



Youth Substance Use Prevention:

An Update on Programs, Practices and Issues

2000-2016

Literature review prepared for Health Canada
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Document Overview:

About this Review

Purpose

This report provides a comprehensive review of the relevant literature on youth substance use prevention published within the last fifteen years. Articles included in this review were published between the years 2000 and January 2016 and originate from peer-reviewed journals. Exceptions were made to include older articles if they were highly influential or related to the DARE program.

Method

This review was conducted in two phases. The first phase was in 2011 and the second phase was in 2015. Articles included were peer-reviewed and in English.

2011 Literature Search: Articles were retrieved from PsycINFO for the period of 2000 to early 2011. A broad search for the keywords, “drug,” “prevention,” and “youth” retrieved 1,367 articles. Many of these publications were not directly related to the purpose of this review, for example articles that focused on drug treatment, outcomes of drug abuse, effects of prenatal or perinatal drug exposure, or safe injection/HIV prevention and hence they were excluded. Articles regarding prevention efforts that solely targeted smoking or alcohol use were also excluded, as the primary aim of this report was to inform reviewers of “illicit” drug usage among adolescents (e.g., marijuana, cocaine, ecstasy). These exclusion criteria resulted in a final list of 264 articles. 14 additional articles were included from other sources, for a total of **278 articles** that have been organized into four general sections. Articles are listed alphabetically by author, with the exception of some articles that are grouped by topic within a section (e.g., DARE). A fifth section on measures for use in research and evaluation in the area of youth substance use is included. In addition, at the end of this document, there is a list of 7 other resources/articles that may be of interest.

2016: In order to update the 2011 literature review (as described above), articles were retrieved from PsycINFO for the period of 2011 to early 2016. Using the original search keywords, “drug,” “prevention,” and “youth”, a total of 958 articles were retrieved. As described above, articles that did not deal directly with illicit drug use prevention or focused on populations from developing countries were excluded resulting in a final list of **173 articles** that are included in this review. Articles from this search have been integrated into the 2011 literature review.

In addition, a search was conducted in the Cochrane Database of Systematic Reviews using the search words ‘youth + prevention + substance’ for the period of 2005 to 2016 (note that articles prior to 2005 are not included in the database). A total of 150 articles were retrieved. 135 articles were not directly related to this review as they focused on topics such as tobacco use, treatment issues, self-harm, mental health. The remaining 15 articles were further reviewed and an

additional 6 articles were excluded as they focused on alcohol-only interventions or were protocols for future systematic reviews. This resulted in **8 articles** for inclusion in the review.

Further to this, a second PsycINFO series of literature searches were conducted in order to ensure that articles were uncovered related to specific prevention efforts. Nine topics were included in this search using the timeframe of 2000 to early 2016. A total of **153 articles** were downloaded for inclusion.

- Harm reduction approaches
- Computer-based approaches to prevention
- Neuroscience-based approaches to prevention
- Concurrent disorders and prevention
- Cannabis specific prevention programs
- Prevention of drug impaired driving
- Binge-drinking prevention programs
- Prescription drug misuse prevention
- New psychoactive substance use prevention

Details of the above searches can be found in Appendix D.

Six additional peer-reviewed articles were drawn from another literature review. In total, this document contains summaries of 618 peer-reviewed research articles covering the years 2000-early 2016.

Organization

- Part I: Current Perspectives on Substance Use Prevention
- Part II: Models of Substance Use Prevention Programs
- Part III: Risk and Protective Factors Influencing Youth Substance Use
- Part IV: Research and Evaluation Methods
- Part V: Measures for Use in Research and Evaluation
- Appendix A: Other documents of interest
- Appendix B: Program index
- Appendix C: Key Journals for substance use prevention
- Appendix D: Summary of targeted searches

Summary of findings

- Youth engage in substance use for a number of reasons, including boredom, psychological distress, biological factors and normative influence of parents and peers.
- Major factors predicting drug abuse include youths' attitudes and beliefs about drugs, psychological well-being, family history, school culture, wealth/access to drugs, peer and community influence. However there is no clear picture; effects of one factor are often mediated by another (i.e., whether or not one factor predicts engagement in substance use depends on the level of a second factor).
- Family attachment, healthy peer relationships, school involvement, self-esteem and good coping skills are all important protective factors against substance use. Such factors can inform the foundation for strengths-based programs which have been found to be effective in helping youth develop positively (and avoid substance use).
- Although the most widely implemented drug prevention program in North America, DARE has not been found to reduce substance use or abuse among adolescents. DARE has been updated and the updated program has experienced some positive results but overall remains low in effectiveness.
- Three programs have strong evidence and have been deemed to be the most effective in substance use prevention: Strengthening Families; Unplugged and the Good Behaviour Game.¹
- Overall, programs that have proven most effective are those that are well-designed, multi-component, incorporate an understanding of the etiology of substance use, nonjudgmental, developmentally and population appropriate and are of high intensity. Approaches that encourage adolescents to make their own decisions about drugs (informed choice) and those that target perceptions of social norms (social influence) are favoured in the literature. Most recently, more focus is being given to the importance of culturally tailoring programs for different groups.
- More than any other approach in the literature, brief intervention has very mixed results in terms of effectiveness. This may be because there is not consistency in how this approach is implemented.
- Internet-based prevention approaches are slowly gaining popularity. Given the infancy of this approach, evidence is not yet strong enough to indicate that this strategy leads to behavioural change.
- There continues to exist substantial challenges with program implementation and which may be contributing to low impact of programs.
- Overall, there are conflicting findings in the literature regarding best practices for preventing substance use among adolescents. Researchers are continuously working to refine measures and develop strategies to best evaluate the effectiveness of prevention efforts.
- Although different avenues of inquiry are emerging in the research to better understand risk and protective factors, two in particular are gaining substantial momentum: neurological factors that may contribute to some youth being more susceptible to substance use and abuse as well as how substance use and mental health interact.
- There continues to be a need for research and evaluation that is longitudinal in nature, rigorously designed and considers a wide range of risk and protective factors related to substance use.

¹ These programs are highlighted in blue boxes in this document.

Document Overview:

Part I: Current Perspectives on Substance Use Prevention

Section 1.1.

Section 1.1 of this document reviews the literature on successful and unsuccessful approaches to substance use prevention.

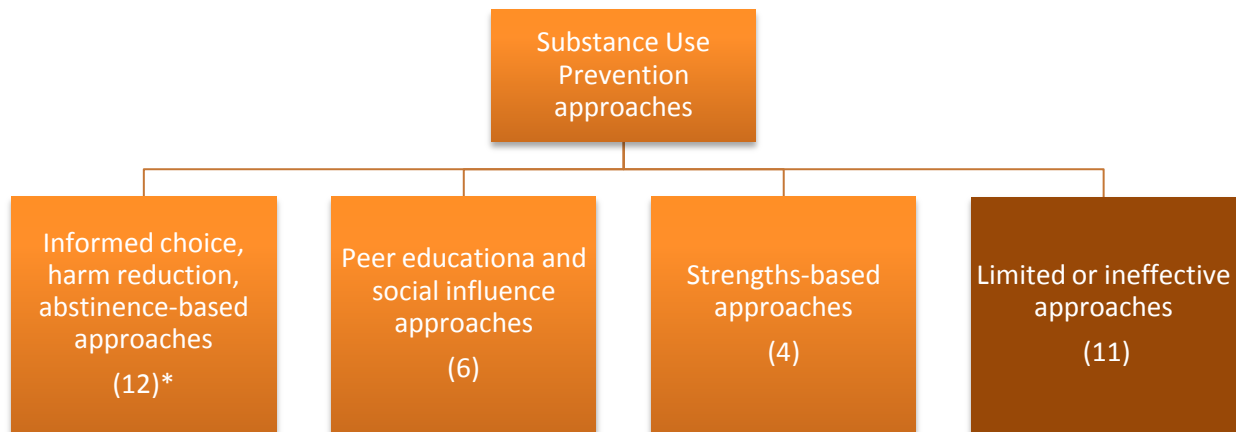


Figure 1: Common substance use prevention approaches.

*Number of articles in each category.

Key terms

Abstinence-based: Abstinence-based strategies advocate abstaining from using drugs altogether. This can be considered a primary prevention approach (i.e., preventing the onset of substance use). One common strategy is the “Just say no” approach.

Informed choice: Informed choice approaches encourage adolescents to make their own decisions about substance use based on information provided (and generated through discussion) on risks and preferred alternatives.

Harm reduction: Harm reduction aims to reduce the harms associated with the use of drugs in individual who are unable to unwilling to stop use. The focus is on the prevention of harm rather than the prevention of drug use itself.

Social influence: Social influence approaches primarily incorporate discussion about peer influence, and offer youth strategies to resist peer pressure to use substances. (Note that in the substance use prevention literature, peers are generally the focus of “social influence” models).

Strengths-based: Strengths-based approaches build on adolescents’ strengths (i.e., “assets”) rather than target reducing their “risk-factors.” The thought is that by enhancing strengths, risk factors will be outweighed by protective factors.

Section 1.2-1.7

Sections 1.2 through 1.7 review perspectives that are critical to substance use prevention issues.

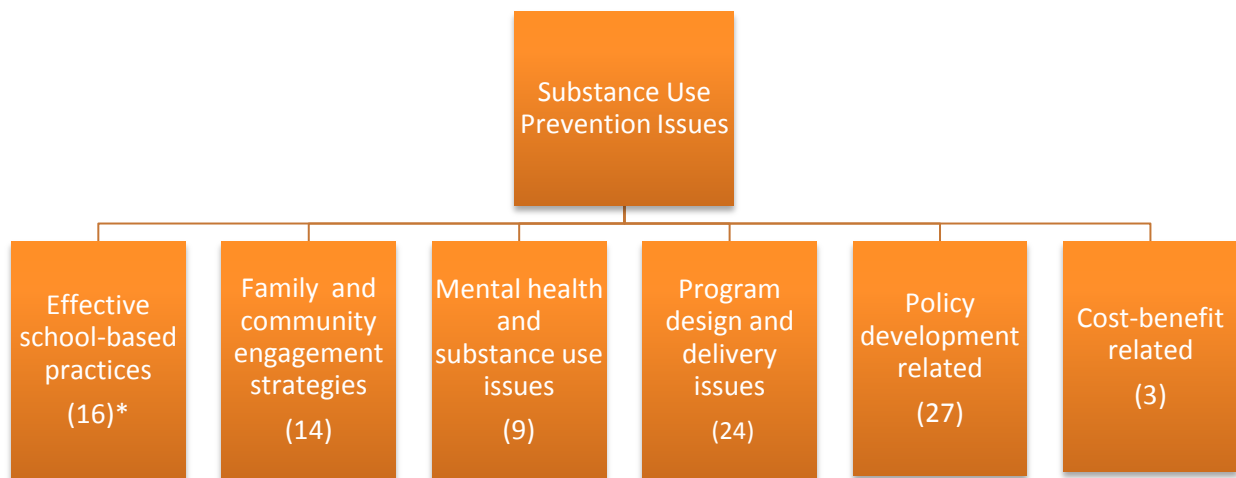


Figure 2: Substance Use Prevention Issues

*Number of articles in each category.

Document Overview:

Part II: Models of Substance Use Prevention Programs

Part II provides a compendium of youth substance use prevention programs evaluated within the past sixteen years. Programs vary by approach (e.g., informed choice, abstinence-based, social influence), location (e.g., school, home, community), and method of delivery (e.g., peers, mentors, media). All programs are universal (i.e., designed for all youth) except for those in the “targeted” section which are broken down by target population (e.g., youth who identify as GLBTQ, Aboriginal, or who are considered “high-risk”).

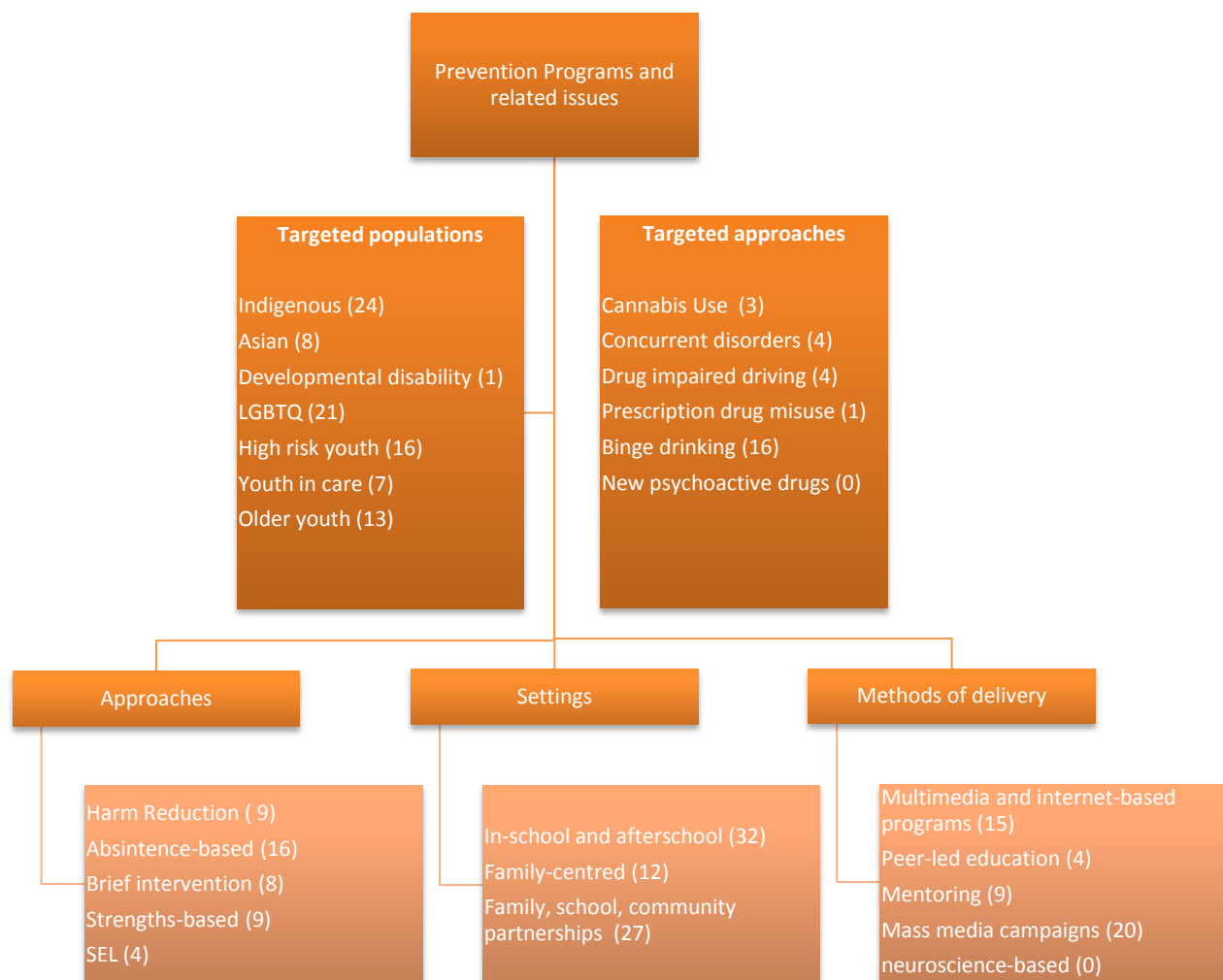


Figure 3: Organization of substance use prevention model and issues

What Works in Prevention

What works	What doesn't
<ul style="list-style-type: none"> Multi-component strategies (individual, school, family, community, media) that impact systems; Approaches that incorporate a social determinants of health approach 	<ul style="list-style-type: none"> Approaches narrow in focus (e.g., only teach affective education; some brief interventions); approaches that don't consider the many factors that lead to or sustain substance use
<ul style="list-style-type: none"> Approaches that have higher dosage to allow for skill development 	<ul style="list-style-type: none"> Single-dose or limited dose interventions
<ul style="list-style-type: none"> Interactive formats (peer involvement, discussion-based) 	<ul style="list-style-type: none"> Non-interactive formats (lecturing about facts)
<ul style="list-style-type: none"> Non-judgemental, harm reduction approaches 	<ul style="list-style-type: none"> Abstinence-based approaches
<ul style="list-style-type: none"> Serious, straightforward information 	<ul style="list-style-type: none"> Trying to sound cool; providing information that is below youths' developmental level
<ul style="list-style-type: none"> Programs that are well-implemented, sequential, high intensity, foster competence, developmentally appropriate 	<ul style="list-style-type: none"> Poorly implemented programs that are developmentally mis-matched, poorly designed, and have limited intensity
<ul style="list-style-type: none"> Programs that offer education and skill-building over time in a developmentally appropriate and sequential manner 	<ul style="list-style-type: none"> Programs that only offer education and skill-building at one developmental time-point only
<ul style="list-style-type: none"> Programs aim to build up protective factors and reduce risk factors 	<ul style="list-style-type: none"> Approaches that focus only on reducing risk without attention to protective factors

Emerging Areas of Focus in Substance Use Prevention

- Approaches that incorporate neuroscience
- Strengthening self-regulation capacities of youth
- Tailoring programs for specific groups of youth (e.g., LGBTQ, Indigenous)
- Incorporating mental health and substance use in programming
- Using technology to deliver prevention education
- Involving youth in program development
- Examining larger policies that impact rates of youth substance use

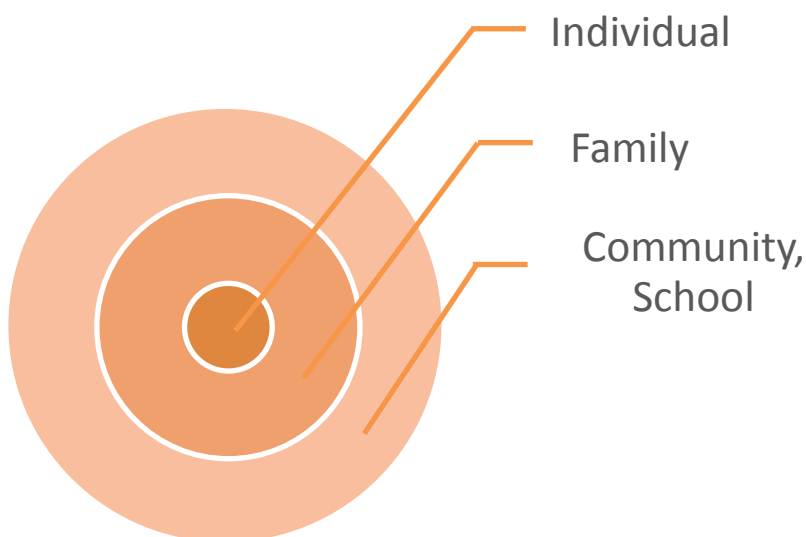
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Part III: Risk and Protective Factors Influencing Youth Substance Use

Part III identifies risk and protective factors that have been found to influence adolescents' decisions to use or not use substances. Factors have been divided into three broad categories often used in the resiliency literature: individual-level, family, or contextual (e.g., community, school). Although factors have been categorized for ease of reference, it is important to understand that these factors are all related and influence each other. For example, an individual-level factor such as attitude towards substance use is impacted by experiences in the home, school, and wider community. Strengths-based programs understand that by building up protective factors, risk factors can become less of an influence in the life of a youth. For example, mentoring programs seek to build relationships, and having at least one solid relationship with an important adult is the number one protective factor shared by resilient individuals. *Thus, even if a program does not focus on substance use prevention in its' content, it can prevent substance use by virtue of the strengths focus that promotes positive youth development.*

Resilience as a Theoretical Basis for Substance Abuse Prevention
Meschke, L.L. & Patterson, J.M. (2003). *The Journal of Primary Prevention*, 23 (4), 483-514.

The resilience perspective is used to examine the risk and protective mechanisms associated with adolescent substance use. Based on this model, protective mechanisms originate from the individual, family, peer, and community levels. Research reviewed in these areas provided evidence of effective protective mechanisms, particularly at the individual and the family levels, including social skills, religious beliefs, communication, and support. Research addressing potential protective mechanisms at the peer and community levels is promising but less conclusive.



- Gender, age, ethnicity (6)
- Attitudes, beliefs, behaviours (18)
- Psychological assets and risks (19)
- Previous substance use (13)
- Brain development (6)

- Attachment (3)
- Parenting practices (20)
- Family structure (3)

- School culture and connectedness (15)
- Peers (19)
- Community and SES (16)

- **Concomitant factors (30)**

Figure 4: Factors influencing youth substance use.

Document Overview:

Part IV: Research and Evaluation Methods

The final section of this document highlights issues that have been raised with current methods of substance use prevention research. Common concerns include a lack of consistent evaluation standards, focus on short-term results, and biased reporting from youth and external evaluators. This section also reviews articles that suggest strategies for evaluating programs and concludes with a listing of measures that have demonstrated good psychometric properties.



Figure 5: Organization of evaluation methods literature.

Common concerns	Best practices
<ul style="list-style-type: none">• Lack of consistent evaluation standards• Poorly implemented programs (implementation is not taken into account)• Lack of overall perspective in reporting (i.e., failing to consider etiology and comorbidity of issues)• Questionable reliability and bias in adolescent self-reports• Manipulation of analyses by researchers to report favourable results• Heavily focused on short term outcomes	<ul style="list-style-type: none">• Mixed method research (qualitative and quantitative)• Utilization of psychometrically sound measures• Building trust with adolescents prior to conducting research• Multi-site evaluations• Longitudinal studies• Randomized control trial studies• Greater transparency and accountability in published research



Part I:

Current Perspectives on Substance Use Prevention

Part I: Current Perspectives on Substance Use Prevention

1.1. Approaches to substance use prevention (33)

1.1.a. Informed choice, harm reduction and abstinence-based approaches

- ✓ Beck, J. (1998). 100 years of 'just say no' versus 'just say know': Re-evaluating drug education goals for the coming century. *Evaluation Review*, 22(1), 15-45.

Through comparative socio-historical analysis of American school-based drug education, this review critically examines past perspectives and practices and how they shaped current programs. Among the key findings emerging from this analysis: Contrary to the popular belief that drug education began in the 1960s, its roots actually go back at least 115 yrs to the advent of compulsory temperance instruction. Although the particular substances targeted by such approaches have changed, the underlying approaches and dominant "no-substance-use" injunction has not. Despite the existence of "informed choice" approaches, throughout much of this period evaluation efforts continue to be constrained by the limited dictates of "no-use" perspectives. A pragmatic alternative to contemporary "Just Say No" education is offered that strives to minimize potential harm resulting from the uninformed misuse of licit and illicit substances. A unique evaluative strategy designed to assess the effectiveness of this form of "informed choice" or "harm reduction" drug education is discussed.

- Burke, M. R. (2002). School-based substance abuse prevention: Political finger-pointing does not work. *Federal Probation*, 66(2), 66-71.

The recent eruption of news stories covering the poor evaluation results of the Drug Abuse Resistance Education (D.A.R.E.) program, the most widely implemented youth drug prevention program in the United States, coupled with the even more recent speculation that adolescent drug use may again be on the rise, has focused much attention on substance abuse prevention programs administered in school settings. It is not uncommon to find school-based prevention in the spotlight, as schools have traditionally been the site of both alcohol and drug education and the collection of adolescent substance use data.

Legend

- ★★ **Indicates an effective approach;** evaluators found these programs or strategies to be effective. Rigour was utilized in the methodology and the programs may appear on "evidenced-based practices" databases.
- ★ **Indicates a promising practice;** these programs or strategies show promise, but have not yet undergone extensive evaluation.
- ✓ **Interesting position or discussion** article on issues and practices in prevention.

N.B.. Titles that are shaded are highly recommended reading.

- ✓ Farrugia, A. (2014). Assembling the dominant accounts of youth drug use in Australian harm reduction drug education. *International Journal of Drug Policy*, 25(4), 663-672.

Education programs are a central element of Australian harm reduction drug policy. Considered less judgmental and more effective than the punitive policies of Australia's past, harm reduction drug education is premised on the goal of reducing 'risks' and harms associated with illicit drug use rather than an elimination of use per se. In this article I analyse two sets of key texts designed to reduce drug related harm in Australia: harm reduction teaching resources designed for classroom use and social marketing campaigns that are targeted to a more general audience. I identify two significant accounts of young people's drug use present in Australian harm reduction drug education: 'damaged mental health' and 'distress'. I then draw on some of Deleuze and Guattari's key concepts to consider the harm reducing potential these accounts may have for young people's drug using experiences. To demonstrate the potential limitations of current drug education, I refer to an established body of work examining young people's experiences of chronicling. From here, I argue that the accounts of 'damaged mental health' and 'distress' **may work to limit the capacity of young drug users to practice safer drug use.** In sum, current Australian harm reduction drug education and social marketing may be producing rather than reducing drug related harm.

Hamilton, G. (2004). Harm minimization in school drug education: A commentary on McBride et al. (2004). *Addiction*, 99(3), 293-294.

Comments on an article by McBride et al (see record 2004-11270-003). McBride et al provide two strong contributions to the school-based drug prevention literature. First, the use of a control trial design that accounts for school-level effects provides robust evidence as to how resources and efforts should be expended to combat adolescent alcohol use and associated problems, and secondly its focus on harm minimization rather than abstinence as a programme goal is innovative. One question that remains to be answered is whether the harm minimization philosophy was responsible for the behavioural changes identified, or if these differences resulted from a well-organized and resourced intervention. The fact that most comparison schools appear to have also implemented resources based on harm minimization is not persuasive. Schools have long played a role in addressing how to reduce alcohol use and its associated harms among adolescents. The possibility exists that abstinence-based approaches may be too simplistic to tackle this complex issue. Other strategies warrant trial and this research indicates harm minimisation approaches are worthy of further investigation.

- ✓ Hunter, C., Strike, C., Barnaby, L., Busch, A., Marshall, C., Shepherd, S., & Hopkins, S. (2012). Reducing widespread pipe sharing and risky sex among crystal methamphetamine smokers in Toronto: Do safer smoking kits have a potential role to play? *Harm Reduction Journal*, 9.

Background: Crystal methamphetamine smoking is associated with many negative health consequences, including the potential for transmission of hepatitis. We examined whether or not a kit for crystal methamphetamine smoking might have some potential to reduce the negative health effects of crystal methamphetamine smoking. Methods: Five focus groups were conducted with crystal methamphetamine smokers recruited by community health agencies and youth shelters in Toronto, Canada. Target groups included homeless/street-involved youth, sex workers, men who have sex with men, and youth in the party scene. Participants (n = 32) were asked questions about motivations for crystal methamphetamine use, the process of smoking,

health problems experienced, sharing behaviour, risky sexual practices, and the ideal contents of a harm reduction kit. Results: Pipe sharing was widespread among participants and was deemed integral to the social experience of smoking crystal methamphetamine. Heated pipes were unlikely to cause direct injuries, but participants mentioned having dry, cracked lips, which may be a vector for disease transmission. Many reported having sex with multiple partners and being less likely to use condoms while on the drug. Demand for harm reduction kits was mixed. Conclusions: Changing pipe sharing behaviours may be difficult because many participants considered sharing to be integral to the social experience of smoking crystal methamphetamine. Within the context of a broader health promotion and prevention program, pilot testing of safer smoking kits **to initiate discussion and education** on the risks associated with sharing pipes and unprotected sex for some communities (e.g., homeless/street-involved youth) is worth pursuing.

McKeganey, N. (2006). The lure and loss of harm reduction a response to the commentaries. *Addiction Research & Theory*, 14(6), 585-588.

Reply by the current author to the comments made by Wayne M. Harding (see record 2007-03173-002), Mike Ashton (see record 2007-03173-003), Colin Mangham (see record 2007-03173-004) and Richard Velleman (see record 2007-03173-005) on the original article (see record 2007-03173-001). In addressing the issue of the UK government's focus on harm reduction strategies rather than drug prevention strategies, the author wholeheartedly agrees with Harding in lamenting the lack of empirically based discussions of drug policy within the UK and elsewhere. He also believes Ashton's response raises an important issue, namely the degree to which drug treatment services and drug policy have embraced harm reduction ideas within the UK. The author commends Mangham for usefully identifying key elements of an effective prevention paradigm. And finally, the author addresses Velleman's criticism by noting that Velleman has interpreted his original article as a call for the focus on harm reduction to be dropped and replaced with a focus on drug prevention. But the author replies that Velleman is missing the important question, namely, why have the existing harm reduction services largely failed to reduce the harms of continued drug use and whether it is now time to make drug prevention rather than harm reduction the cornerstone of drug policy and practice.

Merkinaitė, S., Grund, J. P., & Frimpong, A. (2010). Young people and drugs: Next generation of harm reduction. *International Journal of Drug Policy*, 21(2), 112-114.

Globally, young people under 25 accounted for an estimated 45% of all new HIV infections in 2007. Across the Eastern Europe and Central Asia region as many as 25% of injecting drug users (IDUs) are younger than 20. The Eurasian Harm Reduction assessment of young peoples' (under 25) drug use, risk behaviors and service availability and accessibility confirms, young people at risk of injecting, or those already experimenting with injecting drugs, find themselves isolated from health and prevention services, which increases the risks for health and social harms, while the approach towards young peoples' use rely heavily on law enforcement. Denying young drug users' access to life-saving drug treatment and other harm reduction services contributes to the risk environment surrounding their use and violates their right to health and well-being as identified in the Convention on the Rights of the Child. Governments, health care providers and harm reduction services should work together to create an environment in which young people can access needed services, including non-judgmental and low-threshold approaches offered by harm reduction programs.

Panagopoulos, I., & Ricciardelli, L. A. (2005). Harm reduction and decision making among recreational ecstasy users. *International Journal of Drug Policy*, 16(1), 54-64.

Recent research indicates that 3,4-methylene-dioxymethamphetamine (MDMA), also known as 'ecstasy', is becoming increasingly popular as an illicit drug among young people. This study investigated risk and harm reduction practices among recreational ecstasy users. A semi-structured interview with 40 participants was designed to investigate how ecstasy users identify and manage the harms associated with their drug use, and the underlying decision-making process. Overall, the participants identified both positive and negative effects. The reported positive effects predominantly centred around enhanced psychological, physiological and social experiences. However, there were a number of factors that contributed to regulating ecstasy use. These included specific in-group and out-group practices executed within the peer group, preventative harm-reducing practices, shared decision making, and shared responsibility for harm prevention. Recommendations for promoting harm reduction strategies and suggestions for future research are discussed.

Spooner, C., & Hall, W. (2002). Preventing drug misuse by young people: We need to do more than 'just say no.' *Addiction*, 97(5), 478-481.

Most drug prevention programs, such as school-based drug education and mass media campaigns, aim to encourage individuals not to use drugs. These strategies have had mixed, often disappointing, results. Three inter-related areas of research indicate that a broader view of how to prevent drug problems is needed. The first is research on the etiology of drug abuse, problem behavior, crime and psychosocial disorders among young people. The second is research on developmental transitions in child and adolescent development. The third is research on macro-environmental influences--economic, social and physical environmental influences--on health and social outcomes. Implications for public policy are also discussed.

Swift, W., Copeland, J., & Lenton, S. (2000). Cannabis and harm reduction. *Drug and Alcohol Review*, 19(1), 101-112.

Cannabis is typically used experimentally or intermittently in adolescence and early adulthood, and is generally discontinued by the mid- to late-20s. While only a minority proceed to long-term regular use, it is by far the most widely consumed illicit drug in many western countries. Since 1985, Australia's official policy on cannabis and other drugs has been one of harm reduction (HR). There is a spirited debate in Australia and elsewhere about cannabis-related harm. Points of contention include: claimed increases in the potency of cannabis; what legislative responses should apply to its possession, use, and cultivation; its use as a therapeutic agent; and the most appropriate responses to adolescent use. There is also controversy about the definition and scope of HR. This article takes a fairly broad look at cannabis-related harm and associated HR strategies. Issues discussed include: health-related harm, probable acute and chronic harms, high-risk groups, health-related HR, legal harm, harms associated with cannabis law enforcement, legal issues for cannabis users, and assessing the effectiveness of HR for cannabis.

✓ Toubmourou, J. W., Stockwell, T., Neighbors, C., Marlatt, G. A., Sturge, J., & Rehm, J. (2007). Interventions to reduce harm associated with adolescent substance use. *The Lancet*, 369(9570), 1391-1401.

A major proportion of the disease burden and deaths for young people in developed nations is attributable to misuse of alcohol and illicit drugs. Patterns of substance use established in

adolescence are quite stable and predict chronic patterns of use, mortality, and morbidity later in life. Findings were integrated of systematic reviews to summarise evidence for interventions aimed at prevention and reduction of harms related to adolescent substance use. Evidence of efficacy was available for developmental prevention interventions that aim to prevent onset of harmful patterns in settings such as vulnerable families, schools, and communities, and universal strategies to reduce attractiveness of substance use. Regulatory interventions aim to increase perceived costs and reduce availability and accessibility of substances. Increasing price, restricting settings of use, and raising legal purchase age are effective in reducing use of alcohol and tobacco and related harms. Screening and brief intervention are efficacious, but efficacy of a range of treatment approaches has not been reliably established. Harm-reduction interventions are effective in young people involved in risky and injecting substance use.

Weitzman, E. R., & Nelson, T. F. (2004). College student binge drinking and the 'prevention paradox': Implications for prevention and harm reduction. *Journal of Drug Education*, 34(3), 247-265.

Considerable attention has been paid to heavy episodic or "binge" drinking among college youth in the United States. Despite widespread use, the binge measure is perceived by some as a low intervention threshold. We use data from the Harvard School of Public Health College Alcohol Study (n = 49,163) to describe patterns of consumption and harms along a continuum including the binge measure to demonstrate the validity of the binge threshold and prevention paradox in college. While the heaviest drinkers are at greatest risk for harm, they are relatively few and generate proportionately small amounts of all drinking-harms. The risk of harms is not zero among lower level drinkers in college. Because they are numerous, they account for the majority of harms. This paradoxical pattern suggests we moderate consumption among the majority using environmental approaches, the efficacy of which are described using case study data from a national prevention demonstration. Implications for prevention policy, programming, and media advocacy are discussed.

1.1.b. Peer education and social influence approaches

Butters, J. E. (2004). The impact of peers and social disapproval on high-risk cannabis use: Gender differences and implications for drug education. *Drugs: Education, Prevention & Policy*, 11(5), 381-390.

Drug education programs that rely on an abstinence based philosophy neglect, and may even contribute to, the potentially adverse consequences experienced by young people who already engage in this potentially health-compromising behaviour. A predominant focus of drug research during the initial wave of rising cannabis use by young people in the 1960's and 1970's, was centred on identifying the factors that contributed to this trend. Less attention has been devoted to uncovering those factors that may inhibit the progression to high-risk levels of use and particularly whether their impact differs for adolescent males and females. In spite of the questionable effectiveness, formal control mechanisms (i.e., criminal laws) and a reliance on prevention-based drug education remain primary approaches for combating drug use. This paper identifies a subgroup of adolescents already using cannabis and estimates the effects of peers, social disapproval and perceived health effects on inhibiting the escalation of use to problem levels. The results suggest that the risk for problem cannabis use among adolescents may be attenuated by some of these informal control items. The findings also suggest however, that the effects of these factors may be different for males and females. The implications for drug education initiatives are discussed.

Giannotta, F., Vigna-Taglianti, F., Rosaria Galanti, M., Scatigna, M., & Faggiano, F. (2014). Short-term mediating factors of a school-based intervention to prevent youth substance use in Europe. *Journal of Adolescent Health*, 54(5), 565-573.

Purpose: To investigate factors mediating the effects of a European school-based intervention (Unplugged) based on a social influence approach to youths' substance use. Methods: Schools in seven European countries (n = 143, including 7,079 pupils) were randomly assigned to an experimental condition (Unplugged curriculum) or a control condition (usual health education). Data were collected before (pretest) and 3 months after the end of the program (posttest). Multilevel multiple mediation models were applied to the study of effect mediation separately for tobacco, alcohol, and cannabis use. Analyses were conducted on the whole sample, and separately on baseline users and nonusers of each substance. Results: Compared with the control group, participants in the program endorsed less positive attitudes toward drugs; positive beliefs about cigarettes, alcohol, and cannabis; and the normative perception of peers using tobacco and cannabis. They also increased in knowledge about all substances and refusal skills toward tobacco. Decreased positive attitudes toward drugs, increase in refusal skills, and reappraisal of norms about peer using tobacco and cannabis appeared to mediate the effects of the program on the use of substances. However, mediating effects were generally weak and some of them were only marginally significant. Conclusions: This study lends some support to the notion that school-based programs based on a social influence model may prevent juvenile substance use through the modification of attitudes, refusal skills, and normative perceptions.

Midford, R. (2010). Drug prevention programmes for young people: Where have we been and where should we be going? *Addiction*, 105(10), 1688-1695.

Aim: Substance use by young people has long been a concern of western society, but opinion is mixed as to which prevention approach offers the greatest benefit, and whether indeed there is any benefit at all. This paper reviews the nature of prevention programmes, the research evidence that underpins these programmes and the prevention objectives against which effectiveness is measured. The aim of this is to create better understanding of the elements that maximize programme effectiveness, what can be achieved by prevention programmes and how programmes can be improved. Findings: There is a range of prevention approaches for which there is evidence of effectiveness. Some are classroom-based; some focus upon parenting; some have substantial whole-of-school and community elements; and some target risk and protective factors in early childhood. All, however, are based substantially on the social influence model. In an attempt to improve practice lists of effective programmes have been developed, but there are concerns about the science behind selection. On balance, there is consistent evidence that social influence prevention programmes do have a small, positive effect on drug use, but this then raises the question as to whether harm, rather than use, would be the more worthwhile target for prevention. Prevention that seeks to reduce harm has been demonstrably effective, but has found little support in some jurisdictions. **Conclusion:** Research has created a progressively better understanding of how to optimize programme effectiveness and what can be achieved realistically by even the most effective programmes. However, further research is required to identify which, if any, particular approach offers greater promise. **The effectiveness of harm reduction should be compared with more traditional abstinence and the additional effects of whole of school, parent and community elements need to be measured more accurately. Contemporary social influence prevention programmes are flawed, but the approach is still the best way of influencing drug use behaviour in young people as a whole. Evidence-based refinement is the best option for greater benefit.**

Rowland, B., & Toumbourou, J. W. (2010). Commentary on Midford (2010): Drug prevention programs for young people **are a good investment**. *Addiction*, 105(10), 1696-1697.

Comments on an article by Richard Midford (see record 2010-19424-002). Midford provides an overview from a respected researcher of efforts to prevent alcohol-and drug-related harm among young people in Australia and other western nations. These efforts have included classroom approaches, parenting and whole-of-community and school approaches. In this paper he emphasizes particularly the benefits of school-based drug education. He concludes his paper by forewarning of the disadvantages of stepping away from harm reduction as the mainstay for Australian prevention policy. Midford's paper emphasizes school or classroom drug education programs, based upon the social influence model. He appears less convinced that the cost effectiveness of school drug education is enhanced through supplementation with additional parent education and community components. The added complexity and cost of coordinating these additional elements has failed in many evaluations to translate to additive prevention benefits. Midford's consideration of the potential for tension between abstinence and harm reduction within prevention policy is welcomed and harm reduction, rather than abstinence, should be the mainstay of prevention policy. However, the position here is that there can be benefits where abstinence is given prominence within alcohol and drug prevention policies.

- ✓ Orme, J., & Starkey, F. (1999). **Peer** drug education: The way forward? *Health Education*, 99(1), 8-16.

The development of drug education for young people in the UK has been the subject of various policy statements in recent years. With the publication of the Government White Papers research has drawn attention to the potential benefits of peer education as a method of drug prevention due mainly to the credibility of young people with their peers. This credibility might be based on age alone, or may also involve credibility stemming from the young person's own drug use, past or present. This paper discusses issues relating to the effectiveness of peer drug education with particular reference to two evaluations carried out recently in South West England; brings together the most recent literature on peer education; and considers the appropriateness of different approaches in schools and youth work settings. This paper contributes significantly to the debate on the use of peer education as a health education approach.

Shiner, M. (1999). Defining peer education. *Journal of Adolescence*, 22(4), 555-566.

Presents an operational framework for defining and interpreting peer interventions and peer education. The framework is based on fieldwork for research assessing the value of peer-led approaches as a means of delivering drug prevention in a variety of projects with students and adults. The author recommends that consideration should be given to what it is that constitutes "peeriness", the aims and methods of an intervention, and the way in which peer educators are involved. Reflecting a gap in the existing literature, particular attention is paid to the nature of peer involvement. A key distinction is posited between peer development and peer delivery, and it is suggested that there be a good fit between location (school, community, etc.), approach and client group.

1.1.c. Strengths-based prevention approaches

- ✓ Cheon, J. W. (2008). Best practices in community-based prevention for youth substance reduction: Towards strengths-based positive development policy. *Journal of Community Psychology*, 36(6), 761-779.

Substance use among youth remains a major public health and safety concern. One fundamental way to address youth substance use prevention is to keep young people on a positive trajectory by engaging them in positive activities from early years of their childhood. In this article, the author offers a best practice analysis of systematic review about 12 selected community-based preventions, and proposes policy changes towards incorporating a strengths perspective. A substantive, methodological, and value-based critical analysis of the strongly effective preventions was conducted. A strengths-based positive youth development perspective is specified as one feasible needed improvement and subsequent policy changes in the school district as well as in the local, state, and federal levels are proposed along with the suggestion of a mandated community youth participation strategy.

- Damon, W. (2004). What is Positive Youth Development? *Annals of the American Academy of Political and Social Science*, 591, 13-24.

This article explores the recent approach to youth research and practice that has been called positive youth development. The author makes the case that the approach grew out of dissatisfaction with a predominant view that underestimated the true capacities of young people by focusing on their deficits rather than their developmental potentials. The article examines three areas of research that have been transformed by the positive youth approach: the nature of the child; the interaction between the child and the community; and moral growth. It concludes with the point that positive youth development does not simply mean an examination of anything that appears to be beneficial for young people. Rather, it is an approach with strong defining assumptions about what is important to look at if one is to accurately capture the full potential of all young people to learn and thrive in the diverse settings where they live.

- Lee, T. Y. (2012). Construction of an integrated positive youth development conceptual framework for the prevention of the use of psychotropic drugs among adolescents. *International Journal of Child Health and Human Development*, 5(1), 37-50.

This is a theoretical paper with an aim to construct an integrated conceptual framework for the prevention of adolescents' use and abuse of psychotropic drugs. This paper first reports the subjective reasons for adolescents' drug use and abuse in Hong Kong, and reviews the theoretical underpinnings. Theories of drug use and abuse, including neurological, pharmacological, genetic predisposition, psychological, and sociological theories were reviewed. It provides a critical re-examination of crucial factors that support the construction of a conceptual framework for primary prevention of adolescents' drug use and abuse building on, with minor revision, the model of victimization and substance abuse among women presented by Logan et al. This revised model provides a comprehensive and coherent framework synthesized from theories of drug abuse. This paper then provides empirical support for integrating a positive youth development perspective in the revised model. It further explains how the 15 empirically sound constructs identified by Catalano et al. and used in a positive youth development program, the Project P.A.T.H.S., relate generally to the components of the revised model to formulate an integrated positive youth

development conceptual framework for primary prevention of adolescents drug use. Theoretical and practical implications as well as limitations and recommendations are discussed.

Zins, J. E. (2001). Examining opportunities and challenges for school-based prevention and promotion: Social and emotional learning as an exemplar. *The Journal of Primary Prevention, 21*(4), 441-446.

Discusses barriers and opportunities concerning social and emotional learning (SEL) programs in schools. SEL refers to the knowledge and skills that children acquire through social and emotional-related education, instruction, activities, or promotion efforts that help them recognize and manage emotion, engage in responsible decision making, and establish positive relationships. Barriers to prevention and promotion program development include: (1) increasing the number of schools employing such curricula; (2) leadership issues in initiating and directing SEL efforts; (3) the emphasis of the Individuals with Disabilities Education Act on remediation rather than prevention and promotion services; and (4) inadequate literature concerning SEL program implementation processes. SEL must become a part of the foundation for and integrated into all teacher education classes. All pre-service teachers should complete coursework in SEL skills, and SEL field placements should be available. Skillfully implementing, monitoring, and evaluating well-designed SEL programs will increase the likelihood that these efforts will become institutionalized.

1.1.d. Ineffective substance use prevention approaches²

Bodin, M., & Leifman, H. (2011). A randomized effectiveness trial of an adult-to-youth mentoring program in Sweden. *Addiction Research & Theory*, 19(5), 438-447.

This report describes an independent evaluation of a psychosocial, adult-to-youth mentoring program run by the Swedish branch of the Mentor Foundation, aiming to prevent substance use in low-risk youth (ClinicalTrials.gov ID: NCT01138982). Eligible 14-year-olds (n = 128) were randomly assigned to the mentoring program or to a control condition. Baseline and 12-month follow-up measurements included self-reports on emotional, behavioral, and substance use measures from youth and their parents, and grade point average. These were retrieved from school registers at the follow-up. With alpha-levels corrected for multiple comparisons, analyses revealed no statistically significant outcome differences between the two groups. However, a relatively low statistical power and a low program dosage preclude any definite conclusions about program effectiveness. Among the 65 youth assigned to the intervention, those who met with their mentor for a full program period (n = 33, 51%) were significantly more likely than non-completers to report liking, trusting, and getting help from their mentors. The high rates of premature program terminations highlight the difficulties inherent in implementing mentoring programs under real-world conditions, and the need to strive for adherence to empirically and theoretically derived best practices when doing so. Best practices—such as using mentors with a helping professional background, an ongoing training of mentors, and close monitoring of the mentoring relationships—may be crucial for successful program implementation, and consequently also for the chances of mentoring programs to meet their goals of substance use prevention and improved life quality for the targeted youth

Carney, T., Myers, B. J., Louw, J., & Okwundu, C. I. (2014). Brief school-based interventions and behavioural outcomes for substance-using adolescents. *Cochrane Database of Systematic Reviews* (2).

Background: Adolescent substance use is a major problem, in and of itself and because it acts as a risk factor for other problem behaviours. As substance use during adolescence can lead to adverse and often long-term health and social consequences, it is important to intervene early on in order to prevent progression to more severe problems. Brief interventions have been shown to reduce problematic substance use among adolescents and are especially useful for individuals who have moderately risky patterns of substance use. Such interventions can be conducted in school settings. This review set out to evaluate the effectiveness of brief school-based interventions for adolescent substance use.

Objectives: To evaluate the effectiveness of brief school-based interventions on reducing substance use and other behavioural outcomes among adolescents compared to another intervention or assessment-only conditions.

² Note that these studies find the approaches examined to be ineffective; however **ineffectiveness may also stem from poorly implemented programs**. The issue of poor implementation is discussed in many of the articles. The most noted intervention that has been found to be ineffective or limited in its effectiveness in several studies is brief interventions. **Please also see Section 2.2 for abstinence-based approaches which have been found to be ineffective overall.**

Search Methods: We searched 10 electronic databases and six websites on evidence-based interventions, and the reference lists of included studies and reviews, from 1966 to March 2013. We also contacted authors and organisations to identify any additional studies.

Selection Criteria: We included randomised controlled trials that evaluated the effects of brief school-based interventions for substance-using adolescents. The primary outcomes were reduction or cessation of substance use. The secondary outcomes were engagement in criminal activity and engagement in delinquent or problem behaviours related to substance use.

Data Collection and Analysis: We used the standard methodological procedures outlined by The Cochrane Collaboration, including the GRADE approach for evaluating the quality of evidence.

Main Results: Six studies involving 1139 participants were included in this review. Overall the quality of evidence was moderate in the information provision comparison, and low or very low in the assessment only comparison. Reasons for downgrading the quality included risk of bias of the included studies, imprecision and inconsistency. Our findings suggested that compared to information provision only, brief interventions (BIs) did not have a significant effect on any substance use (three studies, 732 participants, standardised mean difference (SMD) -0.06; 95% confidence interval (CI) -0.20 to 0.09) or delinquent-type behaviour outcomes among adolescents (two studies, 531 participants, SMD -0.26; 95% CI -0.54 to 0.02). When compared to assessment-only controls, BIs had some significant effects on substance use and delinquent-type or problem behaviours, but high levels of heterogeneity existed between studies and it was not always possible to pool the results. When the comparison was with assessment-only conditions, studies of individual interventions that measured BI effectiveness reported significantly reduced substance use in general and in two studies reduced frequency of alcohol use specifically. When the data were pooled, BIs reduced cannabis frequency (SMD -0.22; 95% CI -0.45 to -0.02) across three studies (n = 407). Cannabis quantity was also reduced by BIs in comparison to assessment only (SMD -60.27; 95% CI -66.59 to -53.95) in one study (n = 179). However, the evidence for studies that compared brief interventions to assessment-only conditions was generally of low quality. Brief interventions also had mixed effects on participants' delinquent or problem behaviours.

Conclusion: There was limited quality evidence that brief school-based interventions were more effective in reducing substance use than the assessment-only condition, but were similar to information provision. There is some evidence for the effectiveness of BI in reducing adolescent substance use, particularly cannabis, when compared to assessment only. However, it is premature to make definitive statements about the effectiveness of brief school-based interventions for reducing adolescent substance use. Further high quality studies examining the relative effectiveness of BIs for substance use and other problem behaviours need to be conducted, particularly in low- and middle-income countries.

D'Amico, E. J., & Fromme, K. (2002). Brief prevention for adolescent risk-taking behavior. *Addiction*, 97(5), 563-574.

Despite widespread prevention efforts to decrease adolescent risk-taking, substance use and driving after drinking (DD) are prevalent in the US. The current study compared the efficacy of an abbreviated version of Drug Abuse and Resistance Education (DARE-A) to a new Risk Skills Training Program (RSTP). Adolescent participation in drinking, drug use, DD and riding with a drunk driver was examined longitudinally. After baseline assessments, adolescents were randomly assigned to the RSTP, DARE-A or a no intervention control group and then completed

2-month post-test and 6-month follow-up assessments. The sample (N=300) was comprised of 58% females and the age range was 14-19 years. The RSTP was developed to target several risk behaviors and to examine the feasibility of conducting a brief personalized prevention program in a group setting. DARE-A focused on increasing knowledge and understanding the deleterious effects of substance use. Risk-taking behavior, perception of peer risk-taking and positive and negative alcohol expectancies were assessed. RSTP participants decreased participation in several risk behaviors at post-test, but reductions were not maintained at 6-month follow-up.

Malmberg, M., et al. (2014). Effectiveness of the 'Healthy School and Drugs' prevention programme on adolescents' substance use: A randomized clustered trial. *Addiction*, 109(6), 1031-1040.

Aim: To evaluate the effectiveness of the Healthy School and Drugs programme on alcohol, tobacco and marijuana use among Dutch early adolescents. Design: Randomized clustered trial with two intervention conditions (i.e. e-learning and integral). Setting: General population of 11–15-year-old adolescents in the Netherlands. Participants A total of 3784 students of 23 Dutch secondary schools. Measurements: Structured digital questionnaires were administered pre-intervention and at 32 months follow-up. The primary outcome measures were new incidences of alcohol (life-time and 1-month prevalence), tobacco (life-time and 1-month prevalence) and marijuana use (life-time prevalence). Findings: Main effect analyses showed no programme effects on incidences of alcohol consumption (life-time prevalence: e-learning condition: $B = 0.102$, $P = 0.549$; integral condition: $B = -0.157$, $P = 0.351$; 1-month prevalence: e-learning condition: $B = 0.191$, $P = 0.288$; integral condition: $B = -0.140$, $P = 0.445$), tobacco consumption (life-time prevalence: e-learning condition: $B = 0.164$, $P = 0.444$; integral condition: $B = 0.160$, $P = 0.119$; 1-month prevalence: e-learning condition: $B = 0.088$, $P = 0.746$; integral condition: $B = 0.261$, $P = 0.093$), or marijuana consumption (life-time prevalence: e-learning condition: $B = 0.070$, $P = 0.732$; integral condition: $B = 0.186$, $P = 0.214$). Conclusion: The non-significant impact of the Healthy School and Drugs programme (a Dutch school-based prevention programme for early adolescents) on incidences of alcohol, tobacco and marijuana use indicates that the programme is either ineffective or implemented inadequately.

Nirenberg, T., Baird, J., Longabaugh, R., & Mello, M. J. (2013). Motivational counseling reduces future police charges in court referred youth. *Accident Analysis and Prevention*, 53, 89-99.

By the age of 18, between 16 and 27% of adolescents in the U.S. have been arrested for an offense and by the age of 23 this increases to a staggering 25–41%. Most youth that get into legal trouble have a substance abuse problem and many youth report high risk driving behaviors. Adjudication of adolescents for an offense may provide an opportunity to provide a secondary prevention program for such high risk behaviors. In this regard the primary aim of the present study was to test two hypotheses: (1) that interventions involving group motivational interviewing would decrease future legal charges beyond those achieved by the combination of sanctions and remedial actions otherwise mandated by the court; and (2) that the addition of a trauma room exposure to the group MI intervention would increase the effectiveness of MI in decreasing these future legal charges. Court mandated youth who have had a high risk driving police charge and/or alcohol related police charge and who are drivers ($n = 992$) were randomly assigned to one of the three 20 interventions; enhanced prototypic community service (CS), Motivational Intervention with typical community service (MI), and Motivational Intervention with exposure to a hospital trauma center (MI-H). As hypothesized, the probability of being charged with an offense within the

6 months post-treatment was significantly less for participants in the combined MI groups than those in the CS group. The combined MI groups also had significantly fewer overall number of police charge events than the CS group at 6 months. Mediation analyses revealed that the relationship between MI vs. CS interventions and subsequent police charges was partially accounted for by the youth's experience of the MI component of the intervention. Despite fewer police charges at 6 months the combined MI group reported (1) significantly more hazardous drinking and (2) a greater amount of speeding and distracted driving than the control group over this same 6-month period. Hypothesis 2, that MI-H would be more effective than MI in reducing police charges, was not supported. This was so despite evidence supporting the hypotheses that (1) trauma room exposure would increase participants' emotional arousal during the intervention and (2) increased arousal would be predictive of fewer police charges. Despite support for the theorized causal pathway, the combination of trauma room exposure and MI did not result in better outcomes than MI combined with traditional community service. Given this discrepancy between empirical supports for the theory in the face of the absence of incremental effectiveness of the MI-H treatment condition, a better understanding of the participant's hospital experience will be necessary if we are to successfully utilize the trauma room exposure to increase the effectiveness of MI interventions for this target group to achieve better outcomes.

Oesterle, S., et al. (2015). Effects of communities that care on males' and females' drug use and delinquency 9 years after baseline in a community-randomized trial. *American Journal of Community Psychology*, 56(3-4), 217-228.

This study tested sustained effects of the Communities That Care (CTC) prevention system on health-risking behaviors 9 years after baseline in a community-randomized trial involving 24 towns in seven states. Earlier analyses found sustained effects on abstinence from drug use and delinquency through Grade 12 in a panel of fifth graders. At age 19, 91 % (n = 3986) of the living panel completed the survey. Data were analyzed using generalized linear mixed models. The prevalence of lifetime and current substance use and delinquency were the primary outcomes. Secondary outcomes included substance use disorders, major depression, suicidality, educational attainment, and sexual risk behaviors. CTC had a significant overall effect across lifetime measures of the primary outcomes for males, but not for females or the full sample, although lifetime abstinence from delinquency in the full sample was significantly higher in CTC communities (ARR = 1.16). Males in CTC communities also continued to show greater lifetime abstinence from cigarette smoking (ARR = 1.22). CTC did not have a sustained effect on current substance use and delinquency nor did it improve the secondary outcomes at age 19 for either gender. Communities using CTC may need to extend their prevention planning to include the high school years to sustain effects on drug use and delinquency beyond high school for both genders. **Note that 'Communities that Care' has been found to be effective when examining short and medium term outcomes.**

Singh, R. D., Jimerson, S. R., Renshaw, T., Saeki, E., Hart, S. R., Earhart, J., & Stewart, K. (2011). A summary and synthesis of contemporary empirical evidence regarding the effects of the Drug Abuse Resistance Education Program (D.A.R.E.). *Contemporary School Psychology*, 15, 93-102.

The prevention of drug abuse is an especially salient topic for school psychologists and other educational professionals. Schools are the primary setting for providing education and information aimed at the prevention of drug abuse. Previous meta-analyses (Ennett, et al., 1994; West & O'Neal, 2004) indicate that one of the nation's most popular drug prevention programs, the Drug

Abuse Resistance Education program (D.A.R.E.), was not effective in reducing illicit drug use among youths. In 2003, D.A.R.E. was modified in an attempt to make it more effective. The purpose of this review is to summarize and synthesize the contemporary empirical evidence, which includes six studies focusing on the old D.A.R.E. and one study focusing on the new D.A.R.E., regarding outcomes associated with the modified D.A.R.E. program. Recent studies offer mixed evidence regarding the effectiveness of the new D.A.R.E curriculum, thus, further systematic investigation is warranted to better understand student outcomes associated with the new D.A.R.E curriculum. This information is particularly valuable for school psychologists, administrators, and other education professionals responsible for identifying empirically supported programs for use in schools.

Smedslund, G., Berg, R. C., Hammerstrom, K. T., Steiro, A., Leiknes, K. A., Dahl, H. M., & Karlsen, K. (2011). Motivational interviewing for substance abuse. *Cochrane Database of Systematic Reviews*(11).

Background: There are 76.3 million people with alcohol use disorders worldwide and 15.3 million with drug use disorders. Motivational interviewing (MI) is a client-centred, semi-directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence. The intervention is used widely, and therefore it is important to find out whether it helps, harms or is ineffective.

Objectives: To assess the effectiveness of motivational interviewing for substance abuse on drug use, retention in treatment, readiness to change, and number of repeat convictions.

Search strategy: We searched 18 electronic databases, 5 web sites, 4 mailing lists, and reference lists from included studies and reviews. Search dates were November 30, 2010 for Cochrane Library, Medline, Embase and PsychINFO.

Selection criteria: Randomized controlled trials with persons dependent or abusing substance. Interventions were MI or motivational enhancement therapy. The outcomes were extent of substance abuse, retention in treatment, motivation for change, repeat conviction.

Data collection and analysis: Three authors independently assessed studies for inclusion, and two authors extracted data. Results were categorized into (1) MI versus no-treatment control, (2) MI versus treatment as usual, (3) MI versus assessment and feedback, and (4) MI versus other active treatment. Within each category, we computed meta-analyses separately for post-intervention, short, medium and long follow-ups.

Main results: We included 59 studies with a total of 13,342 participants. Compared to no treatment control MI showed a significant effect on substance use which was strongest at post-intervention SMD 0.79, (95% CI 0.48 to 1.09) and weaker at short SMD 0.17 (95% CI 0.09 to 0.26], and medium follow-up SMD 0.15 (95% CI 0.04 to 0.25)]. For long follow-up, the effect was not significant SMD 0.06 (95% CI-0.16 to 0.28). There were no significant differences between MI and treatment as usual for either follow-up post-intervention, short and medium follow up. MI did better than assessment and feedback for medium follow-up SMD 0.38 (95% CI 0.10 to 0.66). For short follow-up, there was no significant effect . For other active intervention there were no significant effects for either follow-up. There was not enough data to conclude about effects of MI on the secondary outcomes.

Author's conclusions: MI can reduce the extent of substance abuse compared to no intervention.

The evidence is mostly of low quality, so further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

Sussman, S., Sun, P., Rohrbach, L. A., & Spruijt-Metz, D. (2012). One-year outcomes of a drug abuse prevention program for older teens and emerging adults: Evaluating a motivational interviewing booster component. *Health Psychology, 31*(4), 476-485.

Objective: The present study tested the efficacy of motivational interviewing-based booster sessions for Project Toward No Drug Abuse (TND), a 12-session school-based curriculum targeting youth at risk for drug abuse. In addition, generalization of effects to risky sexual behavior was assessed. The 1-year outcomes evaluation of the project is presented. Method: A total of 24 schools were randomized to one of three conditions: standard care control (SCC), TND classroom program only (TND-only), and TND plus motivational interviewing booster (TND + MI). A total of 1186 participants completed baseline and 1-year follow-up surveys. Following the classroom program, youth in the TND + MI condition received up to 3 sessions of MI in person or by telephone. Effects were examined on 30-day cigarette, alcohol, marijuana, and hard drug use, as well as measures of risky sexual behavior (number of sex partners, condom use, having sex while using drugs or alcohol). Results: Collapsed across the 2 program conditions, results showed significant reductions in alcohol use, hard drug use, and cigarette smoking relative to controls. These effects held for an overall substance use index. The MI booster component failed to achieve significant incremental effects above and beyond the TND classroom program. No effects were found on risky sexual behavior. Conclusions: While the program effects of previous studies were replicated, the study failed to demonstrate that an adequately implemented MI booster was of incremental value at 1-year follow-up.

Van Hout, M. C. (2011). Peer and universal drug prevention in Irish schools: Food for thought. *Journal of Alcohol and Drug Education, 55*(2), 8-16.

This letter presents a regional study investigating prevalence of substance use among 12 Irish secondary schools in the North Eastern region of Ireland. The study aimed to present regional youth substance prevalence data for the Regional Drug Task Force Data Coordination unit. The peer education program in this study commenced on a regional basis in 2003 and aimed to equip students in first and fifth years with factual information about the risks attached to alcohol, cigarette and drug use. Six randomly selected schools agreed to take part in the peer education program. The total sample consisted of 429 students. This study highlights the need for improved scripting, design and outcome evaluation of peer education tactics within the universal drug education curriculum.

Werch, C. E., Pappas, D. M., Carlson, J. M., DiClemente, C. C., Chally, P. S., & Sinder, J. A. (2000). Results of a social norm intervention to prevent binge drinking among first-year residential college students. *Journal of American College Health, 49*(2), 85-92.

Examined the effects of a primary prevention social norm intervention on binge drinking among first year residential college students. 634 students were randomly assigned to receive a two-phase social norm intervention or the standard campus psychoeducational prevention program. At post test, no differences were found between intervention and control group students on any of the alcohol use and alcohol-use risk factor measures. Significant subgroup differences were found by stage of initiating binge drinking behaviors, for frequency of alcohol use, quantity of alcohol use, and social norms. It is asserted that these findings suggest the need for tailoring social norm binge drinking interventions to students' stage of initiating heavy drinking and carefully monitoring for potential negative, as well as positive, effects of norm-based prevention messages.

1.2. Effective practices in school-based programs (16)

Caulkins, J. P., Pacula, R. L., Paddock, S., & Chiesa, J. (2004). What we can--and cannot--expect from school-based drug prevention. *Drug and Alcohol Review*, 23(1), 79-87.

School-based drug prevention is a central component of drug control strategies. This paper assesses quantitatively its contributions in the United States from a social policy perspective. The social benefits per participant stemming from reduced drug use (~ \$840 from tobacco, alcohol, cocaine and marijuana) appear to exceed the economic costs of running the programs (~ \$150 per participant); while the benefits associated with reduced cocaine use alone (~ \$300) exceed the costs, the corresponding figure for marijuana (~ \$20) is small. Even if prevention reduced the use of other illicit drugs (e.g. heroin) by as much as it reduced use of cocaine, the majority of benefits would still stem from reductions in use of tobacco and alcohol, which has implications for how school-based drug prevention is funded and whether it is perceived more as a weapon in the war on illicit drugs or as a public health measure. Specific numeric results are subject to considerable uncertainty, but the basic character of the conclusions appears to be robust with respect to parameter uncertainty. The greatest uncertainties concern the permanence of prevention's effects and how to value instances of initiation being deferred but not completely prevented.

★★ Cuijpers, P. Effective ingredients of school-based drug prevention programs: A systematic review. *Addictive Behaviors*, 27(6), 1009-1023.

Drug prevention in schools is a top priority in most Western countries and several well-designed studies have shown that prevention programs have the potential of reducing drug use in adolescents. However, most prevention programs are not effective and there are no general criteria available for deciding which program is effective and which is not. In this systematic review of the literature, the current scientific knowledge about which characteristics determine the effectiveness of drug prevention programs is examined. Three types of studies are reviewed: meta-analyses (3 studies were included), studies examining mediating variables of interventions (6 studies), and studies directly comparing prevention programs with or without specific characteristics (4 studies on boosters, 12 on peer- versus adult-led programs, and 5 on adding community interventions to school programs). **Seven evidence-based quality criteria were formulated: the effects of a program should have been proven; interactive delivery methods are superior; the "social influence model" is currently the best; focus on norms, commitment not to use, and intentions not to use; adding community interventions increases effects; the use of peer leaders is better; and adding life skills to programs may strengthen effects.**

★★ Dubois, D. L., Holloway, B. E., Valentine, J. C., & Cooper, H. (2002). Effectiveness of mentoring programs for youth: A meta-analytic review. *American Journal of Community Psychology*, 30(2), 157-197.

55 evaluations were reviewed in a meta-analysis of the effects of mentoring programs on youth. Overall, findings provide evidence of only a modest or small benefit of program participation for the average youth. Program effects are enhanced significantly, however, when greater numbers of both theory-based and empirically based "best practices" are utilized and when strong relationships are formed between mentors and youth. Youth from backgrounds of environmental risk and disadvantage appear most likely to benefit from participation in mentoring programs. Outcomes for youth at-risk due to personal vulnerabilities have varied substantially in relation to program characteristics, with a **noteworthy potential evident for poorly implemented programs to actually have an adverse effect on such youth.** Recommendations include greater adherence to guidelines

for the design and implementation of effective mentoring programs as well as more in-depth assessment of relationship and contextual factors in the evaluation of programs.

Faggiano, F., Vigna-Taglianti, F., Versino, E., Zambon, A., Borraccino, A., & Lemma, P. (2005). School-based prevention for illicit drugs' use. *Cochrane Database of Systematic Reviews* (2).

Background: Drug addiction is a chronic, relapsing disease. Primary interventions should be aimed to reduce first use, or prevent the transition from experimental use to addiction. School is the appropriate setting for preventive interventions.

Objectives: To evaluate the effectiveness of school-based interventions in improving knowledge, developing skills, promoting change, and preventing or reducing drug use versus usual curricular activities or a different school-based intervention .

Search strategy: MEDLINE , EMBASE, ERIC, PSYCHINFO, Cochrane Library, ACP Journal Club, Cochrane Drug and Alcohol Group Register, updated to February 2004, were searched. Bibliography of papers was checked and personal contacts were made to identify other relevant studies.

Selection criteria: RCTs, CCTs or Controlled Prospective Studies (CPS) evaluating school-based interventions designed to prevent substance use.

Data collection and analysis: Data were selected and extracted independently by two reviewers. Quality was assessed with the CDAG checklist. Interventions were classified as skills, affective, knowledge-focused and other characteristics were also studied (teaching, follow-up implementation, context activation).

Main results: 32 studies (29 RCTs and 3 CPSs) were included. 28 were conducted in the USA; most were focused on 6th-7th grade students, and based on post-test assessment. RCTs: (1) Knowledge vs usual curricula: Knowledge focused programs improve drug knowledge (SMD=0.91; 95% CI: 0.42, 1.39).(2) Skills vs usual curricula: Skills based interventions increase drug knowledge (WMD=2.60; 95% CI: 1.17-4.03), decision making skills (SMD=0.78; CI95%: 0.46-1.09), self-esteem (SMD=0.22; CI95%: 0.03-0.40), peer pressure resistance (RR=2.05; CI95%: 1.24-3.42), drug use (RR=0.81; CI95%: 0.64, 1.02), marijuana use (RR=0.82; CI95%: 0.73, 0.92) and hard drug use (RR=0.45; CI95%: 0.24-0.85). (3) Skills vs knowledge: No differences are evident.(4) Skills vs affective: Skills-based interventions are only better than affective ones in self-efficacy (WMD=1.90; CI95%: 0.25, 3.55). (5) Affective vs usual curricula: Affective interventions improve drug knowledge (SMD=1.88; CI95%: 1.27, 2.50) and decision making skills (SMD=1.35; CI95%: 0.79, 1.9). (6) Affective vs knowledge: Affective interventions improve drug knowledge (SMD=0.60; CI95%: 0.18,1.03), and decision making skills (SMD=1.22; CI95%: 0.33, 2.12). Results from CPSs: No statistically significant results emerge from CPSs.

Author's conclusions: Skills based programs appear to be effective in deterring early-stage drug use. The replication of results with well designed, long term randomised trials, and the evaluation of single components of intervention (peer, parents, booster sessions) are the priorities for research. All new studies should control for cluster effect.

Hansen, W. B. (2010). Current and future directions in elementary school drug prevention. *Journal of Drug Education, 40*(1), 91-98.

Drug prevention efforts in elementary schools are widespread. Nonetheless, there are clear challenges that both researchers and practitioners face. Because there may be occasional unintended negative outcomes - statistically these are guaranteed - does not mean all prevention efforts should grind to a halt. It is far better that any observed failures should pave the way for future progress. There are sufficient promising results that provide clues about how to increase effectiveness and decrease unintended harm are already available. However, until a different strategy for moving forward is adopted, progress toward defining appropriate early prevention approaches may be slow to emerge.

★★ Karcher, M. J., Kuperminc, G. P., Portwood, S. G., Sipe, C. L., & Taylor, A. S. (2006). **Mentoring programs**: A framework to inform program development, research, and evaluation. *Journal of Community Psychology, 34*(6), 709-725.


As mentoring programs have proliferated, considerable variation in approaches to programmatic mentoring has emerged. Concomitant confusion exists about the context, structure, and goals that constitute mentoring as a distinct intervention. This article presents a brief summary of what is currently known about different approaches to mentoring and proposes a framework that identifies both the common and the specific elements among different youth mentoring approaches. Rather than focusing solely on the participants and contexts of mentoring programs, such as peer- or school-based mentoring, as the key elements that differentiate programs, the authors suggest that more fruitful program development and research will result from a closer examination of the context, structure, and goals of programs, as well as of three critical program elements: content, infrastructure, and dosage. To understand better how and under what conditions mentoring works, program developers and researchers should test hypotheses regarding the influences of these program elements based on theory-driven expectations about the interrelationships among proximal, enabling, and distal outcomes of mentoring programs.

McCrystal, P., & Winning, K. (2009). Drugs education and prevention for school-aged young people. *Child Care in Practice, 15*(4), 341-352.

Drug misuse in Northern Ireland, like many parts of the world, is becoming one of the major issues facing society today. A first stage to addressing this problem is effective drugs education and prevention strategies to school-aged young people. A survey of a range of education providers including mainstream and special needs schools, and school exclusion projects, suggests that all education providers aim to provide drugs education. Within mainstream schools, drugs education and prevention for young people with special education needs is provided within an existing framework developed for all school children. In contrast, special education providers deliver this facility through an approach developed to meet the specific requirements of their client group. The findings suggest that whilst expertise in the delivery of drugs education and prevention strategies exist for young people with special education needs, it may not be specifically targeted at all of them whilst attending school.


Midford, R. (2007). Drug education and other prevention programmes for students. *Drug and Alcohol Review*, 26(6), 573-575.

School drug education is a major component in the drug strategies of almost all developed countries, primarily because of public concern about alcohol and other drug use by young people and the need of elected governments to be seen to be addressing the problem. This special edition on drug education and other prevention programs for students explores many of the issues of interest to the field at the moment and the papers offer a range of evidence and insights as to how the approach can be improved on a number of different levels. The papers range from the theoretical to the empirical in their approach and from national policy to classroom practice in their focus. Even in this broad sweep, however, it cannot deal with all the issues of relevance to the development of more effective prevention programs for students. What the series of papers has done is raise a number of critical issues, at a number of different levels that need to be addressed if drug prevention programs are to ever fulfil their potential. Finally, research needs to investigate how the effectiveness of research demonstration programs can best be preserved when delivered in everyday school settings.

- ★★ Montoya, I. D., Atkinson, J., & McFaden, W. C. (2003). Best Characteristics of Adolescent Gateway Drug Prevention Programs. *Journal of Addictions Nursing*, 14(2), 75-83. 

This paper identifies the best characteristics of gateway drug prevention programs that have the effect of preventing or reducing the use of alcohol, tobacco, and marijuana by adolescents. A comprehensive literature review of the performance of school-, family-, and community-based drug prevention programs covering the last 20 years was conducted to **identify the best characteristics of successful programs**. Six characteristics were identified that are common to successful drug prevention programs: involving parents; teaching life and resistance skills and normative education; enacting laws and policies against adolescent drug use; encouraging peer participation; conducting a media campaign; and retaining program participants. School administrators, parents, and community leaders can use the knowledge in this paper to design drug prevention programs that can **accommodate specific risk factors and types of gateway drug use by adolescents**.

- ★★ Porath-Waller, A. J., Beasley, E., & Beirness, D. J. (2010). A meta-analytic review of school-based prevention for cannabis use. *Health Education & Behavior*, 37(5), 709-723.

This investigation used meta-analytic techniques to evaluate the effectiveness of school-based prevention programming in reducing cannabis use among youth aged 12 to 19. It summarized the results from 15 studies published in peer-reviewed journals since 1999 and identified features that influenced program effectiveness. The results from the set of 15 studies indicated that these school-based programs had a positive impact on reducing students' cannabis use ($d = 0.58$, CI: 0.55, 0.62) compared to control conditions. Findings revealed **that programs incorporating elements of several prevention models were significantly more effective than were those based on only a social influence model**. Programs that were longer in duration (≥ 15 sessions) and facilitated by individuals other than teachers in an interactive manner also yielded stronger effects. The results also suggested that programs targeting high school students were more effective than were those aimed at middle-school students. Implications for school-based prevention programming are discussed. 

- ★★ Soole, D. W., Mazerolle, L., & Rombouts, S. (2008). School-based drug prevention programs: A review of what works. *Australian and New Zealand Journal of Criminology*, 41(2), 259-286.

This article examines the effectiveness of school-based drug prevention programs in preventing illicit drug use. This article reports the results of a systematic review of the evaluation literature to answer three fundamental questions: (1) do school-based drug prevention programs reduce rates of illicit drug use? (2) what features are characteristic of effective programs? and (3) do these effective program characteristics differ from those identified as effective in reviews of school-based drug prevention of licit substance use (such as alcohol and tobacco)? Using systematic review and meta-analytic techniques, characteristics of school based drug prevention programs that have a significant and beneficial impact on ameliorating illicit substance use (i.e., narcotics) among young people were identified. Successful intervention programs typically involve high levels of interactivity, time-intensity, and universal approaches that are delivered in the middle school years. These program characteristics aligned with many of the effective program elements found in previous reviews exploring the impact of school-based drug prevention on licit drug use. Contrary to these past reviews, however, this analysis suggests that the inclusion of booster sessions and multifaceted drug prevention programs have little impact on preventing illicit drug use among school-aged children. Limitations of the current review and policy implications are discussed.

- ★★ Teesson, M., Newton, N. C., & Barrett, E. L. (2012). Australian school-based prevention programs for alcohol and other drugs: a systematic review. *Drug Alcohol Rev*, 31(6), 731-736.

ISSUES: To reduce the occurrence and costs related to substance use and associated harms it is important to intervene early. Although a number of international school-based prevention programs exist, the majority show minimal effects in reducing drug use and related harms. Given the emphasis on early intervention and prevention in Australia, it is timely to review the programs currently trialled in Australian schools. This paper reports the type and efficacy of Australian school-based prevention programs for alcohol and other drugs. APPROACH: Cochrane, PsychInfo and PubMed databases were searched. Additional materials were obtained from authors, websites and reference lists. Studies were selected if they described programs developed and trialled in Australia that address prevention of alcohol and other drug use in schools. KEY FINDINGS: Eight trials of seven intervention programs were identified. The programs targeted alcohol, cannabis and tobacco and most were based on social learning principles. All were universal. **Five of the seven intervention programs achieved reductions in alcohol, cannabis and tobacco use at follow up.** CONCLUSION: Existing school-based prevention programs have shown to be efficacious in the Australian context. However, there are only a few programs available, and these require further evaluative research. This is critical, given that substance use is such a significant public health problem. The findings challenge the commonly held view that school-based prevention programs are not effective.

- ★★ Tobler, N. S. (2000). Lessons learned. *The Journal of Primary Prevention*, 20(4), 261-274.

Ingredients of adolescent school-based drug prevention programs needed to reduce, prevent or delay adolescent substance abuse are presented in the historical context of three meta-analyses. Non-interactive programs showed only a 4% reduction in prevalence rate, while Interactive programs showed a 21% reduction in prevalence rate. Small Interactive programs were found to be most successful; most probably due to program protocol being more closely followed. Essential program content and necessary features of the successful Interactive programs are identified.

- ★★ Tobler, N. S., Roona, M. R., Ochshorn, P., Marshall, D. G., Streke, A. V., & Stackpole, K. M. (2000). School-based adolescent drug prevention programs: 1998 meta-analysis. *The Journal of Primary Prevention, 20*(4), 275-336.

This paper reports on a meta-analysis of 207 universal school-based drug prevention programs that compared the self-reported drug use of treatment to control or comparison youth. Programs are classified into Interactive and Non-Interactive groups based on a combination of content and delivery method. Weighted categorical and weighted regression methods have been used to determine the attributes that most effectively reduce, delay, or prevent drug use, including program size, type of control group and leader attrition, target drug, intensity, grade, special population and level of drug use. **Program type and size are found to be significant predictors of effectiveness. Non-interactive lecture-oriented prevention programs that stress drug knowledge or affective development show small effects. Interactive programs that foster development of interpersonal skills show significantly greater effects that decrease with large-scale implementations.**

- Werch, C. E., Moore, M. M., Diclemente, C. C., Owen, D. M., Carlson, J. M., & Jobli, E. (2005). Single vs. multiple drug prevention: Is more always better?: A pilot study. *Substance Use & Misuse, 40*(8), 1085-1101.

Objective. The purpose of this study was to compare the effects of a single drug, i.e., alcohol, against a multiple drug preventive intervention. **Methods.** A controlled trial was conducted with 448 8th grade students (mean age = 13 years old) from an inner-city middle school (n = 216) and a rural junior high school (n = 232) in 2000-2001. Students were randomized within school, and 3-month post-intervention follow-up data were collected. **Results.** Two risk/protective factors were found to differ significantly in favor of youth receiving the single drug alcohol intervention (p's = 0.03), while the frequency of alcohol use and two additional risk/protective factors approached significance (p's < 0.10). **Conclusion.** These findings support the potential efficacy of a brief, single drug preventive intervention over a brief, multi-drug intervention in producing short-term alcohol outcomes for adolescents, and indicate differential effects of interventions for subgroups of substance using youth.

- Zavela, K. J. (2002). Developing effective school-based drug abuse prevention programs. *American Journal of Health Behavior, 26*(4), 252-265.

Researched effective drug prevention strategies for school-aged populations from drug prevention programs funded by the USDHHS Center for Substance Abuse Prevention (CSAP). Nine directors and staff members from model CSAP-funded programs were interviewed. 15 strategies that focus on building trusted relationships, selecting well-qualified staff using existing communication networks, and providing timely evaluation feedback are discussed, with examples from the agencies cited. It is concluded that formulating effective partnerships that support both the goals of the outside agency with drug prevention resources and the mission of a school can contribute toward effective school-based drug prevention programs.

1.3. Family and community engagement (14)

- ★★ Arthur, M. W., Hawkins, D., Brown, E. C., Briney, J. S., Oesterle, S., & Abbott, R. D. (2010). Implementation of the Communities That Care prevention system by coalitions in Community Youth Development Study. *Journal of Community Psychology*, 38(2), 245-258.

Although advances in prevention science over the past two decades have produced a growing list of tested and effective programs and policies for preventing adolescent delinquency and drug use, widespread dissemination and high-quality implementation of effective programs and policies in communities has not been achieved. The Community Youth Development Study (CYDS) is a randomized, community-level trial of the Communities That Care (CTC) system for promoting science-based prevention in communities. This study compares 12 community prevention coalitions implementing the CTC system in 12 intervention communities as part of the CYDS to prevention coalitions located in the 12 control communities. As hypothesized, the CYDS coalitions implemented significantly more of the CTC core intervention elements, and also implemented significantly greater numbers of tested, effective prevention programs than the prevention coalitions in the control communities. Implications of the findings for efforts to achieve widespread dissemination of effective prevention programs, policies, and practices are discussed.

- Al-Halabi Diaz, S., & Perez, J. M. E. (2009). Use of small incentives for increasing participation and reducing dropout in a family drug-use prevention program in a Spanish sample. *Substance Use & Misuse*, 44(14), 1990-2000.

Poor participation rates represent one of the most serious problems facing family-based drug-use prevention programs. Strategies involving incentives have been used to increase recruitment and retention of the target population of such interventions, but in Spain, such strategies for modifying behavior are unusual. The goal of the research was to study the use of small financial incentives (a \$10 voucher) as a strategy to increase attendance and reduce dropout in a family drug-prevention program applied in the school context. Participants were 211 pupils (aged 12-13) and their parents. The results show that small financial incentives can be useful to increase the attendance of families in prevention programs and to reduce dropout.

- Boddington, N., Perry, D., Clements, I., Wetton, N., & McWhirter, J. (1999). A multi-level approach to community-focused training in drug education: Part 1 - Working with parents, governors and school staff. *Health Education*, 99(6), 244-252.

Recent advice suggests that single-level, single-strand interventions are less effective in preventing or reducing harm from drug misuse than multi-level multi-agency approaches. This paper describes one aspect of a community-focused initiative in drug education. The overall aim of the initiative was to support and train key adults within the community to implement locally relevant schemes of work and drug-related policies. In this paper, a description of the training offered to parents, school staff and governors in communities in Essex is provided. A second paper will describe the intensive in-service training for health education co-ordinators and the action research carried out by teachers which led to the development of a minimum entitlement curriculum for three different communities within the same county. This combination of research, training and development as a new approach to drug prevention in local communities is outlined.

Diaz, S. A.-H., Secades-Villa, R., Perez, J. M. E., Fernandez-Hermida, J. R., Garcia-Rodriguez, O., & Crespo, J. L. C. (2006). Family predictors of parent participation in an adolescent drug abuse prevention program. *Drug and Alcohol Review, 25*(4), 327-331.

Low participation rates constitute a serious problem faced by family drug abuse prevention programs. In this study, factors related to participation in a Life Skills Training program implemented in three schools in Spain are analyzed. Participants in the study were 485 pupils aged 12-14 years and their respective parents. The variables that predicted participation in the program were: number of children and educational level of parents, children's drug use, family conflict, parental rearing style, relationships between parents and children and family communication. The results from Spain are similar to those found in international studies, and indicate that the families most at risk of drug use are those least likely to participate in prevention programs. There is a need for strategies to increase participation in prevention programs of the families most at risk.

- ✓ Evans, R. (1999). Parents' involvement in drug prevention and education: A comparative study of programme effectiveness in the UK and USA. *Early Child Development and Care, 150*, 69-95.

Reviews research to compare US and UK drug prevention and education programs that have included parents either directly or indirectly within intervention strategies. The goals of the review are to discuss research related to: (1) evidence that involves families in the web of influence around substance use by children and adolescents, (2) implications for practice in light of the concepts of risk and resilience, (3) targeting interventions through a multi-level perspective on risk management, (3) meta-analyses of evaluated programs, (4) model programs for which success has been claimed in changing drug use, and (5) critical issues for policy and practice in the identification, recruitment and retaining of parents within drug prevention contexts. It is suggested that, in terms of what works, the evidence from the UK (England and Wales) is limited, and the situation regarding published evaluated accounts of prevention programs in the US is qualitatively and quantitatively different. Specific programs discussed include DARE (UK), Project STAR, Seattle Social Development Project, Project Family, Strengthening Families Programme, Focus on Families, and Adolescent Transitions Programme.

Firesheets, E. K., Francis, M., Barnum, A., & Rolf, L. (2012). Community-based prevention support: using the interactive systems framework to facilitate grassroots evidenced-based substance abuse prevention. *Am J Community Psychol, 50*(3-4), 347-356.

The community plays an important role in the success of substance abuse prevention efforts. However, current funding structures and a focus on limited approaches to prevention delivery have created a large gap between what substance abuse prevention professionals practice and what the community at large knows about prevention. The concept of "community" has not always been well-defined in the field of prevention, and there are few mechanisms to engage grassroots community members in evidence-based substance abuse prevention. This article explains how Wandersman et al.'s (Am J Community Psychol 41:171-181, 2008) Interactive Systems Framework can be applied to grassroots prevention efforts. The authors describe a Community Prevention Support System that collaborates with the Professional Prevention Support System to promote the adoption of evidence-based substance abuse prevention practices at the grassroots, community level.

Flewelling, R. L. et al. (2013). Reducing youth access to alcohol: Findings from a community-based randomized trial. *American Journal of Community Psychology*, 51(1-2), 264-277.

Underage drinking continues to be an important public health problem and a challenge to the substance abuse prevention field. Community-based interventions designed to more rigorously control underage access to alcohol through retailer education and greater enforcement of underage drinking laws have been advocated as potentially effective strategies to help address this problem, but studies designed to evaluate such interventions are sparse. To address this issue we conducted a randomized trial involving 36 communities to test the combined effectiveness of five interrelated intervention components designed to reduce underage access to alcohol. The intervention was found to be effective in reducing the likelihood that retail clerks would sell alcohol to underage-looking buyers, but did not reduce underage drinking or the perceived availability of alcohol among high school students. Post hoc analyses, however, revealed significant associations between the level of underage drinking law enforcement in the intervention communities and reductions in both 30-day use of alcohol and binge drinking. The findings highlight the difficulty in reducing youth drinking even when efforts to curtail retail access are successful. Study findings also suggest that high intensity implementation of underage drinking law enforcement can reduce underage drinking. Any such effects of enhanced enforcement on underage drinking appear to be more directly attributable to an increase in perceived likelihood of enforcement and the resultant perceived inconveniences and/or sanctions to potential drinkers, than to a reduction in access to alcohol per se.

McWhirter, J., Boddington, N., Perry, D., Clements, I., & Wetton, N. (2000). A multi-level approach to community-focused training in drug education: Part 2 - Teachers as researchers and partners in curriculum development. *Health Education*, 100(1), 9-22.

Recent advice suggests that single-level, single-strand interventions are less effective in preventing or reducing harm from drug misuse than multi-level multi-agency approaches. Part 1 described one aspect of a community focused initiative in drug education. The overall aim of the initiative was to support and train key adults within the community to implement locally relevant schemes of work and drug-related policies. In the previous paper, a description of the training offered to parents, school staff and governors in communities in Essex was provided. This second paper reviews both the guidelines for effective teaching and learning in drug education and the importance of effective teacher education. An action research approach to in-service training for health education coordinators which led to the development of a minimum entitlement curriculum for three different communities within the same county is outlined.

★★ Oesterle, S., Hawkins, J. D., Fagan, A. A., Abbott, R. D., & Catalano, R. F. (2010). Testing the universality of the effects of the communities that care prevention system for preventing adolescent drug use and delinquency. *Prevention Science*, 11(4), 411-423.

Universal community-oriented interventions are an important component in the prevention of youth health and behavior problems. Testing the universality of the effects of an intervention that was designed to be universal is important because it provides information about how the program operates and for whom and under what conditions it is most effective. The present study examined whether the previously established significant effects of the universal, community-based Communities That Care (CTC) prevention program on the prevalence of substance use and the variety of delinquent behaviors held equally for boys and girls and in risk-related subgroups defined by early substance use, early delinquency, and high levels of community-targeted risk at baseline.

Interaction analyses of data from a panel of 4,407 students followed from Grade 5 to Grade 8 in the first randomized trial of CTC in 12 matched community pairs suggests that CTC reduced students' substance use and delinquency equally across risk-related subgroups and gender, with two exceptions: The effect of CTC on reducing substance use in 8th grade was stronger for boys than girls and the impact of CTC on reducing 8th-grade delinquency was stronger for students who were nondelinquent at baseline. [Correction Notice: An erratum for this article was reported in Vol 11(4) of *Prevention Science* (see record 2010-23348-008). In the original article, there was an error in Table 4. The correct Table 4 is given in the erratum.]

- ★★ Redmond, C., Spoth, R. L., Shin, C., Schainker, L. M., Greenberg, M. T., & Feinberg, M. (2009). Long-term protective factor outcomes of evidence-based interventions implemented by community teams through a community-university partnership. *The Journal of Primary Prevention, 30*(5), 513-530.

It is becoming increasingly common for community teams or coalitions to implement programming for children and families designed to promote positive youth development and prevent adolescent problem behaviors. However, there has been only limited rigorous study of the effectiveness of community teams' programming efforts to produce positive outcomes. This study employed a community-level randomized control design to examine protective parent and youth skills outcomes of evidence-based preventive interventions selected from a menu and delivered by community teams supported by a community-university partnership model called PROSPER. Twenty-eight rural communities in two states were randomized across intervention and control conditions. Data were collected through written questionnaires that were completed by approximately 12,000 middle school students in the fall of the 6th grade, prior to intervention delivery, and again in the spring of the 7th, 8th, and 9th grades. Positive intervention effects were found for youth, parent, and family outcomes (e.g., association with antisocial peers, child management, parent-child affective quality) at each post-intervention assessment point. Improvements in these family and youth skill outcomes are expected to support long-term reductions of adolescent problem behaviors, such as substance abuse. Editors' Strategic Implications: In this important and well controlled trial, the authors demonstrate that university partnership-supported community teams, especially when supported with ongoing technical assistance, can continue to produce positive outcomes even after much of the control over delivery of programs is turned over to representatives of the communities in which they are implemented.

- ★ St. Pierre, T. L., & Kaltreider, D. L. (1997). Strategies for involving parents of high-risk youth in drug prevention: A three-year longitudinal study in boys and girls clubs. *Journal of Community Psychology, 25*(5), 473-485.

Involving parents of high-risk youth in community-based intervention programs is extremely challenging. This article presents six groups of strategies for recruiting and retaining parents of high-risk youth in a parent involvement program called the Family Advocacy Network (FAN Club). The FAN Club program accompanied a drug prevention program for the parents' early adolescent children who were members of Boys & Girls Clubs. Strategies presented are based on a longitudinal study that found positive program effects for youth (mean age 11.35 yrs at baseline) in Boys & Girls Clubs that offered the FAN Club with the three-year youth drug prevention program and monthly youth activities. Strategies are: (1) identify the right person to lead the program; (2) clearly convey the purpose of the program; (3) build relationships of mutual trust, respect, and equality; (4) create parent ownership and group bonding; (5) provide easy access, incentives, and reminders; and (6) be flexible but persistent.

Steiker, L. K. H. (2008). Making drug and alcohol prevention relevant: Adapting evidence-based curricula to unique adolescent cultures. *Family & Community Health: The Journal of Health Promotion & Maintenance*, 31(Suppl1), S52-S60.

There is profound value in involving youth in the cultural adaptation of evidence-based drug prevention curricula. Presently, despite the existence of evidence-based programs, few community settings are aware of, utilizing, and following evidence-based curricula in practice. Therefore, to transfer such programs to practice, systematic adaptation procedures should be further developed, utilized, and evaluated. It is recommended that community settings adapt curricula to meet their youths' unique needs to be effective, particularly with diverse cultures.

Yap, M., Jorm, A., Bazley, R., Kelly, C., Ryan, S., & Lubman, D. (2011). Web-based parenting program to prevent adolescent alcohol misuse: Rationale and development. *Australasian Psychiatry*, 19(4),

Objectives: Despite substantial evidence demonstrating the important influence that parents have on adolescent drinking, evidence-based preventative interventions that help parents to reduce the risk that their child will develop later alcohol use problems are lacking. Although some face-to-face family-based interventions for adolescent alcohol misuse have been found to be effective, their public health impact is limited by their labour-intensiveness, poor uptake and low adherence. A web-based intervention has the potential to overcome many of these challenges, and was recently recommended by prevention experts as one key way to increase participation rates in preventative interventions. This paper describes the development of www.parentingstrategies.net, a website providing parenting guidelines and a tailored web-based intervention endorsed by longitudinal research evidence and expert consensus. Conclusions: This website provides the first web-based preventative intervention for parents, and has great potential as a family friendly component in the spectrum of interventions that are critically needed to tackle the issue of adolescent alcohol misuse across the community.

Zand, D., Thomson, N. R., Dugan, M., Braun, J. A., Holterman-Hommes, P., & Hunter, P. L. (2006). Predictors of Retention in a Alcohol, Tobacco, and Other Drug Prevention Study. *Evaluation Review*, 30(2), 209-222.


This article explored retention patterns, as well as factors that predicted these patterns, in the evaluation of a relationship-based substance abuse prevention intervention study that targeted inner-city African American youth. A total of 851 contacts were made to retain 82% (n = 104) of the baseline sample (N = 127) in the evaluation. Results from multinomial regression analyses indicated that participants who were retained in the evaluation were more likely to perceive alcohol, tobacco, and other drug use as less risky and were more likely to report higher levels of family supervision than were evaluation attritions. Those who were easy to retain reported lower family conflict and fewer family relocations during the past year than those who were difficult to retain. Implications of these findings for developing retention strategies, as well as future research, are discussed.

1.4. Mental health and substance use (9)

Anthony, E. K., Taylor, S. A., & Raffo, Z. (2011). Early intervention for substance abuse among youth and young adults with mental health conditions: An exploration of community mental health practices. *Administration and Policy in Mental Health and Mental Health Services Research*, 38(3), 131-141.

This mixed method study examined current practices and barriers for screening and assessing substance use among youth/young adults in community mental health systems. Substance use rates remain high among youth/ young adults in the general population and substance use disorders are prevalent among young people involved in public service systems such as mental health. In an effort to understand the dynamics for early intervention, 64 case managers and/or clinical directors from children's mental health systems in two states participated in an online survey or focus group in fall 2008. Quantitative survey questions and qualitative focus group questions explored attitudes and perspectives about screening and early intervention for substance use among youth/young adults involved in the mental health system and current agency practices. Mixed method results suggest a number of barriers to substance use screening and early intervention and point to innovations that could be more effectively supported.

Copeland, J., Rooke, S., & Swift, W. (2013). Changes in cannabis use among young people: Impact on mental health. *Current Opinion in Psychiatry*, 26(4), 325-329.

Purpose of review: The aim of this review was to examine current trends in cannabis use and cannabis use disorder (CUD) among youth, and to investigate recent findings concerning the relationship between cannabis use and mental health concerns, with a focus on how use during adolescence may interact with related mental health disorders. Recent findings: Current data indicate that cannabis use among adolescents has shown both marginal increases and decreases, depending on global location; however, the profile of cannabinoids in cannabis may now be biased toward those that promote psychotogenic and memory-impairing effects. CUD has been found most prevalent among youth. After controlling for multiple confounders, longitudinal research suggests that cannabis use predicts the development of anxiety disorders, depression, suicidal ideation, certain personality disorders, and interpersonal violence. Further, associations have been found stronger in adolescents relative to adults, and younger age of initiation increases the risk of developing mental health disorders. **Summary:** Cannabis use among youth remains prevalent, and recent studies are consolidating previous findings that adolescents are especially vulnerable to mental health disorders associated with cannabis. This suggests that cannabis involvement requires increased prominence in research, prevention initiatives, routine screening, and interventions to improve adolescent mental health. 

Evans, S. W., Koch, J. R., Brady, C., Meszaros, P., & Sadler, J. (2013). Community and school mental health professionals' knowledge and use of evidence based substance use prevention programs. *Administration and Policy in Mental Health and Mental Health Services Research*, 40(4), 319-330.

Youth with learning and behavioral problems are at elevated risk for substance use during adolescence. Although evidence-based substance use prevention and screening practices are described in the literature, the extent with which these are provided to these youth is unclear. Mental health professionals in schools and community mental health centers are in an ideal position to conduct substance use screening and prevention practices since they have frequent contact with this high risk group. In order to determine whether these mental health professionals

were using evidence based substance use screening and prevention programs with these youth, we analyzed 345 completed surveys from mental health professionals in schools and community clinics throughout a mid-Atlantic state. Results indicated that a large portion of the respondents were unfamiliar with evidence based practices and they were infrequently used. Implications for the division of labor at schools and community mental health centers are discussed in relation to time allotment and priority for these procedures.


Haines-Saah, R. J., Moffat, B., Jenkins, E. K., & Johnson, J. L. (2014). The influences of health beliefs and identity on adolescent marijuana and tobacco co-use. *Qualitative Health Research, 24*(7), 946-956.

Among youth, the co-use of marijuana and tobacco is highly prevalent, yet a considerable gap remains in the drug-prevention literature pertaining to such co-use. In particular, the prevention field lacks research exploring how adolescents understand the health implications of smoking these two substances in combination. In this article, we draw on qualitative interviews with adolescents from three communities in British Columbia, Canada, and describe the health beliefs and social identities that they associated with smoking marijuana and tobacco. We argue that smoking prevention and cessation initiatives targeting adolescents must address both marijuana and tobacco. Such initiatives must also be designed to identify and address how adolescents frame the potential health harms associated with smoking these substances.

Lubman, D. I., & Yücel, M. (2008). Drugs, mental health and the adolescent brain: Implications for early intervention. *Early Intervention in Psychiatry, 2*(2), 63-66.

Early onset or frequent substance use during adolescence is consistently associated with a wide range of adverse outcomes, including mental health problems. For example, recent meta-analytic studies suggest that cannabis use is associated with increased risk for later psychosis, with clear evidence of a dose-response effect. There are also data to suggest that the risk is even greater if cannabis exposure occurs during adolescence. Moreover, compared with non-substance-using peers, teenagers who smoke tobacco regularly appear to experience greater mental health problems in older adolescence, while those who abuse alcohol have higher rates of mental disorders and attempted suicide. While the epidemiological link between early onset substance use and later mental disorder is well described, the specific neurobiological mechanisms that underpin this relationship remain elusive. In this editorial, we discuss recent evidence highlighting neurodevelopmental harms associated with adolescent substance use, and outline the implications of such findings for prevention and early intervention approaches.

Manion, I., Short, K. H., & Ferguson, B. (2013). A snapshot of school-based mental health and substance abuse in Canada: Where we are and where it leads us. *Canadian Journal of School Psychology, 28*(1), 119-135.

The Mental Health Commission of Canada supported a comprehensive research project to determine the current state of mental health and substance use programs and practices in  Canadian schools. The School-Based Mental Health and Substance Abuse Consortium is made up of a group of 40 leading Canadian researchers, policy makers, and practitioners. The Consortium systematically reviewed literature from around the world, conducted a program scan (147 programs) of current practices in Canadian schools, and distributed a national survey to school boards (n = 177) and schools (n = 643) seeking input on the state of knowledge and practice in child and youth mental health and substance abuse. This information is being shared

with policy makers and school boards to help inform the delivery of future mental health services in Canada's schools.

Maslowsky, J., Schulenberg, J. E., O'Malley, P. M., & Kloska, D. D. (2014). Depressive symptoms, conduct problems, and risk for polysubstance use among adolescents: Results from US national surveys. *Mental Health and Substance Use*, 7(2), 157-169.

Polysubstance use in adolescence is a known precursor to chronic substance misuse. Identifying risk factors for polysubstance use is necessary to inform its prevention. The present study examined the association of elevated levels of multiple mental health symptoms with adolescents' engagement in polysubstance use (past month use of alcohol, cigarettes, and marijuana). In a US national sample of 8th, 10th, and 12th grade students from Monitoring the Future surveys, we estimated probability of polysubstance use associated with high levels of depressive symptoms (DS), conduct problems (CP), or both. DS and CP, alone and particularly in combination, were associated with drastically elevated probability of polysubstance use. Adolescents with high levels of both DS and CP had the highest probability of polysubstance use. Among 8th and 10th graders, probability of polysubstance use associated with cooccurring mental health problems was significantly higher for girls than boys.

McGorry, P. D., Purcell, R., Goldstone, S., & Amminger, G. P. (2011). Age of onset and timing of treatment for mental and substance use disorders: Implications for preventive intervention strategies and models of care. *Current Opinion in Psychiatry*, 24(4), 301-306.

Purpose of review: To provide an update of the recent studies on the age of onset of the major mental illnesses, with a special focus on the prospects for prevention and early intervention. Recent findings: The studies reviewed here confirm previous reports on the age of onset of the major mental disorders. While the behaviour disorders, and certain anxiety disorders, emerge during childhood, most of the high prevalence disorders (anxiety, mood and substance use) emerge during adolescence and early adulthood, as do the psychotic disorders. Early age of onset has been shown to be associated with a longer duration of untreated illness and poorer clinical and functional outcomes. Summary: Although the onset of most mental disorders usually occurs during the first three decades of life, effective treatment is typically not initiated until a number of years later. Although there is increasing evidence to suggest that intervention during the early stages of a disorder may help reduce the severity and/or the persistence of the initial or primary disorder and prevent secondary disorders, additional research is needed into appropriate treatment for early stage cases as well as the long-term effects of early intervention, and to appropriate service design for those in the early stages of a mental illness. This will mean not only the strengthening and re-engineering of existing systems but also, crucially, the construction of new streams of care for young people in transition to adulthood.

Sumnall, H., Bellis, M. A., Hughes, K., Calafat, A., Juan, M., & Mendes, F. (2010). A choice between fun or health? Relationships between nightlife substance use, happiness, and mental well-being. *Journal of Substance Use*, 15(2), 89-104.

Objective: To examine the substance use behaviours of young adults in Europe and to explore the association with self reported indices of mental well being, and the relative value of health. Method: 1341 16–35-year-olds, representing youth and young adults who routinely engage in nightlife, were surveyed in nine European cities. Participants self-completed questionnaires,

designed to gather demographic, social, and behavioural data on historic and current substance use, risk behaviours, and mental well being. **Results: Controlling for inter-country differences, we found that early initiation and frequency of use of a range of substances was associated with poorer life satisfaction, suicidal ideation, and hopelessness. Younger, more frequent substance users placed greater value on having fun than maintaining long-term health.** Bi/homosexual participants were more likely to report hopelessness, suicidal thoughts, dissatisfaction with life, and preferring fun to health. Younger cocaine initiates were more likely to report considering suicide in the last 12 months than older initiates. Conclusions: These findings confirm the importance of early intervention for young substance users. Whilst our study does not make assumptions on causality, identification of substance use in nightclub attendees may be a good marker of comorbid disorders. It is important to recognize that negative mental states may also partly be a product of lifestyle and socioeconomic factors. Prevention and harm reduction interventions should recognize that the most at risk young people may discount future health gains from reducing their substance use.

1.5. Program design and delivery related (24)


Benningfield, M. M., Riggs, P., & Stephan, S. H. (2015). The role of schools in substance use prevention and intervention. *Child and Adolescent Psychiatric Clinics of North America*, 24(2), 291-303.

Schools provide an ideal setting for screening, brief interventions, and outpatient treatment for substance use disorders (SUD). Individual treatment for SUD is effective at decreasing substance use as well as substance-related harm. In some contexts, rather than being helpful, group interventions can result in harm to participants; therefore, individual treatment may be preferred. Early interventions for adolescents who are using alcohol and other drugs (AOD) are generally effective in decreasing frequency and quantity of AOD use as well as decreasing risky behaviors.

Byrnes, H. F., Miller, B. A., Aalborg, A. E., & Keagy, C. D. (2012). The relationship between neighborhood characteristics and recruitment into adolescent family-based substance use prevention programs. *The Journal of Behavioral Health Services & Research*, 39(2), 174-189.

Youth in disadvantaged neighborhoods are at risk for poor health outcomes. Characteristics of these neighborhoods may translate into intensified risk due to barriers utilizing preventive care such as substance use prevention programs. While family-level risks affect recruitment into prevention programs, few studies have addressed the influence of neighborhood risks. This study consists of 744 families with an 11- to 12-year-old child recruited for a family-based substance use prevention program. Using US Census data, logistic regressions showed neighborhoods were related to recruitment, beyond individual characteristics. Greater neighborhood unemployment was related to decreased agreement to participate in the study and lower rates of high school graduation were related to lower levels of actual enrolment. Conversely, higher rates of single-female-headed households were related to increased agreement. Recruitment procedures may need to recognize the variety of barriers and enabling forces within the neighborhood in developing different strategies for the recruitment of youth and their families.

- ✓ Byrnes, H. F., Miller, B. A., & Laborde, N. (2013). A comparison of maternal outcomes from an alcohol, tobacco, and other drug prevention program for mothers choosing an intervention versus being randomized. *Health Education & Behavior*, 40(2), 206-215.

Self-determination theory and substantial research findings suggest that more desirable outcomes may occur when participants are able to choose their prevention or treatment interventions, as having a choice may lead to greater motivation and feelings of self-efficacy. The present study examined the influence of having a choice of family-based prevention programs for youth alcohol, tobacco, and other drug use on mothers' communication outcomes. Families (N = 496) were those with an 11- to 12-year-old enrolled in Kaiser Permanente medical centers at one of four locations. Results from multivariate repeated measures analyses supported the importance of having a choice for improved communication outcomes. As compared with families who were randomly assigned to a program, those allowed to choose showed improved tobacco-specific and peer pressure communication, with marginally improved alcohol communication. No differences were found between the groups for general communication. Results suggest that allowing mothers to participate in decisions about health-related interventions for their teens may lead to better outcomes. 

Chen, P., & Jacobson, K. C. (2012). Developmental trajectories of substance use from early adolescence to young adulthood: Gender and racial/ethnic differences. *Journal of Adolescent Health, 50*(2), 154-163.

Purpose: The current study examined gender and racial/ethnic (Hispanics, non-Hispanic Caucasians, non-Hispanic African Americans, and non-Hispanic Asians) differences in developmental trajectories of alcohol use, heavy drinking, smoking, and marijuana use from early adolescence to young adulthood using a nationally representative sample. Methods: Participants from the National Longitudinal Study of Adolescent Health (N = 20,160) reported rates of alcohol use, heavy drinking, smoking, and marijuana use between the ages of 12 and 34 years. Data analyses were completed using longitudinal multilevel modeling analyses. Results: Levels of substance use increased from early adolescence to mid-20s, and then declined thereafter. Females showed higher levels of substance use in early adolescence, although males exhibited greater changes overtime and higher levels of use in mid-adolescence and early adulthood. Overall, Hispanic youth had higher initial rates of substance use, whereas Caucasian adolescents showed higher rates of change and had the highest levels of substance use from mid-adolescence through the early 30s. Racial/ethnic differences largely disappeared after age 30, except that African Americans showed higher final levels of smoking and marijuana use than the other racial/ethnic groups. Results provide evidence for both similarities and differences in general patterns of development and in gender and racial/ethnic differences across different forms of substance use. Conclusions: Findings from the current study suggest that the critical periods for intervention and prevention of substance use may differ across gender and race/ethnicity, and that future research needs to identify common and unique mechanisms underlying developmental patterns of different forms of substance use.

Cuijpers, P. (2003). Three decades of drug prevention research. *Drugs: Education, Prevention & Policy, 10*(1), 7-20.

Dozens of drug prevention programmes aimed at tobacco, alcohol or all substances have been developed and examined in the past few decades. Prevention programmes have different goals, including increasing knowledge about drugs; reducing use; delaying onset of first use; reducing abuse; minimizing the harm caused by use. Most research has been conducted on school-based drug prevention programmes. These programmes that used interactive methods were found to reduce the use of drugs. All school-based drug prevention programmes (interactive and non-interactive) that have been examined increase the knowledge about drugs. Although effective school-based prevention programmes are available, the dissemination at schools has not been successful for most programmes. Family-based drug prevention programmes are a promising new area of prevention. Most research examining the effects of mass media campaigns about drugs is flawed by major methodological problems. Results suggest that these campaigns cannot reduce the use of substances, but they may increase the effects of community-based interventions. Community interventions (a combined set of activities organized in a specific region or town, with resident participation) are possibly more effective than each of the interventions alone.

D'Amico, E. J., Green, H. D., Jr., Miles, J. N. V., Zhou, A. J., Tucker, J. S., & Shih, R. A. (2012). Voluntary after-school alcohol and drug programs for middle school youth: If you build it right, they will come. *Journal of Research on Adolescence*, 22(3), 571-582.

Few after-school programs target alcohol and other drug (AOD) use because it is difficult to encourage a diverse group of youth to voluntarily attend. The current study describes CHOICE, a voluntary after-school program which targeted AOD use among middle school students. Over 4,000 students across eight schools completed surveys and 15% participated in CHOICE. Analyses indicated that there were some differences between CHOICE participants and nonparticipants. For example, African American and multiethnic students were more likely to attend. Past month alcohol users were more likely to initially attend, and marijuana users were more likely to continue attendance. Thus, CHOICE reached students of different racial and ethnic groups and attracted higher risk youth who may not typically obtain prevention services.

- ✓ Dupont, H. B., Kaplan, C. D., Braam, R. V., Verbraeck, H. T., & de Vries, N. K. (2015). The application of the rapid assessment and response methodology for cannabis prevention research among youth in the Netherlands. *International Journal of Drug Policy*, 26(8), 731-738.

Background: Drug prevention methods tailored to specific target groups have become increasingly important. There is a growing need to find ways to rapidly assess and situate target groups in their particular contexts. This need is associated with the implementation of evidence-based interventions (EBIs) for these specific target groups. Method: This article describes the application of Rapid Assessment and Response (RAR) as a necessary first step in designing and implementing a prevention intervention plan for problematic cannabis use among "loitering" youth in the South of the Netherlands. Seven RAR studies were conducted using an innovative stepwise model in which the prevention field worker is central. Results: The normative structure for the use of cannabis was found to vary across the neighborhoods of the RAR studies and emerged as the focal point in designing a suitable response. The RAR studies also identified the need in the prevention toolbox for a tailored, low-threshold, effective, individual brief intervention for youth problematic cannabis use. Conclusion: The RAR was found to provide a powerful methodology for detecting target groups and generating contextual and normative data that enable the prevention field worker to select and adapt from the spectrum of existing Evidence based Interventions (EBIs) or develop the most promising model for implementation with the specific target group

Gosin, M. N., Dustman, P. A., Drapeau, A. E., & Harthun, M. L. (2003). Participatory Action Research: Creating an effective prevention curriculum for adolescents in the Southwestern US. *Health Education Research*, 18(3), 363-379.

Existing research confirms a need to seek strategies that combine the strengths of researchers and community to create effective prevention curricula for youth. This article describes how components of Participatory Action Research (PAR) methodology were used to create the keepin' it REAL Drug Resistance Strategies (DRS) curriculum designed for a diverse Southwestern US youth population. School community participants were involved in multiple stages of creation and implementation. The research team developed a systematic process for creating lessons built upon strong theoretical foundations, while teachers and students contributed lesson modifications and evaluations, suggestions for supplemental activities, and the actual production of instructional videos. While the experimental design and some methodological constraints served to limit school

community involvement in some phases of the DRS project, this article describes how PAR methodology ensured that researchers collaborated with school community members to create this promising drug prevention curriculum. Results of the REAL experiment, discussion of the use of this methodology, implications and recommendations for future research also are included.

Hallgren, M., & Andréasson, S. (2013). The Swedish six-community alcohol and drug prevention trial: Effects on youth drinking. *Drug and Alcohol Review, 32*(5), 504-511.

Introduction and Aims: Local communities are increasingly targeted for alcohol and drug prevention campaigns. This study describes some of the key findings from the Swedish six-community alcohol and drug prevention trial (2003–2007) and lessons learned following an evaluation of the trial's effectiveness. The paper focuses mainly on changes in youth drinking and related harms. **Design and Methods:** This was a pre- to post-intervention effect study comparing six trial communities that received added training and technical support with six control communities where regular prevention efforts were supported by national alcohol and drug action plans. A repeated, cross-sectional survey of 8092 youths aged 15–19 years assessed changes in alcohol consumption, binge drinking, perceived alcohol availability, access to alcohol via parents and adult attitudes towards the supply of alcohol to youths. National registry data were used to assess changes in hospital admissions due to alcohol intoxication. **Results:** Overall, there were few significant improvements in the six trial communities compared with the control communities. **Discussion and Conclusions:** The absence of program effects was largely attributable to the selection of strategies (in particular, school and parental programs) lacking evidence of effectiveness in reducing alcohol consumption at the aggregate level. Prevention programs based on efficacy studies need to be tested in community-based effectiveness trials before being disseminated.

Jung, J. R. (2003). Changing the Focus of College Alcohol Prevention Programs. *Journal of American College Health, 52*(2), 92-95.

Discusses the changes required in the focus of college alcohol prevention programs. Two influential formulations concerning college alcohol problems emphasize seemingly conflicting views about the magnitude of college alcohol abuse. One view, consistent with images of college drinking portrayed in popular movies, insists that binge drinking is pervasive and shows no sign of decline. Widely cited surveys of large samples of students from more than 140 institutions of higher learning across the nation in the College Alcohol Survey showed that just under half of students surveyed had engaged in what they termed binge drinking. Accordingly, different strategies and programs are needed to deal effectively with drinking in institutions with different characteristics. The programs that are best for one institution may prove ineffective for other institutions.

Lee, J. K., & Hecht, M. L. (2011). Examining the protective effects of brand equity in the keepin' it REAL substance use prevention curriculum. *Health Communication, 26*(7), 605-614.

While branding appears to be an effective health prevention strategy, it is less clear how successful brands have protective effects. To better understand the role of branding in health prevention and promotion, it is necessary to examine how the persuasive mechanisms of branding function in health campaigns (e.g., modeling socially desirable behaviors). Using cross-

sectional data (n = 709), the current study uncovered the mechanisms explaining branding's effects on adolescent substance use in a school-based substance use intervention, the keepin' it REAL (kiR) curriculum. Consistent with our predictions, a confirmatory factor analysis suggested that kiR brand equity had a higher order, multidimensional factor structure. In addition, a path analysis revealed that brand equity affected adolescent substance use directly and through the predicted social cognitive processes, including refusal efficacy and resistance skills. Thus, it is concluded that kiR brand equity serves as a protective factor for adolescent substance use. Practical implications, research limitations, and future directions are discussed.

Lauricella, M., Valdez, J. K., Okamoto, S. K., Helm, S., & Zaremba, C. (2016). Culturally Grounded Prevention for Minority Youth Populations: A Systematic Review of the Literature. *The Journal of Primary Prevention*, 37(1), 11-32.

Contemporary prevention science has focused on the application of cultural adaptations of evidence-based prevention programs for minority youth populations. Far less is known about culturally grounded methods that are intended to organically develop prevention programs within specific populations and communities. This article systematically reviews recent literature on culturally grounded interventions used to prevent health disparities in ethnic minority youth populations. In this review, we assessed 31 peer-reviewed articles published in 2003 or later that fit inclusionary criteria pertaining to the development and evaluation of culturally grounded prevention programs. The evaluated studies indicated different approaches toward cultural grounding, as well as specific populations, geographic regions, and health issues that have been targeted. Specifically, the findings indicated that most of the studies focused on the development and evaluation of culturally grounded HIV/STI and substance abuse prevention programs for Mexican–American, African American, and American Indian/Alaska Native youth residing in the South or Southwestern US. These studies largely relied on community-based participatory or qualitative research methods to develop programs from the “ground up.” This review has implications for the development of future culturally grounded and culturally adapted prevention programs targeting underserved minority youth populations and geographic regions. Specifically, it identifies populations and regions where culturally grounded prevention efforts are underdeveloped or non-existent, providing some scientific direction for the future development of these types of programs.

Miller-Day, M., & Hecht, M. L. (2013). Narrative means to preventative ends: A narrative engagement framework for designing prevention interventions. *Health Communication*, 28(7), 657-670.

This article describes a Narrative Engagement Framework (NEF) for guiding communication-based prevention efforts. This framework suggests that personal narratives have distinctive capabilities in prevention. The article discusses the concept of narrative, links narrative to prevention, and discusses the central role of youth in developing narrative interventions. As illustration, the authors describe how the NEF is applied in the keepin' it REAL adolescent drug prevention curriculum, pose theoretical directions, and offer suggestions for future work in prevention communication.

Nsimba, S. E. D. (2007). Potential marijuana prevention programs for Hispanic communities: A review article on the impact of various health-related preventive programs targeting adolescents in the United States. *Addictive Disorders & Their Treatment*, 6(4), 181-186.

Marijuana and use of other illicit substances is an increasing major public health problem in developed and developing countries in the world. Studies on Hispanics, African-Americans, and other adolescent immigrants in the United States (US) have shown that this problem in this age group greatly increasing. Various studies and preventive approaches have been tried in the US to prevent the associated adverse health outcomes. However, some of these preventive approaches which have employed have had limited success on marijuana use among adolescents in the US. However, this problem of marijuana and other illicit substance use continue to grow both in developed countries like the US and developing countries including like Tanzania. Globally, marijuana is locally grown in some parts of urban and rural areas and the stuff is being used most by the adolescents and young adults as it is cheap and easy to get it. Among young adolescents, global use of illicit substances is causing a lot of damages to their physical health, mental health, and social well-being. Physical evidences are vivid from street boys and gangster mobs around most cities/streets. Thus, preventive programs (interventions) need to be tailored to the particular needs of this age groups (youths and adolescents) and should address the key determinants that predict subsequent use in a manner that are culturally appropriate and responsive to the environment in which these young people live.

Okamoto, S. K., Kulis, S., Marsiglia, F. F., Holleran Steiker, L. K., & Dustman, P. (2013). A Continuum of Approaches Toward Developing Culturally Focused Prevention Interventions: From Adaptation to Grounding. *The Journal of Primary Prevention*, 35(2), 103-112.

The purpose of this article is to describe a conceptual model of methods used to develop culturally focused interventions. We describe a continuum of approaches ranging from non-adapted/surface-structure adapted programs to culturally grounded programs, and present recent examples of interventions resulting from the application of each of these approaches. The model has implications for categorizing culturally focused prevention efforts more accurately, and for gauging the time, resources, and level of community engagement necessary to develop programs using each of the different methods. The model also has implications for funding decisions related to the development and evaluation of programs, and for planning of participatory research approaches with community members.

Parsai, M. B., Castro, F. G., Marsiglia, F. F., Harthun, M. L., & Valdez, H. (2011). Using Community Based Participatory Research to create a culturally grounded intervention for parents and youth to prevent risky behaviors. *Prevention Science*, 12(1), 34-47.

The principal goal of this article is to contribute to the field of prevention science by providing a sequential description of how Community Based Participatory Research (CBPR) was used to develop a parent education curriculum aimed at preventing and decreasing adolescent drug use and risky sexual behaviors. CBPR principles are outlined, and information is provided on the unique contributions of researchers and community members who came together to develop this parent education program. Focus group information is presented as an exemplar to illustrate how thematic content from focus groups was used to inform the development of this parent education curriculum. A step by step description is given to facilitate replication of this process by other

prevention researchers who are interested in applying this CBPR approach to develop a culturally responsive parent education intervention.

Rhew, I. C., Brown, E. C., Hawkins, J. D., & Briney, J. S. (2013). Sustained effects of the Communities That Care system on prevention service system transformation. *American Journal of Public Health, 103*(3), 529-535.

Objectives: We examined whether the Communities That Care (CTC) system sustained effects 1.5 years after study funding ended on prevention system constructs expected to be important for community-level reductions in drug use and antisocial behaviors among youths. **Methods:** Data were from a community trial of 24 towns in the United States randomized to either the CTC intervention or control conditions. Participants were 928 community key leaders interviewed at 1 to 4 waves from 2001 to 2009. Intervention activities, including training and technical assistance, were conducted between 2003 and 2008 in the CTC communities. **Results:** Leaders from CTC communities reported higher levels of adoption of a science-based approach to prevention and a higher percentage of funding desired for prevention activities in 2009 than did leaders in control communities. CTC communities showed a higher increase over time in community norms against adolescent drug use as well as adoption of a science-based approach compared with control communities. **Conclusions:** These findings indicated that CTC implementation produced enduring transformation of important prevention system constructs in intervention communities, which might, in turn, produce long-term reductions in youth problem behaviors.

Rulison, K. L., Feinberg, M., Gest, S. D., & Osgood, D. W. (2015). Diffusion of intervention effects: The impact of a family-based substance use prevention program on friends of participants. *Journal of Adolescent Health, 57*(2), 203-210.

PURPOSE: We tested whether effects of the Strengthening Families Program for Youth 10–14 (SFP10-14) diffused from intervention participants to their friends. We also tested which program effects on participants accounted for diffusion. **METHODS:** Data are from 5,449 students (51% female; mean initial age = 12.3 years) in the PROMoting School-community-university Partnerships to Enhance Resilience community intervention trial (2001–2006) who did not participate in SFP10-14 (i.e., nonparticipants). At each of five waves, students identified up to seven friends and self-reported past month drunkenness and cigarette use, substance use attitudes, parenting practices, and unsupervised time spent with friends. We computed two measures of indirect exposure to SFP10-14: total number of SFP-attending friends at each wave and cumulative proportion of SFP-attending friends averaged across the current and all previous post-intervention waves. **RESULTS:** Three years post-intervention, the odds of getting drunk (odds ratio = 1.4) and using cigarettes (odds ratio = 2.7) were higher among nonparticipants with zero SFP-attending friends compared with nonparticipants with three or more SFP-attending friends. Multilevel analyses also provided evidence of diffusion: nonparticipants with a higher cumulative proportion of SFP-attending friends at a given wave were less likely than their peers to use drugs at that wave. Effects from SFP10-14 primarily diffused through friendship networks by reducing the amount of unstructured socializing (unsupervised time that nonparticipants spent with friends), changing friends' substance use attitudes, and then changing nonparticipants' own substance use attitudes. **CONCLUSIONS:** Program developers should consider and test how interventions may facilitate diffusion to extend program reach and promote program sustainability.

- ✓ Skager, R. (2007). Replacing ineffective early alcohol/drug education in the United States with age-appropriate adolescent programmes and assistance to problematic users. *Drug and Alcohol Review*, 26(6), 577-584.

Issues: Despite more than a decade of federal sponsorship of 'evidence-based' alcohol/drug education, there has been no consistent downward trend in overall prevalence among youth over the past 15 years. Reasons underlying this situation are examined. Approach: Published technical critiques of initial research supporting widely used evidence-based programs are reviewed along with replication studies conducted later by independent researchers not associated with initial program development. Social and institutional barriers in the US against changes in AOD policy and practice for young people are also suggested. Key Findings: Emerging use of diverted pharmaceuticals (now second to cannabis in prevalence) may underlie moderate recent decline in use of alcohol. Early federal certification standards for 'evidence based' prevention education have been seriously compromised. Technical critiques of initial evaluations and negative replication studies of these programs are consistent with lack of impact. Finally, fidelity of implementation in regular school settings is commonly flawed. Implications: Failure of these mainly pre-secondary educational programs may underlie recent federal support for forced random AOD testing of secondary school students. A new approach to drug education for adolescent students seems warranted as a positive alternative to personally intrusive surveillance. Conclusion: An interactive approach at the secondary school level that incorporates an age-appropriate educational process is proposed. While advising abstinence, this approach also facilitates identifying and assisting problematic AOD users.

Spoth, R., Redmond, C., Clair, S., Shin, C., Greenberg, M., & Feinberg, M. (2011). Preventing substance misuse through community-university partnerships: Randomized controlled trial outcomes 4½ years past baseline. *American Journal of Preventive Medicine*, 40(4), 440-447.

Background: Substance misuse by adolescents and related health issues constitute a major public health problem. Community-based partnership models designed for sustained, quality implementation of proven preventive interventions have been recommended to address this problem. There is very limited longitudinal study of such models. Purpose: To examine the long-term findings from an RCT of a community–university partnership model designed to prevent substance misuse and related problems. Design/setting/participants: A cohort sequential design included 28 public school districts in rural towns and small cities in Iowa and Pennsylvania that were randomly assigned to community–university partnership or usual-programming conditions. At baseline, 11,960 students participated, across two consecutive cohorts. Data were collected from 2002 to 2008. Intervention: Partnerships supported community teams that implemented universal, evidence-based interventions selected from a menu. The selected family-focused intervention was implemented with 6th-grade students and their families; school-based interventions were implemented during the 7th grade. Observations demonstrated intervention implementation fidelity. Main outcome measures: Outcome measures were lifetime, past-month, and past-year use of a range of substances, as well as indices of gateway and illicit substance use; they were administered at baseline and follow-ups, extending to 4.5 years later. Results: Intent-to-treat, multilevel ANCOVAs of point-in-time use at 4.5 years past baseline were conducted, with supplemental analyses of growth in use. Data were analyzed in 2009. Results showed significantly lower substance use in the intervention group for 12 of 15 point-in-time outcomes, with relative reductions of up to 51.8%. Growth trajectory analyses showed

significantly slower growth in the intervention group for 14 of 15 outcomes. Conclusions: Partnership-based implementation of brief universal interventions has potential for public health impact by reducing growth in substance use among youth; a multistate network of partnerships is being developed. Notably, the tested model is suitable for other types of preventive interventions.

Steiker, L. K. H., Goldbach, J., Hopson, L. M., & Powell, T. (2011). The value of cultural adaptation processes: Older youth participants as substance abuse preventionists. *Child & Adolescent Social Work Journal*, 28(6), 495-509.

This National Institutes of Health (National Institute on Drug Abuse) funded study employed focus groups to explore the value of: (a) engaging youth as experts in their own drug culture to engage them in open, honest discussion around substance use in their communities; and (b) allowing youth within a range of settings to systematically recreate unique workbook and video scenarios while maintaining the core components of an evidence-based substance abuse prevention program. Researchers collaborated with community based agencies that serve high risk youth, including youth who were incarcerated, homeless, in alternative high schools, in low-income housing programs, and on the US-Mexico border. The research indicates that high-risk youth in community settings can be actively engaged in adapting evidence-based prevention curricula. Youth emphasized their reasons for using drugs, as well as the salient consequences, and the value of tailored scenarios that incorporate their life experiences, language, drugs of choice, and relevant motivators. Serendipitous findings noted attitude changes related to dissonance between the adaptation component participants' behaviors and their input as "Preventionists." Findings have implications for developing prevention strategies that may be helpful for older, high-risk youth.

- ✓ Stockwell, T., Toumbourou, J. W., Letcher, P., Smart, D., Sanson, A., & Bond, L. (2004). Risk and protection factors for different intensities of adolescent substance use: When does the Prevention Paradox apply? *Drug and Alcohol Review*, 23(1), 67-77.

The 'Prevention Paradox' applies when low-risk individuals in a population contribute the most cases of a condition or problem behaviour by virtue of their being in the majority, thereby recommending a universal or whole of population approach to prevention. The applicability of a universal as opposed to a targeted high-risk approach to the prevention of youth substance use was examined in two studies of children and adolescents conducted in Victoria, Australia. In Study 1, a cross-sectional survey of students, most regular tobacco, alcohol and cannabis use by 15/16-year-olds occurred in the moderate and low-risk groups, recommending a universal prevention strategy. Study 2 used data from a major longitudinal study where risk factors at around age 11/12 years were used to predict substance use at age 17/18 years. Most students who admitted involvement infrequent smoking, heavy drinking and, although to a lesser degree, cannabis were classified as low or average risk. It is concluded that universal prevention strategies are needed for late adolescent alcohol, tobacco and cannabis use and more targeted strategies for addressing harm related to early age drug use, frequent cannabis use and illegal drug use.

Stolle, M., Stappenbeck, J., Wendell, A., & Thomasius, R. (2011). Family-based prevention against substance abuse and behavioral problems: Culture-sensitive adaptation process for the modification of the US-American Strengthening Families Program 10–14 to German conditions. *Journal of Public Health, 19*(4), 389-395.

Aim: The Strengthening Families Program 10–14 (SFP 10–14) was developed in 1993 at the Iowa State University as a universal family-based prevention program against substance abuse and behavioral problems in youth aged 10 to 14 years. Its effectiveness in delaying the initiation of tobacco, alcohol and cannabis use, in decreasing the average amount consumed and in reducing adolescents' problem behavior in school and at home has been repeatedly evaluated in randomized-controlled studies in the US. While there is a well-established system of school- and community-based prevention in Germany, there is a lack of family-based prevention. This situation would be improved by the cultural adaptation and evaluation of SFP 10–14 in Germany. **Subjects and methods:** Focus group meetings were held with experts from family assistance and drug prevention, as well as with parents of children within the ages of the target group, in three geographically different cities in Germany (Hamburg, Schwerin and Munich). Group members were presented the original version of the material from the US (teaching manuals and DVDs), as well as an already adapted version from the UK. Group members developed criteria in a group discussion process necessary for the adaptation of the material to the German culture. Following the newly defined criteria, new teaching DVDs and manuals were produced. **Results:** As a result of the focus groups meetings, several aspects concerning the adaptation of the material had to be considered. Four aspects were especially important: (1) application to the regional social structures in Germany, within the target group (risk population: migration background, socioeconomic status, family structure), (2) adaptation to the German language (colloquial language, idiomatic expressions, non-verbal language), (3) consideration of culturally dependent norms about parents' and children's role model behavior, as well as the problem definition for behavior that is supposed to be addressed (family, school, peer group) and (4) the program's adequate incorporation into the conditions of the local support system. **Conclusions:** Neither of the two existing SFP versions (US and UK version) could serve as a matrix for the German version, extensive adaptations were necessary. Results from the adaptation process carried out earlier in the UK with the original material from the US were helpful in this process. The German version of the program (Familien stärken) will be evaluated for a target group that consists of families with low socioeconomic status. This randomized-controlled multicenter study will be carried out in different German cities (Hamburg, Hanover, Schwerin, Rostock and Munich) between 2010 and 2013.

VanderWaal, C. J., Powell, L. M., Terry-McElrath, Y. M., Bao, Y., & Flay, B. R. (2005). Community and School Drug Prevention Strategy Prevalence: Differential Effects by Setting and Substance. *The Journal of Primary Prevention, 26*(4), 299-320.

This study used key informant interviews and student survey data in 508 U.S. communities to examine relationships between the prevalence of community and non-classroom-based school substance prevention strategies and teen substance use rates. After controlling for covariates, analyses indicated that: (1) adult-supervised after-school activities were significantly related to lower past 30-day cigarette smoking and both past 30-day alcohol use and binge drinking; (2) unsupervised after-school recreational facilities were significantly associated with both lower past 30-day cigarette smoking and current daily smoking; (3) community activities to reduce substance use were significantly related to lower binge drinking; and (4) student organizations to prevent

alcohol abuse were significantly related to lower binge drinking. Communities need a broad spectrum of strategies to address variation in substance use among youth. Editors' Strategic Implications: Policymakers at the school, community, state, and federal levels will benefit from knowing that after-school activities for teens typically result in reliable (though often modest) reductions in substance use in this large national sample. This is a strategy that works, but the effects are likely to vary by setting, level of supervision, substance, and program implementation.

1.6. Policy development related (27)

- ✓ Beyers, J. M., J. W. Toumbourou, et al. (2004). "A cross-national comparison of risk and protective factors for adolescent substance use: the United States and Australia." *Journal of Adolescent Health* 35(1): 3-16.

Purpose To compare risk and protective factors that influence youth substance use in Australia and the United States. The two countries have different policy orientations toward substance use: Australia has adopted harm-reduction policies, and the United States has adopted abstinence-focused policies. **Methods** Cross-sectional survey data were collected from independent samples of adolescents in the states of Maine (N = 16,861; 53% female, 7% Non-white) and Oregon (N = 15,542; 51% female, 24% Non-white) in the United States and Victoria in Australia (N = 8442; 54% Female, 11% Non-white) in 1998 (Maine and Oregon) and 1999 (Victoria). Chi-square tests, t-tests, effect size comparisons, and logistic regression analyses that accounted for age and gender were used to investigate cross-national similarities and differences in: (a) rates of cigarette, alcohol, and marijuana use; (b) levels of risk and protective factors; and (c) magnitudes of associations between risk and protective factors and substance use. **Results** More adolescents in Victoria reported using cigarettes and alcohol, whereas more of the U.S. adolescents reported using marijuana. Exposure to risk and protective factors was generally similar in the cross-national samples. However, adolescents in Maine and Oregon perceived handguns to be more readily available, reported more participation in religious activities, and were higher in sensation-seeking and social skills; and adolescents in Victoria had more favorable attitudes toward drug use and reported community norms and parental attitudes more favorable to drug use. Most of the risk and protective factors were strongly associated with substance use to a similar degree in Victoria, Maine, and Oregon. However, among adolescents in Maine and Oregon peer/individual risk and protective factors associated with social detachment were more strongly related to substance use, and among adolescents in Victoria, family protective factors were less strongly related to alcohol use. **Conclusions** Inter-country influences on youth substance use are generally similar despite different policy directions. Existing differences suggest that the abstinence policy context is associated with higher levels of illicit drug use and stronger relations between individual indicators of social detachment and substance use, whereas the harm reduction policy context is related to more cigarette and alcohol use, possibly from exposure to normative influences that are more tolerant of youth drug use.

- Bjarnason, T., Steriu, A., & Kokkevi, A. (2010). Cannabis supply and demand reduction: Evidence from the ESPAD study of adolescents in 31 European countries. *Drugs: Education, Prevention & Policy*, 17(2), 123-134.

Aims: Most national drug policies target both the supply side and the demand side of illicit drug use. Although such policies are intended to affect individual choices, they by definition operate on a national level and cannot be evaluated solely on the basis of individual-level differences. This study aims to evaluate the impact of country-level differences in the availability and perceived risk of cannabis use on individual-level adolescent cannabis use. **Method:** The study is based on an analysis of 84,711 students in 31 European countries. Multilevel modelling techniques are used to estimate the effects of country-level differences in the perceptions of availability and risk among non-users on individual-level odds of 30-day cannabis use. **Findings:** On the individual level, adolescents who use cannabis find it easier to obtain and less risky if they have used the drug.

Controlling for these individual-level associations, adolescents are also found to be less likely to use cannabis in countries where non-users report less availability and more risks associated with cannabis use. Conclusions: These findings support the notion that both supply reduction and demand reduction may reduce the prevalence of adolescent substance use.

Brochu, S. (2006). Evidence-Based Drug Policies. *Journal of Scandinavian Studies in Criminology and Crime Prevention*, 7(Suppl 1), 36-45.

This paper addresses three types of drug policies: drug laws, drug prevention strategies, and drug treatment strategies that might be used to improve drug policies. For each of these three categories, the paper discusses what criminological research tells us about the best practices. Research suggests that drug abuse prevention and treatment have statistically and clinically significant effects. The terms 'prevention' and 'treatment' are, however, often used indiscriminately and with reference to many different concepts. To assume that everything that is called prevention or treatment is effective would be foolish: not every drug prevention program is effective; not every treatment program has an effect in terms of reducing recidivism. Research has made it possible to identify successful prevention and treatment programs for drug abusers. However, the programs that research would suggest are not always those chosen by practitioners or widely funded by policymakers.

- ✓ Bjarnason, T., Steriu, A., & Kokkevi, A. (2010). Cannabis supply and demand reduction: Evidence from the ESPAD study of adolescents in 31 European countries. *Drugs: Education, Prevention & Policy*, 17(2), 123-134.

Aims: Most national drug policies target both the supply side and the demand side of illicit drug use. Although such policies are intended to affect individual choices, they by definition operate on a national level and cannot be evaluated solely on the basis of individual-level differences. This study aims to evaluate the impact of country-level differences in the availability and perceived risk of cannabis use on individual-level adolescent cannabis use. Method: The study is based on an analysis of 84,711 students in 31 European countries. Multilevel modelling techniques are used to estimate the effects of country-level differences in the perceptions of availability and risk among non-users on individual-level odds of 30-day cannabis use. Findings: On the individual level, adolescents who use cannabis find it easier to obtain and less risky if they have used the drug. Controlling for these individual-level associations, adolescents are also found to be less likely to use cannabis in countries where non-users report less availability and more risks associated with cannabis use. Conclusions: These findings support the notion that both supply reduction and demand reduction may reduce the prevalence of adolescent substance use.

The Council on Communications and the Media (2010). Policy statement—children, adolescents, substance abuse, and the media. *Pediatrics*, 126(4), 791-799.

The causes of adolescent substance use are multifactorial, but the media can play a key role. Tobacco and alcohol represent the 2 most significant drug threats to adolescents. More than \$25 billion per year is spent on advertising for tobacco, alcohol, and prescription drugs, and such advertising has been shown to be effective. Digital media are increasingly being used to advertise drugs. In addition, exposure to PG-13- and R-rated movies at an early age may be a major factor in the onset of adolescent tobacco and alcohol use. The American Academy of Pediatrics recommends a ban on all tobacco advertising in all media, limitations on alcohol advertising, avoiding exposure of young children to substance-related (tobacco, alcohol, prescription drugs,

illegal drugs) content on television and in PG-13– and R-rated movies, incorporating the topic of advertising and media into all substance abuse–prevention programs, and implementing media education programs in the classroom

DeBeck, K., Wood, E., Montaner, J., & Kerr, T. (2009). Canada's new federal 'National Anti-Drug Strategy': An informal audit of reported funding allocation. *International Journal of Drug Policy*, 20(2), 188-191.

Background: While there is mounting international acceptance of harm reduction approaches and growing support for policies that balance enforcement with more health-focused interventions, in many settings these developments are not reflected in policy. In October 2007, the Canadian federal government launched a new \$64 million dollar “National Anti-Drug Strategy” in which two-thirds of the new monies was reportedly directed towards drug prevention and treatment initiatives. **Methods:** However, contrary to the impression left by a host of federal politicians, including the Prime Minister, that this new strategy was investing significantly in drug prevention and drug treatment, this analysis finds that when base funding is considered additional monies provided through the new federal National Anti-Drug Strategy only marginally shifts the allocation of funds within each category. **Results:** Specifically, law enforcement initiatives continue to receive the overwhelming majority of drug strategy funding (70%) while prevention (4%), treatment (17%) and harm reduction (2%) combined continue to receive less than a quarter of the overall funding. **Conclusion:** These findings suggest that the Canadian government is failing to invest resources in evidence-based drug policies.

Degi, C. L. (2009). A review of drug prevention system development in Romania and its impact on youth drug consumption trends, 1995-2005. *Drug and Alcohol Review*, 28(4), 419-425.

Issues: A tremendous growth occurred in the reported drug use and abuse in Romania from 1995 to 1999. Lack of concern by government and little policy attention contributed to the surprising delay of drug policy and drug prevention system development. General public stigmatize drug users and drug consumption is considered a matter of personal fault and responsibility. There is some but not sufficient research and evaluation on drug use, abuse problem. **Approach:** Drug use, abuse and prevention are discussed from research-based, user-focused and prevention system development perspectives. Prevalence and trends of drug use, abuse in the past decade (1995-2005) are summarized. Prevention issues are discussed based on research data from adolescents, parents and teachers. The Romanian primary drug prevention system has been evaluated based on previous experiences in drug use prevention activities carried out in schools and recreational environments. **Key Findings:** Public and scientific perspectives on drug consumption in Romania, between 1995 and 1999, were dominated by an idealistic, non-realistic perception. Since 1995, drug use among adolescents increased almost four times in less than 4 years. The first law against drug traffic and consumption was issued only in 2000. Now primary drug prevention strategies are in action, but in general they are lacking standard evaluation procedures. **Implications/Conclusion:** Conclusions are drafted for new perspectives in prevention activities. More long-term, user-focused, demand-centred prevention activities should be carried out in more and more diversified settings and evaluation should be thoroughly considered.

DeJong, W. (2001). Finding common ground for effective campus-based prevention. *Psychology of Addictive Behaviors*, 15(4), 292-296.

This commentary reviews the controversy over use of the term binge drinking to describe college student alcohol consumption, argues for abandoning the term, and explains how doing so will help unify and reinvigorate campus-based prevention work. Binge drinking has been defined for men as 5 or more drinks in a row at least once in the previous 2 weeks and as 4 or more drinks for women. There is no scientific basis for focusing on this measure to the exclusion of other consumption measures; neither is there justification for labeling such consumption binge drinking, which reinforces an exaggerated view of student drinking. To build support for environmental management strategies to reduce alcohol-related problems, campus officials should avoid terminology that demonizes students and instead embrace the responsible majority of college students as an essential part of the solution.

- ✓ Erickson, P. G., & Hathaway, A. D. (2010). Normalization and harm reduction: Research avenues and policy agendas. *International Journal of Drug Policy*, 21(2), 137-139.

An affinity between the evidence and arguments for drug normalization and the policy and programme directions favoured by harm reduction is often assumed but seldom critically examined. This commentary looks at parallels and contradictions emerging with respect to different cultures, social settings, types of problems and responses where the match is less than perfect. Mounting evidence of normalization has also led to backlash in some countries and the mobilization of forces reaffirming prohibition. We call for further research on normalization that focuses on substance use, risks, harms, and social context across a broader spectrum of the population, and in a variety of cultures. By emphasizing the most serious harms experienced by persons in the smallest segments of drug using populations, harm reduction often has neglected broader research and policy suggestions that might be implemented to benefit controlled, recreational drug users. Future policy development with respect to normalization will require more research and more serious discussion of its implications for informing the transition toward a global public health approach to substance use.

Erskine, H. E. et al. (2015). A heavy burden on young minds: The global burden of mental and substance use disorders in children and youth.

Mental and substance use disorders are common and often persistent, with many emerging in early life. Compared to adult mental and substance use disorders, the global burden attributable to these disorders in children and youth has received relatively little attention. Data from the Global Burden of Disease Study 2010 was used to investigate the burden of mental and substance disorders in children and youth aged 0–24 years. Burden was estimated in terms of disability-adjusted life years (DALYs), derived from the sum of years lived with disability (YLDs) and years of life lost (YLLs). Results. Globally, mental and substance use disorders are the leading cause of disability in children and youth, accounting for a quarter of all YLDs (54.2 million). In terms of DALYs, they ranked 6th with 55.5 million DALYs (5.7%) and rose to 5th when mortality burden of suicide was reattributed. While mental and substance use disorders were the leading cause of DALYs in high-income countries (HICs), they ranked 7th in low- and middle-income countries (LMICs) due to mortality attributable to infectious diseases. Conclusions. Mental and substance use disorders are significant contributors to disease burden in children and youth across the globe. As reproductive health and the management of infectious diseases improves in

LMICs, the proportion of disease burden in children and youth attributable to mental and substance use disorders will increase, necessitating a realignment of health services in these countries.

Evans-Whipp, T., Beyers, J. M., Lloyd, S., Lafazia, A. N., Toumbourou, J. W., Arthur, M. W., et al. (2004). A review of school drug policies and their impact on youth substance use. *Health Promotion International*, 19(2), 227-234.

Youth substance use is an important social and health problem in the United States, Australia and other Western nations. Schools are recognized as important sites for prevention efforts and school substance use policies are a key component of health promotion in schools. The first part of this paper reviews the known status of school policies on tobacco, alcohol and other illicit drugs in a number of Western countries and the existing evidence for the effectiveness of school drug policy in preventing drug use. The review shows that most schools in developed countries have substance use policies but that there is substantial variation in the comprehensiveness of these policies (i.e. the breadth of people, places and times of day that are explicitly subject to policy prohibitions), and the orientation of their enforcement (e.g. punitive versus remedial), both across and within schools. The few studies of policy impact focus solely on tobacco policy and provide preliminary evidence that more comprehensive and strictly enforced school policies are associated with less smoking. The second part of the paper introduces the International Youth Development Study, a new longitudinal research project aimed at comparing school policies and the developmental course of youth drug use in the United States, where drug policies are abstinence-based, with Australia, which has adopted a harm minimization approach to drug policy.

Franzkowiak, P. (2002). Primary drug prevention: Developments in Germany since the 1970s. *Journal of Drug Issues*, 32(2), 491-502.

Contends that primary drug prevention in Germany has been in a constant state of transition since the early 1970s. Five consecutive phases can be identified: (1) drug deterrence and repression; (2) drug education and drug information; (3) primary drug prevention through alternatives to risk-taking, and the strengthening of personal resources; (4) primary drug prevention through strengthening of personal and social resources, promotion of resistance and life skills; (5) primary drug prevention through strengthening of personal and social resources, promotion of resistance and life skills, the promotion of harm reduction and competence in risk-taking with young people who may already consume legal or illegal drugs. During the last decade, the concept of health promotion, with its integration of individual, contextual and structural prevention, has served as a guide. Beginning in the mid-1990s, secondary and tertiary prevention efforts have attracted growing interest. The integrative concept of "risk-taking competence," which introduces harm reduction approaches into primary prevention strategies, is favored in contemporary discussion and practice.

Friese, B., & Grube, J. W. (2013). Legalization of medical marijuana and marijuana use among youths. *Drugs: Education, Prevention & Policy*, 20(1), 33-39.

Aim: This study examined the relationship of youth marijuana use and perceived ease of access with the number of medical marijuana cards at the county-level, and marijuana norms as indicated by per cent of voters approving legalization of medical marijuana in 2004. Methods: Survey data from 17,482 youths (aged 13–19) in Montana and county-level archival data, including votes for the legalization of medical marijuana and the number of medical marijuana

cards were analysed using hierarchical linear modelling. Findings: Living in a county with more medical marijuana cards was not related to lifetime or 30-day marijuana use. However, voter approval of medical marijuana was positively related to lifetime and 30-day use. Perceived ease of access to marijuana was positively related to medical marijuana cards, but this relation became non-significant when voter approval was controlled. Among marijuana users, marijuana cards and voter approval were positively related to perceived ease of access. Conclusions: The relation between medical marijuana cards and youth use may be related to an overall normative environment that is more tolerant of marijuana use. Interventions to prevent youth marijuana use should focus on adult norms regarding use by and provision of marijuana to youths.

Glassman, T. (2002). The Failure of Higher Education to Reduce the Binge Drinking Rate. *Journal of American College Health*, 51(3), 143-144.

Alcohol and other drug (AOD) coordinators on higher education colleges and university campuses have failed to control the binge drinking rates in spite of the attention given to the issue. To facilitate change, we must consider a number of existing situations and make a necessary philosophical shift in our approaches. If a college or university is lucky enough to have a fulltime AOD coordinator, this person may not have had the training necessary to do the job successfully. Recruitment is another concern. Successful AOD prevention requires coalition building and policy development, something for which most counselors are not trained. Another shortcoming that AOD coordinators suffer from is a lack of resources. Funding is well under 5% of student health service budgets. Accepting money and products created by the alcohol industry is a great temptation for coordinators leading underfunded programs. Using the industry's materials and money presents a mixed message to students because the message is inherently hypocritical. It comes as no surprise that binge drinking rates have not fallen in the last decade. Until colleges and universities allocate the necessary resources and take a political stand, it is most unlikely that any reductions in binge drinking rates will occur in future.

- ✓ Hawthorne, G. (2001). Drug education: Myth and reality. *Drug and Alcohol Review*, 20(1), 111-119.

Discusses drug education in Australia. The authors state that recently there has been an increase in public funds for drug education, and the accompanying rhetoric asserts that it is to enable abstinence among young people. The authors maintain that this contradicts some State Government education guidelines endorsing harm minimization. Focus is given to evaluation research in school-based drug education which supports this claim. Four models (information, values/decision-making, social competency, and harm minimization or harm reduction models) of drug education are described and examined. Research suggests that the predictors of adolescent drug use are social and personal. Further, schools appear to have little effect on these predictors because they mix-and-match activities from different models and exposure is too slight for major effects. Factors contributing to the mismatch between public rhetoric and the evaluation research literature are examined.

McGorry, P., & Purcell, R. (2009). Youth mental health reform and early intervention: Encouraging early signs. *Early Intervention in Psychiatry*, 3(3), 161-162.

Mental and substance use disorders are the major health issue confronting young people aged 12–25 years, producing more than 50% of the burden of disease in this age group. If these disorders persist, they cause distress and disability that lasts potentially for decades.

Epidemiological data indicate that 75% of people suffering from an adult-type psychiatric disorder have an age of onset by 24 years of age, with most onsets falling within a relatively discrete time band from puberty up until the mid-20s, and reaching a peak in the early twenties. Although early childhood is the critical period for primary preventive efforts, adolescence and emerging adulthood is the stage when early intervention strategies make the most sense. The surge of new morbidity, between the ages of 12–25 during the complex transitional stage of emerging adulthood, is paired with the worst mental health service access across the lifespan. There is currently no stream of health care resourced and structured to respond to the number one health problem affecting young people. A stronger and more distinct stream of care for young people would be one of the 'best buys' available since it would also deliver more effectively the human and economic benefits of early intervention. Treatment in the early stages of any disorder is likely to represent the most effective and cost-effective strategy to reduce long-term disease burden, and this is now finally being recognized and demonstrated in psychiatry. However, it is early days and it remains to be seen whether the current State and Federal governments understand the scale of investment that is required in order to reap the benefits of early intervention in the youth mental health arena.

- ✓ O'Brien, K., Chatwin, C., Jenkins, C., & Measham, F. (2015). New psychoactive substances and British drug policy: A view from the cyber-psychonauts. *Drugs: Education, Prevention & Policy*, 22(3), 217-223.

Aims: (i) To collect data on the consumption patterns, purchase patterns and motivations of the online NPS community, and (ii) engage this specific group of NPS users in an exploration of recent policy developments in the UK focusing on their experiences of new legislative controls and the perceived harms they may cause, and eliciting their suggestions for future policy developments in this area. Methods: We employed an exploratory online methodology comprising a survey and participatory online research designed to interact and engage with experienced users of NPS. Findings: The findings of our small-scale exploratory study illustrate that what we term the cyber-psychonauts are well equipped to make a valuable contribution to NPS policy debates in general, and are ideally placed to report on the effects of recent policy changes on NPS-related harms in particular. The majority of NPS users in our study supported the introduction of a regulated market for NPS, which would not criminalise users and which would focus on the reduction of NPS-related harm. Conclusions: We argue that the cyber-psychonauts are well placed to contribute to NPS-related drug policy debates and, furthermore, that there may be a role for them in disseminating emerging information about NPS-related harm.

- Pidd, K., Boeckmann, R., & Morris, M. (2006). Adolescents in transition: The role of workplace alcohol and other drug policies as a prevention strategy. *Drugs: Education, Prevention & Policy*, 13(4), 353-365.

Aims: To assess (1) the alcohol and other drug (AOD) consumption patterns of adolescent new entrants to the Australian workforce and (2) the association between these consumption patterns and workplace factors. Methods: A cross-sectional survey of 300 first-year apprentices (aged 15-22 years) employed in South Australian workplaces was conducted. Findings: More than 40% of apprentices surveyed reported cannabis and alcohol consumption patterns that placed them at risk of potential harm. In addition, 19% reported drinking alcohol and 6.7% reported using cannabis during work-related hours. Workplace alcohol availability and the existence of workplace AOD policies were significantly associated with apprentices' consumption patterns. Apprentices employed in workplaces where alcohol was available used alcohol more often than those reporting no alcohol availability at work. Apprentices reporting an alcohol policy at their workplace reported

less alcohol use compared to apprentices reporting no policy. Apprentices reporting a drug policy at their workplace reported lower levels of cannabis and alcohol use compared to those reporting no policy. Conclusions: Workplace factors, in particular workplace AOD policies, were significantly associated with adolescent AOD use both at and away from the workplace. These findings indicate that the workplace has potential as a setting for prevention strategies design to minimize AOD-related harms.

Room, R. (2012). Preventing youthful substance use and harm—Between effectiveness and political wishfulness. *Substance Use & Misuse*, 47(8-9), 936-943.

Drinking, smoking, and drug use are symbolic behaviors for young people, often involving a claim for adult status, and set against a "social clock" of expectations about appropriate behavior for a given age. Use is set in a social world of youth sociability, which young people strive to control themselves. Hence, it is difficult to prevent or delay use through adult-run institutions such as schools. Youth-oriented prevention initiatives succeed best when in tune with general social trends, so that youth cannot so easily feel hypocritically singled out. Regulatory approaches that apply to all have had some success in limiting and shaping youthful use and problems. Well-evaluated trials of efforts to insulate youthful use from harm are needed.

Rantala, K. (2004). Drug prevention as co-ordination: The vicious circle of devolving responsibility in primary prevention. *Drugs: Education, Prevention & Policy*, 11(5), 367-379.

Due to ongoing managerial and decentralizing trends in public policy, responsibility for drug prevention is continuously being devolved from one level to another, from the European Union all the way down to the civil society. In this paper, a drug prevention program in Helsinki represents a realization of the EU drugs strategy due to similar rhetoric and goals: co-ordinating multi-agency co-operation. An analysis of contradictions inherent in this setting is based on interviews of the program workers as well as representatives of governmental and national drug-prevention agencies. The analysis results show that 'almost anything goes' because no single body has the legitimacy to prioritize any particular approach over any other. The situation easily results in either ineffective indecision or overdoing preventive enthusiasm that simplifies the drugs issue. This vicious circle is difficult to break. In order to provide more realistic prevention, a systematic increase in the knowledge base of the practitioners in the drug field is needed. Simultaneously, the issue becomes political, requiring authority and agreement on concrete guidelines at a national level—issues that prevailing public policy tries to evade.

Salomonsen-Sautel, S., Min, S.-J., Sakai, J. T., Thurstone, C., & Hopper, C. (2014). Trends in fatal motor vehicle crashes before and after marijuana commercialization in Colorado. *Drug and Alcohol Dependence*, 140, 137-144.

[Correction Notice: An Erratum for this article was reported in Vol 142 of Drug and Alcohol Dependence (see record [rid]2014-37761-009[rid]). In the original article, there were some errors. The corrections are present in the erratum.] Background: Legal medical marijuana has been commercially available on a widespread basis in Colorado since mid-2009; however, there is a dearth of information about the impact of marijuana commercialization on impaired driving. This study examined if the proportions of drivers in a fatal motor vehicle crash who were marijuana-positive and alcohol-impaired, respectively, have changed in Colorado before and after mid-2009 and then compared changes in Colorado with 34 non-medical marijuana states (NMMS). Methods: Thirty-six 6-month intervals (1994–2011) from the Fatality Analysis Reporting

System were used to examine temporal changes in the proportions of drivers in a fatal motor vehicle crash who were alcohol-impaired (≥ 0.08 g/dl) and marijuana-positive, respectively. The pre-commercial marijuana time period in Colorado was defined as 1994–June 2009 while July 2009–2011 represented the post-commercialization period. Results: In Colorado, since mid-2009 when medical marijuana became commercially available and prevalent, the trend became positive in the proportion of drivers in a fatal motor vehicle crash who were marijuana-positive (change in trend, 2.16 (0.45), $p < 0.0001$); in contrast, no significant changes were seen in NMMS. For both Colorado and NMMS, no significant changes were seen in the proportion of drivers in a fatal motor vehicle crash who were alcohol-impaired. Conclusions: Prevention efforts and policy changes in Colorado are needed to address this concerning trend in marijuana-positive drivers. In addition, education on the risks of marijuana-positive driving needs to be implemented.

Sulkunen, P., Rantala, K., & Määttä, M. (2004). The ethics of not taking a stand: Dilemmas of drug and alcohol prevention in a consumer society--A case study. *International Journal of Drug Policy*, 15(5-6), 427-434.

Advanced consumer societies face a dilemma in alcohol and other drug policy between individual freedom of choice and the need to prevent problems. As in many other areas of problem prevention and health promotion, the policy solution often emphasises the moral management of the self. This article argues, on the basis of a case study of a community-based alcohol and other drug prevention programme for young people in Finland, that the moral resources of public administration may not be sufficient for efficient prevention policies. The policies known to work, such as reduction of alcohol availability or restrictions on smoking, impinge on consumer choice, on market freedom and on lifestyle issues that are considered to be a private matter. As a result, public authorities tend to delegate responsibility downwards, from managers to field workers and from field workers to parents and schools. A consequence may be the use of policies that do not work but have popular appeal, such as zero tolerance instead of harm reduction programmes of illicit drugs. The emphasis on moral management of the self may lead to moral management of the other, which strongly disadvantages most youth and does not meet the needs of young persons in greatest need of help.

ter Bogt, T., Schmid, H., Gabhainn, S. N., Fotiou, A., & Vollebergh, W. (2006). Economic and cultural correlates of cannabis use among mid-adolescents in 31 countries. *Addiction*, 101(2), 241-251.

Aims: To examine cannabis use among mid-adolescents in 31 countries and associations with per-capita personal consumer expenditure (PCE), unemployment, peer factors and national rates of cannabis use in 1999. Design, participants and measurement: Nationally representative, self-report, classroom survey with 22,223 male and 24,900 female 15-year-olds. Country characteristics were derived from publicly available economic databases and previously conducted cross-national surveys on substance use. Findings: Cannabis use appears to be normative among mid-adolescents in North America and several countries in Europe. The life-time prevalence of cannabis use was 26% among males and 15% among females and was lowest for males and females in the former Yugoslav Republic (TFYR) of Macedonia: 2.5% and to 2.5%, respectively; and highest for males in Switzerland (49.1%) and in Greenland for females (47.0%). The highest prevalence of frequent cannabis use (more than 40 times in life-time) was seen in Canada for males (14.2%) and in the United States for females (5.5%). Overall, life-time prevalence and frequent use are associated with PCE, perceived availability of cannabis (peer

culture) and the presence of communities of older cannabis users (drug climate). Conclusions: As PCE increases, cannabis use may be expected to increase and gender differences decrease. Cross-national comparable policy measures should be developed and evaluated to examine which harm reduction strategies are most effective.

- ✓ Vander Laenen, F. (2011). How drug policy should (not) be: Institutionalised young people's perspectives. *International Journal of Drug Policy*, 22(6), 491-497.

Background: Drug prevention is insufficiently tailored to the needs of vulnerable groups and often concentrates on the general population. Methods: A qualitative youth-centred design, based on group techniques was used to ask vulnerable young people about their needs and expectations regarding drug prevention practices. Participants comprised 160 young people, aged 12–21 years who had emotional and behavioural disorders and who lived in institutions in the mental health care system in Flanders. Results: Findings showed that common prevention and education practices are often insufficient or not applicable to the participants' situation. The young people criticised the institutions' reaction to drug use because it tried to control and sanction their use and paid scant attention to their reasons for drug use. They also held negative views about drug treatment. Their experiences had taught them that control and sanctioning were the dominant reactions to drug use. Conclusion: If drug (prevention) policy is to appeal to vulnerable young people, their views on what would make a good prevention policy must be taken into account.

Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. Adolescence and the social determinants of health. *The Lancet*, 379(9826), 1641-1652.

The health of adolescents is strongly affected by social factors at personal, family, community, and national levels. Nations present young people with structures of opportunity as they grow up. Since health and health behaviours correspond strongly from adolescence into adult life, the way that these social determinants affect adolescent health are crucial to the health of the whole population and the economic development of nations. During adolescence, developmental effects related to puberty and brain development lead to new sets of behaviours and capacities that enable transitions in family, peer, and educational domains, and in health behaviours. These transitions modify childhood trajectories towards health and wellbeing and are modified by economic and social factors within countries, leading to inequalities. We review existing data on the effects of social determinants on health in adolescence, and present findings from country-level ecological analyses on the health of young people aged 10–24 years. The strongest determinants of adolescent health worldwide are structural factors such as national wealth, income inequality, and access to education. Furthermore, safe and supportive families, safe and supportive schools, together with positive and supportive peers are crucial to helping young people develop to their full potential and attain the best health in the transition to adulthood. Improving adolescent health worldwide requires improving young people's daily life with families and peers and in schools, addressing risk and protective factors in the social environment at a population level, and focusing on factors that are protective across various health outcomes. The most effective interventions are probably structural changes to improve access to education and employment for young people and to reduce the risk of transport-related injury.

Vuolo, M. (2013). National-level drug policy and young people's illicit drug use: A multilevel analysis of the European Union. *Drug and Alcohol Dependence*, 131(1-2), 149-156.

Introduction: Recent research has called upon investigators to exploit cross-national differences to uncover the cultural and structural factors influencing drug use. While the individual-level correlates are well-established, little is known about the association between cross-national variation in drug policies and young people's substance use. This study examines, net of individual-level predictors, the association between national-level drug policy and use of an illicit drug other than cannabis. Methods: The study uses Eurobarometer repeated cross-sectional surveys in 2002 and 2004 of adolescents aged 15–24 drawn in multistage, random probability samples proportional to population size and density within regions of their country (N = 15,191). Participants completed self-reported measures of last month drug use, attitudes toward drugs, school and work participation, and demographics. Gathered from several international bodies, national-level policy measures include drug offense levels, possession decriminalization, and presence and usage of harm reduction strategies. Results: Hierarchical logistic regression models demonstrate that, while controlling for important individual-level predictors, in countries where there is no restriction on possession of drugs for personal use, the odds of drug use in the last month are 79% lower ($p < 0.05$). On the other hand, higher usage of treatment and drug substitution are associated with higher levels of drug use. These results are robust to several alternate specifications. Conclusions: Among the strongest and most consistent findings, eliminating punishments for possession for personal use is not associated with higher drug use.

- ✓ Yacoubian, G. S., Jr. (2007). Assessing the relationship between marijuana availability and marijuana use: A legal and sociological comparison between the United States and the Netherlands. *Journal of Alcohol and Drug Education*, 51(4), 17-34.

The United States and the Netherlands have antithetical marijuana control policies. The United States' laws criminalize the possession of even small amounts of marijuana, while the Netherlands have maintained, over the past several decades, two relatively liberal marijuana policies implemented during the 1970s and 1980s. According to the literature on environmental drug prevention strategies, the Dutch policy should result in increased marijuana use because of the drug's amplified availability, while the United States' policy should result in reduced marijuana use. The empirical evidence addressing these hypotheses, however, is sparse. The stark approaches to marijuana control in the United States and the Netherlands offer the opportunity for an intricate legal and social science analysis. An examination of these divergent policies is important because it implicates, first, the extent to which marijuana, a relatively non-serious drug of abuse, is controlled, and second, the extent to which environmental drug prevention strategies are realized by policymakers in the United States and in the Netherlands. Part I of this essay examines the short- and long-term physical and psychological effects of marijuana use. Part II, first, summarizes the marijuana control philosophy in the United States, and second, examines the prevalence of marijuana use in the United States. Part III first, summarizes the Dutch philosophy on marijuana control, and second, reviews the prevalence of marijuana use in the Netherlands. Part IV discusses the implications of the American and Dutch marijuana control policies in relation to environmental drug prevention strategies. With the absence of sufficient research in the Netherlands, it would be difficult to predict whether enforcing stricter laws would positively impact substance use prevention. In the United States, where there exists extant research along with significant dollars that are spent to attempt to control the marijuana supply, it appears to have made little overall impact on rates of marijuana use.

1.7. Cost-benefit analysis related (3)

Guyl, M. (2014). Standardizing economic analysis in prevention will require substantial effort. *Prevention Science*, 15(6), 803-806.

It is exceedingly difficult to compare results of economic analyses across studies due to variations in assumptions, methodology, and outcome measures, a fact which surely decreases the impact and usefulness of prevention-related economic research. Therefore, Crowley et al. (Prevention Science, 2013) are precisely correct in their call for increased standardization and have usefully highlighted the issues that must be addressed. However, having made the need clear, the questions become what form the solution should take, and how should it be implemented. The present discussion outlines the rudiments of a comprehensive framework for promoting standardized methodology in the estimation of economic outcomes, as encouraged by Crowley et al. In short, a single, standard, reference case approach should be clearly articulated, and all economic research should be encouraged to apply that standard approach, with results from compliant analyses being reported in a central archive. Properly done, the process would increase the ability of those without specialized training to contribute to the body of economic research pertaining to prevention, and the most difficult tasks of predicting and monetizing distal outcomes would be readily completed through predetermined models. These recommendations might be viewed as somewhat forcible, inasmuch as they advocate for prescribing the details of a standard methodology and establishing a means of verifying compliance. However, it is unclear that the best practices proposed by Crowley et al. will be widely adopted in the absence of a strong and determined approach.

Guyl, M., Spoth, R., & Crowley, D. M. (2011). Economic analysis of methamphetamine prevention effects and employer costs. *Journal of Studies on Alcohol and Drugs*, 72(4), 577-585.

Objective: The goal of this research was to evaluate economically three interventions designed to prevent substance use in general populations of adolescents, specifically focusing on the prevention of methamphetamine use and its subsequent benefits to employers. **Method:** In a randomized, controlled trial, three preventive interventions were delivered to 6th- or 7th-grade youth in 58 Iowa school districts, with 905 of these youth (449 girls) providing follow-up assessments as 12th graders. Intervention conditions included the family-focused Iowa Strengthening Families Program (ISFP), the school-based Life Skills Training (LST) program, and a combined condition of both the Strengthening Families Program: For Parents and Youth 10–14 (SFP10–14; an ISFP revision) plus LST (LST+SFP10–14). Analyses based on intervention costs, 12th-grade methamphetamine use rates, and methamphetamine-related employer costs yielded estimates of intervention cost, cost-effectiveness, benefit–cost ratio, and net benefit. **Results:** The ISFP lowered methamphetamine use by 3.9%, cost \$25,385 to prevent each case, and had a benefit–cost ratio of 3.84, yielding a net benefit of \$2,813 per youth. The LST program reduced methamphetamine use by 2.5%, required \$5,122 per prevented case, and had a benefit–cost ratio of 19.04, netting \$2,273 per youth. The combined LST+SFP10–14 prevention condition lowered methamphetamine use rates by 1.8%, cost \$62,697 to prevent each case, had a benefit–cost ratio of 1.56, and netted \$620 per youth. Findings were robust after varying a number of key parameters across a range of plausible values. **Conclusions:** Substance use prevention programming is economically feasible, particularly for effective interventions that have lower per person treatment delivery costs.

Kuklinski, M. R., Fagan, A. A., Hawkins, J. D., Briney, J. S., & Catalano, R. F. (2015). Benefit–cost analysis of a randomized evaluation of Communities That Care: Monetizing intervention effects on the initiation of delinquency and substance use through grade 12. *Journal of Experimental Criminology*, 11(2), 165-192.

Objective: To determine whether the Communities That Care (CTC) prevention system is a cost-beneficial intervention. Methods: Data were from a longitudinal panel of 4,407 youth participating in a randomized controlled trial including 24 towns in seven states, matched in pairs within state, and randomly assigned to condition. Significant differences favoring intervention youth in sustained abstinence from delinquency, alcohol use, and tobacco use through grade 12 were monetized and compared to economic investment in CTC. Results: CTC was estimated to produce \$4,477 in benefits per youth (discounted 2011 dollars). It costs \$556 per youth to implement CTC for 5 years. The net present benefit was \$3,920. The benefit–cost ratio was \$8.22 per dollar invested. The internal rate of return was 21 %. Risk that investment would exceed benefits was minimal. Investment was expected to be recouped within 9 years. Sensitivity analyses in which effects were halved yielded positive cost-beneficial results. Conclusions: CTC is a cost-beneficial, community-based approach to preventing initiation of delinquency, alcohol use, and tobacco use. CTC is estimated to generate economic benefits that exceed implementation costs when disseminated with fidelity in communities.



Part II:

Models of Substance Use Prevention Programs

Part II: Models of Substance Use Prevention Programs

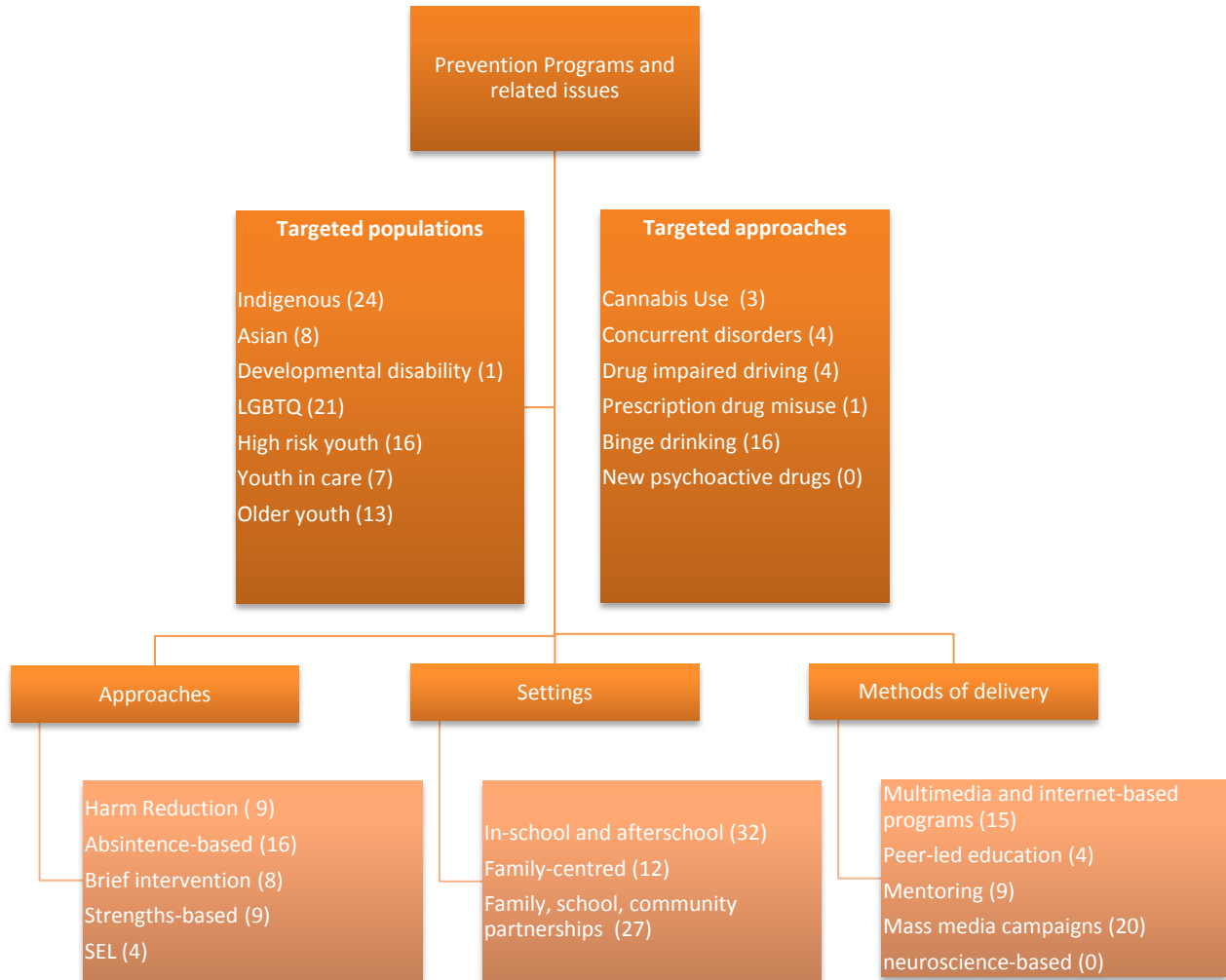


Figure 2: Organization of Part II: models and issues

2.1. Harm reduction approaches (9)

★★ Ellickson, P. L., McCaffrey, D. F., Ghosh-Dastidar, B., & Longshore, D. L. (2003). New Inroads in Preventing Adolescent Drug Use: Results From a Large-Scale Trial of Project ALERT in Middle Schools. *American Journal of Public Health, 93*(11), 1830-1836.

Objectives. The revised Project ALERT drug prevention program across a wide variety of Midwestern schools and communities was evaluated. **Methods.** Fifty-five South Dakota middle schools were randomly assigned to program or control conditions. Treatment group students received 11 lessons in 7th grade and 3 more in 8th grade. Program effects for 4276 8th-graders were assessed 18 months after baseline. **Results.** The revised Project ALERT curriculum curbed cigarette and marijuana use initiation, current and regular cigarette use, and alcohol misuse. Reductions ranged from 19% to 39%. Program effects were not significant for initial and current drinking or for current and regular marijuana use. **Conclusions.** School-based drug prevention programs can prevent occasional and more serious drug use, help low- to high-risk adolescents, and be effective in diverse school environments.

★ Ghosh-Dastidar, B., Longshore, D. L., Ellickson, P. L., & McCaffrey, D. F. (2004). Modifying Pro-Drug Risk Factors in Adolescents: Results From Project ALERT. *Health Education & Behavior, 31*(3), 318-334.

The objective of this study was to evaluate the impact of a revised state-of-the-art drug prevention program, Project ALERT, on risk factors for drug use in mostly rural midwestern schools and communities. Fifty-five middle schools from South Dakota were randomly assigned to treatment or control conditions. Treatment-group students received 11 lessons in Grade 7 and 3 more in Grade 8. Effects for 4,276 eighth graders were assessed 18 months after baseline. Results indicate that Project ALERT had statistically significant effects on all the targeted risk factors associated with cigarette and marijuana use and more modest gains with the pro-alcohol risk factors. The program helped adolescents at low, moderate, and high risk for future use, with the effect sizes typically stronger for the low- and moderate-risk groups. Thus, school-based drug prevention programs can lower risk factors that correlate with drug use, help low- to high-risk adolescents, and be effective in diverse school environments.

Program Profile: Project ALERT

Project ALERT is a middle school curriculum that seeks to motivate students against using drugs and to give them the skills they need to translate that motivation into effective resistance behavior. Following its initial evaluation in 1990, the curriculum was revised to emphasize curbing alcohol *misuse* (as opposed to any use at all) and bring parents into the prevention process. The revised Project ALERT curriculum curbed cigarette and marijuana use initiation, current and regular cigarette use, and alcohol misuse.

(Ellickson et al., 2003;
www.projectalert.com)

Program Profile: SHAHRP

SHAHRP explored the effects of a classroom-based, student-focused alcohol curriculum intervention in secondary schools. The approach involved 3 components: 1) a classroom drug education curriculum, 2) school environment and drug policy, and 3) parental and wider community involvement.

(McBride et al., 2000)

Longshore, D., Ellickson, P. L., McCaffrey, D. F., & St. Clair, P. A. (2007). School-based drug prevention among at-risk adolescents: Effects of ALERT Plus. *Health Education & Behavior, 34*(4), 651-668.

In a recent randomized field trial, Ellickson et al. found the Project ALERT drug prevention curriculum curbed alcohol misuse and tobacco and marijuana use among eighth-grade adolescents. This article reports effects among ninth-grade at-risk adolescents. Comparisons between at-risk girls in ALERT Plus schools (basic curriculum extended to ninth grade with five booster lessons) and at-risk girls in control schools showed the program curbed weekly alcohol and marijuana use, at-risk drinking, alcohol use resulting in negative consequences, and attitudinal and perceptual factors conducive to drug use. Program-induced changes in perceived social influences, one's ability to resist those influences, and beliefs about the consequences of drug use mediated the ALERT Plus effects on drug use. No significant effects emerged for at-risk boys or at-risk adolescents in schools where the basic ALERT curriculum (covering seventh and eighth grades only) was delivered. Possible reasons for gender differences and implications for prevention programming are discussed.

McBride, N., Midford, R., Farrington, F., & Phillips, M. (2000). Early results from a school alcohol harm minimization study: The School Health and Alcohol Harm Reduction Project. *Addiction, 95*(7), 1021-1042.

The School Health and Alcohol Harm Reduction Project (SHAHRP) aims to reduce alcohol-related harm by enhancing students' abilities to identify and deal with high-risk drinking situations particularly likely to be encountered by young people. The SHAHRP study has adopted a quasi-experimental research design, incorporating intervention and control groups and measuring change over a 3-yr period. The study involves 2,343 students (13-17-yr-olds) from 14 metropolitan, government secondary schools in Perth, Western Australia. 73.7% of Ss completed surveys at both baseline and 1st follow-up. The intervention is a curriculum-based education program with an explicit harm minimization goal conducted in 2 phases over 2 yrs. The early results of the study demonstrate initial knowledge and attitude change, predicted by the Ss' involvement in the intervention. A surprising impact of the 1st phase of SHAHRP was the significant difference in alcohol consumption and harms between control and intervention groups, with the SHAHRP group demonstrating a significantly lower increase in alcohol consumption than the control group. Students who were supervised drinkers at baseline and who received the SHAHRP intervention were overwhelmingly represented in the change results.

★ McBride, N., Farrington, F., Midford, R., Meuleners, L., & Phillips, M. (2004). Harm minimization in school drug education: Final results of the School Health and Alcohol Harm Reduction Project (SHAHRP). *Addiction, 99*(3), 278-291.

The School Health and Alcohol Harm Reduction Project (SHAHRP study) aimed to reduce alcohol-related harm in secondary school students. The study used a quasi-experimental research design in which randomly selected and allocated intervention and comparison groups were assessed at eight, 20 and 32 months after baseline. The evidence-based intervention, a curriculum programme with an explicit harm minimization goal, was conducted in two phases over a 2-year period. Main outcomes measured were knowledge, attitude, total alcohol consumption, risky consumption, context of use, harm associated with own use and harm associated with other people's use of alcohol. There were significant knowledge, attitude and behavioural effects early in the study, some of which were maintained for the duration of the study. Intervention students were significantly more likely to be non-drinkers or supervised drinkers than were comparison students. During the

first and second programme phases, intervention students consumed 31.4% and 31.7% less alcohol. Intervention students were 25.7%, 33.8% and 4.2% less likely to drink to risky levels from first follow-up onwards. The results of this study support the use of harm reduction goals and classroom approaches in school drug education.

Morris, J., Parker, H., & Aldridge, J. (2002). The Integrated Programme: An evaluation of a multi-component drugs prevention programme in northern England (1996-1999). *Drugs: Education, Prevention & Policy*, 9(2), 153-168.

Based on North American evidence that multi-component drugs prevention programmes have an impact on reducing young people's drug taking, the Integrated Programme (IP) was designed and delivered to adolescents (aged 12-17 yrs) in northern England during 1998-1999. The IP was evaluated by comparing the attitudes and drug-taking behaviour of nearly 2000 young people before and after programme delivery. Action sites (which received the IP) and comparison sites (which did not) were randomly allocated once baseline survey measurements had been taken. Controlling for key variables multiple logistic regression was used to measure the odds ratio of drug taking on 20 measures for young people in both action and comparison sites based on a follow-up survey. The results suggested that young people who received the IP were more likely to reduce harder drug use and maintain a softer drug-taking repertoire than those in the comparison sites. However, these 'gains' were small and inconsistent and the IP had no impact on reducing initiation/first trying rates. The results were thus only indicative that such programmes might be effective in the UK context.

Poulin, C., & Nicholson, J. (2005). Should harm minimization as an approach to adolescent substance use be embraced by junior and senior high schools? Empirical evidence from an integrated school- and community-based demonstration intervention addressing drug use among adolescents. *International Journal of Drug Policy*, 16(6), 403-414.

The objective of this demonstration project was to determine if school-based harm minimization drug education was potentially acceptable and effective for junior and senior high school students in Nova Scotia. A four-year quasi-experimental intervention using mixed quantitative and qualitative methodologies was conducted. The intervention was a co-operative participatory research project with various activities determined by the participants. The project involved a partnership of four schools, two school boards, two regional addiction services, the provincial department of health, and a university. The outcomes evaluation was

Program Profile: The Integrated Programme

The Integrated Programme (IP) is a multi-component program designed and delivered to adolescents (aged 12-17 yrs). Recognizing that a significant minority of young people about to receive the programme were already drug experienced, the developers included more secondary prevention/harm reduction messages. These aimed to reduce prevalence of use, delay age of onset, and warn about frequency of use and the mixing of drugs and alcohol.

(Morris et al., 2002)

Program Profile: SCIDUA

SCIDUA was a school-and community-based demonstration project to determine whether school based harm minimization drug education might be acceptable and effective in junior and senior high schools in Nova Scotia. The intervention involved various activities determined by the participants. Results indicated the intervention was appropriate for senior but not junior high school students.

(Poulin & Nicholson, 2005)

based on a sample of 1,117 and 849 students in the intervention schools, compared with 3,755 and 4,247 students in the rest of the province, in 1998 and 2002, respectively. The evaluation of acceptability was based on an analysis of 491 documents generated from 1998 to 2002. The outcomes of effectiveness were specific risks and harmful consequences associated with substance use. Harm minimization was found to be an acceptable approach to drug education targeting the senior high school population, and there was also some evidence of effectiveness in that age group in that the prevalence of several risks and negative consequences of substance use decreased significantly in the intervention schools relative to the rest of the province. In junior high school, harm minimization was found to not be an acceptable approach to drug education. This demonstration project provides evidence that school-based harm minimization may be acceptable and effective in senior high schools but may not be acceptable in junior high schools.

Ringwalt, C. L., Clark, H. K., Hanley, S., Shamblen, S. R., & Flewelling, R. L. (2009). The effects of project ALERT one year past curriculum completion. *Prevention Science*, 11(2), 172-184.

School-based drug prevention curricula constitute the nation's most prevalent strategy to prevent adolescent drug use. The effects of one such curriculum, Project ALERT, was evaluated with respect to adolescent substance use. In particular, it was sought to determine if a single effect on 30-day alcohol use, noted shortly following the completion of the 2-year program, could be detected 1 year later. Delayed effects on other outcomes of interest, namely lifetime alcohol use, and 30-day and lifetime use of cigarettes, marijuana, and inhalants were also examined. A randomized controlled trial that used school as the unit of assignment was used. Thirty-four schools with grades 6-8 from 11 states completed the study. Seventy-one Project ALERT instructors taught 11 core lessons to sixth graders and 3 booster lessons to seventh graders. Students were assessed prior to the onset of the intervention, as sixth graders, after the completion of the 2-year curriculum, as seventh graders, and again 1 year later as eighth graders. This paper examines data from the pretest and final posttest. Using hierarchical nonlinear modeling, it was found that the earlier effect on 30-day alcohol use did not persist. Further, no effects for lifetime alcohol use and both the lifetime and 30-day use of cigarettes, marijuana, and inhalants were found. These findings do not support the long-term effectiveness of Project ALERT, when delivered to sixth graders. **(Note the Project ALERT was found to have some positive effects for other groups.)**

- ★★ Zavela, K. J., Battistich, V., Gosselink, C. A., & Dean, B. J. (2004). Say yes first: Follow up of a five-year rural drug prevention program. *Journal of Drug Education*, 34(1), 73-88.

Say Yes First--To Rural Youth and Family Alcohol/Drug Prevention (SYF) was a 5-year, federally-funded U.S.D.H.H.S. Center for Substance Abuse Prevention (CSAP) project that involved 859 children in the class of the year 2000. The children in four rural school districts were followed from Grade 4 to Grade 8 from 1991 to 1996. Initial results in a previous publication showed significant lower drug usage in this cohort than comparison students ([1]; see record 1997-04161-004). A

Program Profile: Say Yes First

Say Yes First was an educational and case management approach to drug prevention for students during Grade 4 through Grade 8. To create positive social influences, the project included low-risk students as part of the intervention strategy. The program was conducted not only during the school year, but also during the summer, 12 months a year, for consistent programming and interventions for the children. Selective prevention strategies, such as academic tutoring and enrichment programs, were developed and provided for at-risk students by half-time project managers.

(Zavela et al., 2004)

follow-up of 120 SYF participants and 136 comparison students in high schools using the National Youth Survey (Follow Up Questionnaire) indicated lower usage of alcohol, tobacco and other drugs for the program students and lower lifetime prevalence of marijuana use for program vs. comparison students. SYF students had higher course grades, lower school absenteeism, more positive attitudes toward school, less trouble in school and less negative self-appraisal. Program students also reported greater participation in sports, more family communication and fewer disagreements or arguments with their parents.

2.2. Abstinence-based approaches (16)

Ennet, S. T., Tobler, N. S., Ringwalt, C. L., & Flewelling, R. L. (1994). How effective is Drug Abuse Resistance Education? A meta-analysis of Project DARE outcome evaluations. *American Journal of Public Health, 84*, 1394-1401.

OBJECTIVES. Project DARE³ (Drug Abuse Resistance Education) is the most widely used school-based drug use prevention program in the United States, but the findings of rigorous evaluations of its effectiveness have not been considered collectively. **METHODS.** Meta-analytic techniques were used to review eight methodologically rigorous DARE evaluations. Weighted effect size means for several short-term outcomes also were compared with means reported for other drug use prevention programs. **RESULTS.** The DARE effect size for drug use behavior ranged from .00 to .11 across the eight studies; the weighted mean for drug use across studies was .06. For all outcomes considered, the DARE effect size means were substantially smaller than those of programs emphasizing social and general competencies and using interactive teaching strategies. **CONCLUSIONS.** DARE's short-term effectiveness for reducing or preventing drug use behavior is small and is less than for interactive prevention programs.

Program Profile: DARE

Drug Abuse Resistance Education (D.A.R.E.) is a police officer-led series of classroom lessons taught from Kindergarten through 12th grade. The D.A.R.E. program is more than just drug prevention education; it teaches students good decision making skills to help them avoid high-risk behavior to ensure they grow up healthy, safe and secure.

(www.DARE.com)

Clayton, R. R., Cattarello, A. M., & Johnstone, B. M. (1996). The Effectiveness of Drug Abuse Resistance Education (Project DARE): 5-Year Follow-Up Results. *Preventive Medicine, 25*(3), 307-318.

Background. This article reports the results of a 5-year, longitudinal evaluation of the effectiveness of Drug Abuse Resistance Education (DARE), a school-based primary drug prevention curriculum designed for introduction during the last year of elementary education. DARE is the most widely disseminated school-based prevention curriculum in the United States. **Method.** Twenty-three elementary schools were randomly assigned to receive DARE and 8 were designated comparison schools. Students in the DARE schools received 16 weeks of protocol-driven instruction and students in the comparison schools received a drug education unit as part of the health curriculum. All students were pretested during the 6th grade prior to delivery of the programs, posttested shortly after completion, and resurveyed each subsequent year through the 10th grade. Three-stage mixed effects regression models were used to analyze these data. **Results.** No significant differences were observed between intervention and comparison schools with respect to cigarette, alcohol, or marijuana use during the 7th grade, approximately 1 year after completion of the program, or over the full 5-year measurement interval. Significant intervention effects in the hypothesized direction were observed during the 7th grade for measures of students' general and specific attitudes toward drugs, the capability to resist peer pressure, and estimated level of drug use by peers. Over the full measurement interval, however, average trajectories of change for

³ For more reviews of DARE please visit

<http://www.surgeongeneral.gov/library/youthviolence/chapter5/sec4.html>

<http://www.drugpolicy.org/library/factsheets/dare/index.cfm>

these outcomes were similar in the intervention and comparison conditions. Conclusions. The findings of this 5-year prospective study are largely consonant with the results obtained from prior short-term evaluations of the DARE curriculum, which have reported limited effects of the program upon drug use, greater efficacy with respect to attitudes, social skills, and knowledge, but a general tendency for curriculum effects to decay over time. The results of this study underscore the need for more robust prevention programming targeted specifically at risk factors, the inclusion of booster sessions to sustain positive effects, and greater attention to interrelationships between developmental processes in adolescent substance use, individual level characteristics, and social context.

Dukes, R. L., Stein, J. A., & Ullman, J. B. (1997). Long-term impact of Drug Abuse Resistance Education (D. A. R. E.): Results of a 6-year follow-up. *Evaluation Review*, 21(4), 483-500.

The long-term effectiveness of Drug Abuse Resistance Education (DARE) was assessed in a 6-yr followup study. 356 12th-grade students who had received the program in the 6th-grade were compared with 264 12th-grade students who did not. A survey was used to assess central DARE concepts such as self-esteem, police bonds, delay of experimentation with drugs, various forms of drug use, risk perception, and drug use attitudes among the students. No relationship between prior DARE participation and alcohol use, cigarette smoking, or marijuana use in 12th-grade was found. However, there was a significant relationship between DARE participation and less use of illegal, more deviant drugs (e.g., inhalants, cocaine, LSD) in a development sample, but not in a validation sample. A 9th-grade followup study (R. L. Dukes et al, 1996) of the same sample showed no significant differences. This suggests a possible sleeper effect for DARE in reference to the use of harder drugs, especially among males.

Gorman, D. M., & Huber, J. C., Jr. (2009). The social construction of 'evidence-based' drug prevention programs: A reanalysis of data from the Drug Abuse Resistance Education (DARE) program. *Evaluation Review*, 33(4), 396-414.

This study explores the possibility that any drug prevention program might be considered "evidence-based" given the use of data analysis procedures that optimize the chance of producing statistically significant results by reanalyzing data from a Drug Abuse Resistance Education (DARE) program evaluation. The analysis produced a number of statistically significant differences between the DARE and control conditions on alcohol and marijuana use measures. Many of these differences occurred at cutoff points on the assessment scales for which post hoc meaningful labels were created. These results are compared to those from evaluations of programs that appear on evidence-based drug prevention lists.

Hansen, W. B., & McNeal, R. B., Jr. (1997). How D.A.R.E. works: An examination of program effects on mediating variables. *Health Education & Behavior*, 24(2), 165-176.

Examines 12 postulated mediators of substance use prevention programs to determine the degree to which Drug Abuse Resistance Education (D.A.R.E.) has an effect on those mediators and the degree to which those effects account for behavioral outcomes of the program. The sample was composed of students who were surveyed as 8th graders and again as 9th graders. Results indicate that the primary effect of D.A.R.E. is a change in commitment not to use substances. This change significantly mediates behavioral effects. However, the magnitude of D.A.R.E.'s effect on the mediator is relatively small. Other mediators that offer strong potential paths for intervention effectiveness are not affected by the program. These results suggest that in order to achieve

prevention effectiveness, the curriculum used in the D.A.R.E. program needs to be replaced with one that targets and meaningfully changes appropriate mediating variables.

Kulis, S., Nieri, T., Yabiku, S., Stromwall, L. K., & Marsiglia, F. F. (2007). Promoting reduced and discontinued substance use among adolescent substance users: Effectiveness of a universal prevention program. *Prevention Science*, 8(1), 35-49.

Efforts to address youth substance use have focused on prevention among non-users and treatment among severe users with less attention given to youth occupying the middle ground who have used substances but not yet progressed to serious abuse or addiction. Using a sample from 35 middle schools of 1,364 youth who reported using substances, this study examined the effectiveness of a universal youth substance use prevention program, the SAMHSA Model Program keepin' it REAL, in promoting reduced or recently discontinued alcohol, cigarette, and marijuana use. Discrete-time event history methods modeled the rates of reduced and recently discontinued use across four waves of data. Each substance (alcohol, cigarettes, and marijuana) was modeled separately. Beginning at the second wave, participants who reported use at wave 1 were considered at risk of reducing or discontinuing use. Since the data sampled students in schools, multi-level models accounted for the nesting of data at the school level. Results indicated that prevention program participation influenced the rates of reduced and recently discontinued use only for alcohol, controlling for baseline use severity, age, grades, socioeconomic status, ethnicity and gender. Among youth who reported use of alcohol in wave 1 (N = 1,028), the rate of reducing use for program participants was 72% higher than the rate for control students. The rate of discontinuing use was 66% higher than the rate for control students. Among youth who reported use of one or more of the three substances in wave 1 (N = 1,364), the rate of discontinuing all use was 61% higher for program participants than for control students. Limitations and implications of these findings and plans for further research are discussed.

Program Profile: Keepin' it Real

Keepin' it Real is a culturally grounded drug prevention curriculum for grades 6-9 that has been proven effective for reducing drug use and establishing anti-drug attitudes and beliefs. The KiR program teaches kids HOW to say "no" to alcohol, tobacco and other drugs without losing friendships. The KiR program enhances life skills such as decision-making, communication and drug-resistant strategies.

KiR is the cultural counterpart of DARE.

(<http://keepinitreal.asu.edu>)

Lynam, D. R., Milich, R., Zimmerman, R., Novak, S. P., Logan, T. K., Martin, C., et al. (2009). Project DARE: No effects at 10-year follow-up *Addictive behaviors: New readings on etiology, prevention, and treatment*. (pp. 187-196). Washington, DC US: American Psychological Association.

(from the chapter) This reprinted article originally appeared in *Journal of Consulting and Clinical Psychology*, 1999, Vol 67(4), 590-593. (The following abstract of the original article appeared in record 1999-03346-017.) The present study examined the impact of Project DARE (Drug Abuse Resistance Education), a widespread drug-prevention program, 10 years after administration. A total of 1,002 individuals who in 6th grade had either received DARE or a standard drug-education curriculum, were reevaluated at age 20. Few differences were found between the 2 groups in terms of actual drug use, drug attitudes, or self-esteem, and in no case did the DARE group have a more

successful outcome than the comparison group. Possible reasons why DARE remains so popular, despite the lack of documented efficacy, are offered.

Marsiglia, F. F., Kulis, S., Yabiku, S. T., Nieri, T. A., & Coleman, E. (2011). When to intervene: Elementary school, middle school or both? Effects of keepin' it REAL on substance use trajectories of Mexican heritage youth. *Prevention Science, 12*(1), 48-62.

This article presents the findings of a study exploring two questions: What age is most efficacious to expose Mexican heritage youth to drug abuse prevention interventions, and what dosage of the prevention intervention is needed? These issues are relevant to Mexican heritage youth—many from immigrant families—in particular ways due to the acculturation process and other contextual factors. The study utilized growth curve modeling to investigate the trajectory of recent substance use (alcohol, cigarettes, marijuana, inhalants) among Mexican heritage students (N = 1,670) participating in the keepin' it REAL drug prevention program at different developmental periods: the elementary school (5th grade), middle school (7th grade), or both. The findings provide no evidence that intervening only in elementary school was effective in altering substance use trajectories from 5th to 8th grade, either for licit nor illicit substances. Implementing keepin' it REAL in middle school alone altered the trajectories of use of all four substances for Mexican heritage youth. A double dose of prevention, in elementary and middle school proved to be equally as effective as intervening in 7th grade only, and only for marijuana and inhalants. The decrease in use of marijuana and inhalants among students in the 7th-grade-only or the 5th- and 7th-grade interventions occurred just after students received the curriculum intervention in 7th grade. These results are interpreted from an eco-developmental and culturally specific perspective and recommendations for prevention and future research are discussed.

Ringwalt, C., Ennett, S. T., & Holt, K. D. (1991). An outcome evaluation of Project DARE (Drug Abuse Resistance Education). *Health Education Research, 6*(3), 327-337.

Evaluated the DARE Project, a school-based drug use prevention program. Ss were 5th and 6th graders from 20 schools in North Carolina. Uniformed police officers delivered 17 weekly lessons in the classroom. The schools were assigned to either a DARE or no-DARE (control) condition. Pre- and posttesting of both groups, attrition assessment, adjustments for school effects, and control for nonequivalency between comparison groups were used. DARE demonstrated no effect on Ss' use of alcohol, cigarettes, or inhalants or on their future intentions to use these substances. However, DARE made a positive impact on Ss' awareness of the costs of using alcohol and cigarettes, perceptions of the media's portrayal of these substances, general and specific attitudes toward drugs, perceived peer attitudes toward drug use, and assertiveness.

Rosenbaum, D. P., Flewelling, R. L., Bailey, S. L., & Ringwalt, C. L. (1994). Cops in the classroom: A longitudinal evaluation of drug abuse resistance education (DARE). *Journal of Research in Crime and Delinquency, 31*(1), 3-31.

Examined the effectiveness of the school-based drug prevention program DARE through a longitudinal randomized study of 18 pairs of elementary schools in Illinois. The DARE curriculum, which is taught by uniformed police officers, was administered to 1,584 5th and 6th graders, and its effect on students' school performance and drug use behaviors, attitudes, and beliefs was assessed 1 yr following program exposure. DARE had no statistically significant main effects on alcohol or cigarette usage behaviors or on school performance. Out of a total of 13 measured attitudes, only perceptions of media influence regarding the portrayal of beer drinking were

significantly affected. However, significant interactions between DARE and various sociodemographic factors (i.e., race/ethnicity, gender, year in school, and family metropolitan status) suggest that some program effects varied across subgroups of the target population.

Thombs, D. L. (2000). A retrospective study of DARE: Substantive effects not detected in undergraduates. *Journal of Alcohol and Drug Education, 46*(1), 27-40.

This retrospective study examined the long-term effects of DARE by assessing substance use among 630 undergraduates (58.6% females, aged 18-24 yrs) attending a large public university in Ohio. Data were collected by an anonymous survey administered in a stratified random sample of undergraduate classes. The results revealed that among those respondents one to six years beyond high school, 62.5% had participated in DARE as a child or teenager, 30.6% had not participated in the program, and 6.7% were uncertain. Results from a multiple discriminant analysis found that after accounting for the effects of age, there were no substantial group differences in substance use. Participation in the DARE program during elementary school, middle school, or high school did not appear to deter subsequent use in the undergraduate years. These findings add to a growing literature that questions the efficacy of the DARE program. Discussion is directed to the possible consequences of DARE participation among those undergraduates who subsequently use tobacco, alcohol or other drugs.

Lucas, W. L. (2008). Parents' perceptions of the Drug Abuse Resistance Education program (DARE). *Journal of Child & Adolescent Substance Abuse, 17*(4), 99-114.

Responses from 420 parents of fifth- and sixth-grade DARE students in a Midwestern county were examined to determine the parents' perceptions of the impact of DARE on their children's and their own attitudes and behavior. Major findings indicated that most parents did not see an impact on their child's school performance or overall attendance. Most perceived program impact with respect to the child's improved understanding and ability to resist drug use and improved perception of police officers. Most parents themselves reported increased awareness of substance abuse problems and increased conversation with their children about drug use as a result of DARE. Relevance of the findings to describing the perceived value and utility of DARE for parents as a stakeholder group is discussed.

Gosin, M., Marsiglia, F. F., & Hecht, M. L. (2003). keepin' it R.E.A.L.: A drug resistance curriculum tailored to the strengths and needs of pre-adolescents of the Southwest. *Journal of Drug Education, 33*(2), 119-142.

Research shows that students respond more favorably to drug prevention programs when they see their culture and themselves represented in the prevention message. Because there are few effective, culturally grounded programs, new approaches are needed, particularly among Mexican American youth. This need inspired the Drug Resistance Strategies Project to develop and test the 'keepin' it R.E.A.L.' curriculum serving ethnically diverse 7th grade students residing in a large southwestern city. This article describes development of the keepin' it R.E.A.L. curriculum, focusing on methods used to ensure cultural grounding. Six core, interrelated conceptual elements were incorporated: (1) ethnic variations in the nature of communication competence; (2) narrative based knowledge; (3) injunctive, personal, and descriptive norms as motivators in substance use; (4) social learning of social skills; (5) drug resistance strategies; and (6) grounding the program in local social contextual risk and resiliency factors. The article also reviews literature on cultural approaches in prevention, presents a theoretical framework, summarizes key outcomes of the

curriculum evaluation, and concludes with recommendations for the development of prevention programs for ethnically diverse youth.

Hecht, M. L., Warren, J.R., Wagstaff, D.A., & Elek, E. (2008). Substance Use, Resistance Skills, Decision Making, and Refusal Efficacy Among Mexican and Mexican American Preadolescents. *Health Communication* 23(4), 349-357.

This article examines the relationships among resistance skills, refusal efficacy, decision-making skills, and substance use for a sample of Mexican and Mexican American 5th grade students who were attending public schools in Phoenix, Arizona. An analysis of self-report questionnaire data indicated that the likelihood that male students reported ever having used one or more substances increased as they reported a greater willingness to use passive decision-making (e.g., going along) and decreased as they reported greater refusal efficacy and a greater willingness to utilize active decision making (e.g., thoughtful processing). No significant relationships emerged between the 4 predictors and lifetime substance use among the girls. These findings support the role of social skills in substance use prevention, shed light on an understudied group, and suggest the importance of continuing to examine gender differences in skills-based interventions.

Hecht, M. L., Colby, M., & Miller-Day, M. (2010). The dissemination of keepin' it REAL through D.A.R.E. America: A lesson in disseminating health messages. *Health Communication*, 25(6-7), 585-586.

This essay discusses the impact of the Drug Resistance Strategies Project's keepin' it REAL substance use prevention curriculum. The Drug Resistance Strategies Project (DRS) is an interdisciplinary collaboration that has spanned 20 years of communication research and practice. The DRS line of research impact has been felt in a number of ways, none more dramatic than the development of the keepin' it REAL drug prevention curriculum. This curriculum is a middle school, multicultural substance use prevention program that is designated as "evidence-based" by the National Registry of Evidence-based Programs and Practices. The prevention curriculum strives to reduce adolescents' drug use and delay the initiation of use by enhancing communication competence and refusal skills. This, of course, opens up new opportunities for research in the United States and cross-culturally, including an effectiveness study of this dissemination vehicle, with the promise of new theories and practices that advance health communication.

Nichols, T. R., Birnel, S., Graber, J. A., Brooks-Gunn, J., & Botvin, G. J. (2010). Refusal skill ability: An examination of adolescent perceptions of effectiveness. *The Journal of Primary Prevention*, 31(3), 127-137.

This pilot study examined whether refusal assertion as defined by a proven drug prevention program was associated with adolescent perceptions of effectiveness by comparing two sets of coded responses to adolescent videotaped refusal role-plays (N = 63). The original set of codes was defined by programmatic standards of refusal assertion and the second by a group of high school interns. Consistency with programming criteria was found for interns' ratings of several indicators of verbal and non-verbal assertiveness. However, a strategy previously defined by the program as effective was perceived as ineffective by adolescents while another deemed ineffective and problematic by intervention developers was viewed as effective. Interns endorsed presenting detailed and reasonable arguments as an effective refusal strategy while short, simple statements were deemed ineffective. This study suggests the importance of including adolescent perspectives in the design, delivery, and evaluation of drug prevention strategies.

2.3. Brief intervention approaches (8)

Baer, J. S., Peterson, P. L., & Wells, E. A. (2004). Rationale and design of a brief substance use intervention for homeless adolescents. *Addiction Research & Theory*, 12(4), 317-334.

The rationale and design for a brief feedback and motivational intervention for substance use among homeless adolescents is described. Homeless adolescents use substances at extremely high rates compared to other youth, and experience considerable negative consequences as a result. Yet homeless adolescents are not reached by, or are not responsive to, traditional prevention and treatment programs for substance use and abuse. The rationale for the use of brief feedback interventions is reviewed, and one such program that was designed to reduce substance use risk among homeless youth is described. The intervention is consistent with tenants of harm reduction in its effort to encourage engagement via its structure, minimal demands, and flexible clinical strategies and goals. Modifications made to the intervention based on lessons learned from an initial trial are described, and highlight the importance of tailoring harm reduction programs to facilitate engagement based on clients' life circumstances, availability, and motivation.

D'Amico, E. J., & Fromme, K. (2002). Brief prevention for adolescent risk-taking behavior. *Addiction*, 97(5), 563-574.

Despite widespread prevention efforts to decrease adolescent risk-taking, substance use and driving after drinking (DD) are prevalent in the US. The current study compared the efficacy of an abbreviated version of Drug Abuse and Resistance Education (DARE-A) to a new Risk Skills Training Program (RSTP). Adolescent participation in drinking, drug use, DD and riding with a drunk driver was examined longitudinally. After baseline assessments, adolescents were randomly assigned to the RSTP, DARE-A or a no intervention control group and then completed 2-month post-test and 6-month follow-up assessments. The sample (N=300) was comprised of 58% females and the age range was 14-19 years. The RSTP was developed to target several risk behaviors and to examine the feasibility of conducting a brief personalized prevention program in a group setting. DARE-A focused on increasing knowledge and understanding the deleterious effects of substance use. Risk-taking behavior, perception of peer risk-taking and positive and negative alcohol expectancies were assessed. RSTP participants decreased participation in several risk behaviors at post-test, but reductions were not maintained at 6-month follow-up.

Program Profile: Risk Skills Training Program

RSTP was developed to a) target multiple risk behaviors and adolescents' personal beliefs and consequences experienced from these behaviors, and b) to examine the feasibility of conducting a brief (i.e., 50 minute), personalized prevention program in a group setting, thus making the program less time-consuming and less expensive to implement.

(D'Amico & Fromme, 2002)

D'Amico, E. J., Houck, J. M., Hunter, S. B., Miles, J. N. V., Osilla, K. C., & Ewing, B. A. (2015). Group motivational interviewing for adolescents: Change talk and alcohol and marijuana outcomes. *Journal of Consulting and Clinical Psychology, 83*(1), 68-80.

Objective: Little is known about what may distinguish effective and ineffective group interventions. Group motivational interviewing (MI) is a promising intervention for adolescent alcohol and other drug use; however, the mechanisms of change for group MI are unknown. One potential mechanism is change talk, which is client speech arguing for change. The present study describes the group process in adolescent group MI and effects of group-level change talk on individual alcohol and marijuana outcomes. **Method:** We analyzed 129 group session audio recordings from a randomized clinical trial of adolescent group MI. Sequential coding was performed with the Motivational Interviewing Skill Code (MISC) and the CASAA Application for Coding Treatment Interactions software application. Outcomes included past-month intentions, frequency, and consequences of alcohol and marijuana use; motivation to change; and positive expectancies. **Results:** Sequential analysis indicated that facilitator open-ended questions and reflections of change talk increased group change talk. Group change talk was then followed by more change talk. Multilevel models accounting for rolling group enrollment revealed group change talk was associated with decreased alcohol intentions, alcohol use, and heavy drinking 3 months later; group sustain talk was associated with decreased motivation to change, increased intentions to use marijuana, and increased positive alcohol and marijuana expectancies. **Conclusions:** Facilitator speech and peer responses each had effects on change and sustain talk in the group setting, which were then associated with individual changes. Selective reflection of change talk in adolescent group MI is suggested as a strategy to manage group dynamics and increase behavioral change.

Approach Profile: Motivational Interviewing

Motivational interviewing is a technique that aims to help individuals change a specific behaviour such as substance use. The approach focuses on helping individuals reach the conclusion that they need to change the behaviour. The theory is based on several assumptions included:

- Most people go through a series of steps before changing behaviour
- Change happens from within a person
- Confrontation and negative messages are ineffective
- Knowledge alone is not helpful
- Reducing ambivalence about change is critical to actual change

<http://www.collegedrinkingprevention.gov>

Hall, B. C., Stewart, D. G., Arger, C., Athenour, D. R., & Effinger, J. (2014). Modeling motivation three ways: Effects of MI metrics on treatment outcomes among adolescents. *Psychology of Addictive Behaviors, 28*(1), 307-312.

The purpose of this study was to determine how three different measures of motivation (cognitive motivation, taking steps, and self-efficacy for change and maintenance) predict substance use outcomes after engaging in a Motivational Interviewing intervention. Participants were 225 high school students enrolled in Project Reducing the Effects of Alcohol and Drugs on Youth (Project READY), a NIDA-funded intervention initially developed with Motivational Interviewing (MI) principles for adolescents identified by schools as having problems with alcohol or other drug use. We measured motivation at multiple time points during the intervention in multiple methods.

Cognitive motivation was assessed using a Decisional Balance matrix at Session 3 of treatment. We measured self-efficacy with the Situational Confidence Questionnaire, administered at 4-, 8-, 12-, and 16-week follow-ups. A measure of taking steps (SOCRATES, v. 8) was administered at intake and Session 8. We hypothesized that motivation would follow the Transtheoretical Model (TTM) pathway, and we proposed a model where cognitive motivation would predict self-confidence for change and taking steps toward change, and self-confidence and taking steps would predict substance use outcomes. We tested our model using path analysis in AMOS and found support for a motivational continuum predicting percent days abstinent at 16-week follow-up [$\chi^2 = 2.75$, $df = 7$, $p = .90$, $CFI = 1$, $RMSEA$ (90% confidence interval) = $.00 - .03$]. This model demonstrates that motivational metrics predict unique outcomes at different time points and serve as important components of intervention.

Loneck, B., Corrigan, M. J., Videka, L., Newman, L. J., Reed, J. C., & Moonan, K. E. (2010). Prevention counseling and student assistance programs: A review of the literature. *Journal of Child & Adolescent Substance Abuse*, 19(4), 279-299.

Substance abuse prevention counseling can be found in two venues: school counseling and student assistance programs (SAPs). School prevention counseling is based on school psychology and guidance counseling. The authors of this article did not find any empirical studies of prevention counseling. Six criteria were used to assess the published research on SAPs: research designs, sampling methods, measures, procedures, analyses, and peer review of results. SAP studies reviewed were placed in one of three levels: Rigorous (N = 3; met all inclusion criteria), Informative (N = 2; met all criteria except peer review), and Evaluative (N = 5; weak design, but explicit in describing methods). The Rigorous Studies found a decrease in substance use or risk factors. The two Informative Studies found a decrease in substance use. The Evaluative Studies demonstrated the prevention of increases in substance use.

Norberg, M. M., Hides, L., Olivier, J., Khawar, L., McKetin, R., & Copeland, J. (2014). Brief interventions to reduce ecstasy use: A multi-site randomized controlled trial. *Behavior Therapy*, 45(6), 745-759.

Studies examining the ability of motivational enhancement therapy (MET) to augment education provision among ecstasy users have produced mixed results and none have examined whether treatment fidelity was related to ecstasy use outcomes. The primary objectives of this multi-site, parallel, two-group randomized controlled trial were to determine if a single-session of MET could instill greater commitment to change and reduce ecstasy use and related problems more so than an education-only intervention and whether MET sessions delivered with higher treatment fidelity are associated with better outcomes. The secondary objective was to assess participants' satisfaction with their assigned interventions. Participants (N = 174; M age = 23.62) at two Australian universities were allocated randomly to receive a 15-minute educational session on ecstasy use (n = 85) or a 50-minute session of MET that included an educational component (n = 89). Primary outcomes were assessed at baseline, and then at 4-, 16-, and 24-weeks postbaseline, while the secondary outcome measure was assessed 4-weeks post-baseline by researchers blind to treatment allocation. Overall, the treatment fidelity was acceptable to good in the MET condition. There were no statistical differences at follow-up between the groups on the primary outcomes of ecstasy use, ecstasy-related problems, and commitment to change. Both intervention groups reported a 50% reduction in their ecstasy use and a 20% reduction in the severity of their ecstasy-related problems at the 24-week follow up. Commitment to change slightly improved for both groups (9%–17%). Despite the lack of between-group statistical

differences on primary outcomes, participants who received a single session of MET were slightly more satisfied with their intervention than those who received education only. MI fidelity was not associated with ecstasy use outcomes. Given these findings, future research should focus on examining mechanisms of change. Such work may suggest new methods for enhancing outcomes. Australia and New Zealand Clinical Trial Registry: ACTRN12611000136909

Riper, H., van Straten, A., Keuken, M., Smit, F., Schippers, G., & Cuijpers, P. (2009). Curbing problem drinking with personalized-feedback interventions: A meta-analysis. *American Journal of Preventive Medicine*, 36(3), 247-255.

Context: The effectiveness of personalized-feedback interventions to reduce problem drinking has been evaluated in several RCTs and systematic reviews. A meta-analysis was performed to examine the overall effectiveness of brief, single-session personalized-feedback interventions without therapeutic guidance. **Evidence acquisition:** The selection and analyses of studies were conducted in 2008. Fourteen RCTs of single-session personalized-feedback interventions without therapeutic guidance were identified, and their combined effectiveness on the reduction of problematic alcohol consumption was evaluated in a meta-analysis. Alcohol consumption was the primary outcome measure. **Evidence synthesis:** The pooled standardized-effect size (14 studies, 15 comparisons) for reduced alcohol consumption at post-intervention was $d = 0.22$ (95% CI = 0.16, 0.29; the number needed to Treat = 8.06; areas under the curve = 0.562). No heterogeneity existed among the studies ($Q = 10.962$; $p = 0.69$; $I^2 = 0$). **Conclusions:** The use of single-session personalized-feedback interventions without therapeutic guidance appears to be a viable and probably cost-effective option for reducing problem drinking in student and general populations. The Internet offers ample opportunities to deliver personalized-feedback interventions on a broad scale, and problem drinkers are known to be amenable to Internet-based interventions. More research is needed on the long-term effectiveness of personalized-feedback interventions for problem drinking, on its potential as a first step in a stepped-care approach, and on its effectiveness with other groups (such as youth obliged to use judicial service programs because of violations of minimum-age drinking laws) and in other settings (such as primary care).

Whicher, E. V., Utku, F., Schirmer, G., Exam, S., Davis, P., & Abou-Saleh, M. T. (2012). Pilot project to evaluate the effectiveness and acceptability of single-session brief counseling for the prevention of substance misuse in pregnant adolescents. *Addictive Disorders & Their Treatment*, 11(1), 43-49.

Background: Teenage pregnancy is associated -with psychosocial disadvantage, as is drug misuse. Studies have found 37% of pregnant adolescents to indulge in substance misuse. Single-session motivational interviewing is effective in reducing alcohol and drug use in young people in education. However, there has been no research into providing brief interventions for drug and alcohol misuse in pregnant teenagers. As a consequence, this pilot study was designed to determine whether a single session of brief counseling lasting 40 minutes, administered in antenatal clinics, was acceptable and effective in reducing substance misuse among pregnant adolescents. **Methods:** Young girls aged between 13 and 19 years with a history of alcohol or drug use during die previous 3 months were recruited through 2 antenatal clinics in southwest London. Participants were assessed using Personal Experience Screening Questionnaire (PESQ), die Assessment of Substance Misuse in Adolescents, die CRAFFT (acronym of die first letters of key words in each question) questionnaire, and 3-month Timeline Follow Back Calendars. The standardized brief intervention was then administered by manual trained researchers. The questionnaires were repeated 3 months later. **Results:** We recruited 20

pregnant teenagers with a mean age of 17.42 years (SD 1.17). All participants had used alcohol, with 35% currently using drugs. Cannabis was the most common illegal drug of misuse, with 80% admitting use and 45% currently using the drug. Before the intervention, the mean number of using days was 14.58, standard deviation (STD) 21.16, and after the intervention, the mean was 5.16 days, STD 11.76, (2-tailed significance, $P = 0.005$). The PESQ scores showed a statistically significant reduction in the severity of substance use (mean change in scores 3.385, STD 4.369, 2-tailed significance, $P = 0.16$). The changes in die Assessment of Substance Misuse in Adolescents and CRAFFT were not statistically significant. Conclusions: Although the sample was small, the changes in measures of substance use, using Timeline Follow Back Calendars and the PESQ, were statistically significant, supporting the use of brief Interventions to reduce substance use/misuse in pregnant teenagers. Furthermore, the piloted intervention was acceptable. Pregnancy is a confounding factor that may lead to a reduction in substance misuse.

See also:

- Borsari & Carney, 2005 (Section 2.13e)
- Ceperich & Ingersoll, 2011 (Section 2.13e)
- Conrod et al., 2013 (Section 2.13e)
- Hernandez et al, 2015 (Section 2.7)
- Kazemi et al., 2013 (Section 2.13e)

2.4. Strengths-based approaches (13)

2.4.a. Positive Youth Development (PYD) approaches

- ✓ Catalano, R. F., Berglund, L.M, Ryan J.A.M, Lonczak, H.S., & Hawkins, D. (2002). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *Prevention & Treatment, 5(1)*, Article 15.

The past 30 yrs have seen widespread proliferation of prevention and positive youth development (PYD) programs. More recently, the field has witnessed a greater focus on evaluation of programs emphasizing PYD, the subject of the present study. Interest in PYD has grown as a result of studies that show the same individual, family, school, and community factors often predict both positive and negative outcomes for youth. Such factors as developing strong bonds with healthy adults and maintaining regular involvement in positive activities not only create a positive developmental pathway, but can prevent the occurrence of problems. While encouraging, these findings highlight the need for systematic review across programs to further their general acceptance by the field. Thus, the goals of the present study were to research and establish both theoretical and empirical definitions of PYD and related concepts; document and describe common denominators between risk and protective factors implicated in youth problem behavior; identify and summarize the results of evaluations of PYD interventions; and identify elements contributing to both the success and lack of success in PYD programs and program evaluations, as well as potential improvements in evaluation approaches.

Program Profile: Positive Youth Development

Positive Youth Development (PYD) is an approach to prevention that focuses on individuals' strengths as opposed to their "risk-factors" or "deficits." The PYD approach was developed based on the premise that all adolescents have the potential to contribute positively to their own lives and to those of their families, communities, and society as a whole.

(Damon, 2004)

- ✓ Dell, C. A., et al. (2013). Back to the basics: Identifying positive youth development as the theoretical framework for a youth drug prevention program in rural Saskatchewan, Canada amidst a program evaluation. *Substance Abuse Treatment, Prevention, and Policy, 8*.

Background: Despite endorsement by the Saskatchewan government to apply empirically-based approaches to youth drug prevention services in the province, programs are sometimes delivered prior to the establishment of evidence-informed goals and objectives. This paper shares the 'preparatory' outcomes of our team's program evaluation of the Prince Albert Parkland Health Region Mental Health and Addiction Services' Outreach Worker Service (OWS) in eight rural, community schools three years following its implementation. Before our independent evaluation team could assess whether expectations of the OWS were being met, we had to assist with establishing its overarching program goals and objectives and 'at-risk' student population, alongside its alliance with an empirically-informed theoretical framework. Methods: A mixed-methods approach was applied, beginning with in-depth focus groups with the OWS staff to identify the program's goals and objectives and targeted student population. These were supplemented with OWS and school administrator interviews and focus groups with school staff. Alignment with a theoretical focus was determined through a review of the OWS's work to date and explored in focus groups between our evaluation team and the OWS staff and validated with

the school staff and OWS and school administration. Results: With improved understanding of the OWS's goals and objectives, our evaluation team and the OWS staff aligned the program with the Positive Youth Development theoretical evidence-base, emphasizing the program's universality, systems focus, strength base, and promotion of assets. Together we also gained clarity about the OWS's definition of and engagement with its 'at-risk' student population. Conclusions: It is important to draw on expert knowledge to develop youth drug prevention programming, but attention must also be paid to aligning professional health care services with a theoretically informed evidence-base for evaluation purposes. If time does not permit for the establishment of evidence-informed goals and objectives at the start-up of a program, obtaining insight and expertise from program personnel and school staff and administrators can bring the program to a point where this can still be achieved and theoretical linkages made after a program has been implemented. This is a necessary foundation for measuring an intervention's success.

Edwards, O. W., Mumford, V.E., & Serra-Roldan, R. (2007). A Positive Youth Development Model for Students Considered At-Risk. *School Psychology International*, 28(1), 29-45.

Children considered "at-risk" for school failure and other adverse life outcomes have received increasing attention in multiple countries across the world. The research literature is replete with studies that emphasize specific detrimental factors that may make a child's life more difficult upon entering adulthood. The traditional, negative perspective of first identifying deficits and pathology before offering aid contrasts sharply with resiliency research and the emerging positive youth development (PYD) model. The developmental assets framework is under the rubric of PYD and offers a strength-based approach to child development, prevention and intervention. This article reviews and integrates data which demonstrate how asset-building is beneficial to students considered at-risk. School psychologists are well-positioned to collaborate with teachers and other educators to play vital roles in implementing this proactive PYD model to help all students.

Ersing, R.L. (2008). Building the Capacity of Youths through Community Cultural arts: A Positive Youth Development Perspective. *Best Practices in Mental Health*, 5(1), 26-43.

This paper examines the role that community-based arts programs play in empowering marginalized youths to become agents of community change. A positive youth development perspective is used to identify the characteristics of after-school cultural arts programs that nurture core developmental assets and build strong connections between youths and their communities. Attention is given to promoting assets that strengthen the resilience of young people struggling with emotional stressors that may lead to risk-taking behavior. The Prodigy Cultural Arts Program is presented as an example of a successful after-school arts program that incorporates principles of positive youth development. Prodigy focuses on building the capacity of adolescents to become confident and competent young adults, engaged as leaders in community building. Implications for using cultural arts programs to promote developmental assets, especially among youths residing in socially and economically disadvantaged neighborhoods, are discussed.

Fraser-Thomas, J. L., Côté, J., & Deakin, J. (2005). Youth sport programs: an avenue to foster positive youth development. *Physical Education & Sport Pedagogy* 10(1), 19 - 40.

Concern about the growth in adolescent problem behaviours (e.g. delinquency, drug use) has led to increased interest in positive youth development, and a surge in funding for 'after school programs' The potential of youth sport programs to foster positive development while decreasing the risk of problem behaviours is examined. Literature on the positive and negative outcomes of

youth sport is presented. It is proposed that youth sport programs actively work to assure positive outcomes through developmentally appropriate designs and supportive child-adult (parent/coach) relationships. Also highlighted is the importance of sport programs built on developmental assets (Benson, 1997) and appropriate setting features (National Research Council and Institute of Medicine, 2002) in bringing about the five 'C's of positive development (competence, confidence, character, connections, and compassion/caring; Lerner et al., 2000). An applied sport-programming model, which highlights the important roles of policy-makers, sport organizations, coaches and parents in fostering positive youth development is presented as a starting point for further applied and theoretical research.

Heyne, T., & Bogner, F. X. (2009). Strengthening resistance self-efficacy: Influence of teaching approaches and gender on different consumption groups. *Journal of Drug Education*, 39(4), 439-457.

This study focused on strengthening the individual self-efficacy of low achieving 8th graders reducing drug-specific peer pressure through theoretical and practical training. The subject of the intervention was based on a substance-specific life skills program offering both teacher-centered and student-centered teaching approaches. A cluster analysis identified four consumption groups in the pre-test setting: (1) A "potentially curious" sample; (2) an "actually curious" sample; (3) an "experimenter" sample; and (4) a "consumer" sample. Self-efficacy was measured three times in a pre-, post-, and retention-test design. Only the "potentially curious" sub-sample showed higher resistance self-efficacy, boys and girls revealed no differences. Altogether, a short- and middle-term consistent increase was detected in both teaching methods. Consequences to increase the efficiency of drug prevention measurements are being discussed.

Schwartz, S. J., Phelps, E., Lerner, J. V., Huang, S., Brown, C. H., Lewin-Bizan, S., et al. (2010). Promotion as prevention: Positive youth development as protective against tobacco, alcohol, illicit drug, and sex initiation. *Applied Developmental Science*, 14(4), 197-211.

The present study was designed to examine the association of positive youth development with the likelihood of tobacco, alcohol, marijuana, hard drug, and sex initiation between 5th and 10th grades. A national, largely middle-class sample of 5,305 adolescents, participating in a longitudinal study funded by the National 4-H Council (although not all participants were enrolled in 4-H or other after-school programs), completed measures of positive youth development (PYD) constructs and of tobacco, alcohol, marijuana, and hard drug use once per year between 5th and 10th grades. At the 9th and 10th grade assessments, adolescents were asked whether they had initiated sexual intercourse and, if so, at what age they had first engaged in intercourse. Although the present sample was somewhat lower risk compared to national averages, survival analysis models indicated that PYD was significantly and negatively associated with the initiation hazards for tobacco use, marijuana use, and sex initiation for girls only, and with hard drug use for both genders. PYD was also positively associated with the odds of condom use across genders. Results are discussed with regard to PYD as a preventive process.

★ Tebes, J. K., Feinn, R., Vanderploeg, J. J., Chinman, M. J., Shepard, J., Brabham, T., et al. (2007). Impact of a positive youth development program in urban after-school settings on the prevention of adolescent substance use. *Journal of Adolescent Health*, 41(3), 239-247.

Purpose: Positive youth development (PYD) emphasizes a strengths-based approach to the promotion of positive outcomes for adolescents. After-school programs provide a unique opportunity to implement PYD approaches and to address adolescent risk factors for negative outcomes, such as unsupervised out-of-school time. This study examines the effectiveness of an

after-school program delivered in urban settings on the prevention of adolescent substance use. Methods: A total of 304 adolescents participated in the study: 149 in the intervention group and 155 in a control group. A comprehensive PYD intervention that included delivery of an 18-session curriculum previously found to be effective in preventing substance use in school settings was adapted for use in urban after-school settings. The intervention emphasizes adolescents' use of effective decision-making skills to prevent drug use. Assessments of substance use attitudes and behaviors were conducted at program entry, program completion, and at the 1-year follow-up to program entry. Propensity scores were computed and entered in the analyses to control for any pretest differences between intervention and control groups. Hierarchical linear modeling (HLM) analyses were conducted to assess program effectiveness. Results: The results demonstrate that adolescents receiving the intervention were significantly more likely to view drugs as harmful at program exit, and exhibited significantly lower increases in alcohol, marijuana, other drug use, and any drug use 1 year after beginning the program. Conclusions: A PYD intervention developed for use in an urban after-school setting is effective in preventing adolescent substance use.

Phillips Smith, E. (2007). The role of afterschool settings in positive youth development. *Journal of Adolescent Health, 41*(3), 219-220.

Comments on an article by Tebes et al. (see record 2007-12692-005). The Tebes et al. article in the current issue provides a quasi-experimental evaluation of an afterschool program designed to promote youth development and prevent adolescent substance abuse among adolescents participating in an afterschool program. Both the research on afterschool settings and in positive youth development (PYD) are relatively new areas of exploration. These efforts can help us to better understand how youth can be encouraged to not only avoid problem behavior but also to grow up to be helpful, involved citizens in communities.

2.4.b. Social-Emotional Learning (SEL) approaches

- ★ Jones, S. M., Brown, J. L., Hoglund, W. L. G., & Aber, J. L. (2010). A school-randomized clinical trial of an integrated social-emotional learning and literacy intervention: Impacts after 1 school year. *Journal of Consulting and Clinical Psychology, 78*(6), 829-842.

Objective: To report experimental impacts of a universal, integrated school-based intervention in social-emotional learning and literacy development on change over 1 school year in 3rd-grade children's social-emotional, behavioral, and academic outcomes. **Method:** This study employed a school-randomized, experimental design and included 942 3rd-grade children (49% boys; 45.6% Hispanic/Latino, 41.1% Black/African American, 4.7% non-Hispanic White, and 8.6% other racial/ethnic groups, including Asian, Pacific Islander, Native American) in 18 New York City public elementary schools. Data on children's social-cognitive processes (e.g., hostile attribution biases), behavioral symptomatology (e.g., conduct problems), and literacy skills and academic achievement (e.g., reading achievement) were collected in the fall and spring of 1 school year. **Results:** There were main effects of the 4Rs Program after 1 year on only 2 of the 13 outcomes examined. These include children's self-reports of hostile attributional biases (Cohen's $d = 0.20$) and depression ($d = 0.24$). As expected based on program and developmental theory, there were impacts of the intervention for those children identified by teachers at baseline with the highest levels of aggression ($d = 0.32-0.59$) on 4 other outcomes: children's self-reports of aggressive fantasies, teacher reports of academic skills, reading achievement scaled scores, and children's attendance. **Conclusions:** This report of effects of the 4Rs intervention on individual children across domains of functioning after 1 school year represents an important first step in establishing a better understanding of what is achievable by a schoolwide intervention such as the 4Rs in its earliest stages of unfolding. The first-year impacts, combined with the knowledge of sustained and expanded effects after a second year, provide evidence that this intervention may be initiating positive developmental cascades both in the general population of students and among those at highest behavioral risk.

Program Profile: 4Rs Program

The 4Rs Program is a universal, school-based intervention for Grades K–5 focused on social–emotional learning and literacy development. The 4Rs Program focuses on changing underlying mental and interpersonal processes that lead to aggression and violence when they are still in the formative stage.

(Jones et al., 2010)

Program Profile: PATHS

PATHS (Promoting Alternative Thinking Strategies) is a comprehensive, developmentally-based curriculum for teachers to use in their classrooms with latency-aged children throughout the elementary school years. Some of the major goals of PATHS include teaching emotional literacy, improving social competence, alleviating and preventing emotional distress and behavior problems, reducing risk factors, improving classroom atmosphere, enhancing student-teacher relationships, and promoting optimal development.

(Kusche, 2002)

Kusche, C. A. (2002). Psychoanalysis as prevention: Using PATHS to enhance ego development, object relationships, & cortical integration in children. *Journal of Applied Psychoanalytic Studies*, 4(3), 283-301.

Psychoanalysis has improved the lives of many individuals, as well as humanity in general. However, the great potential for psychoanalysis to vastly enhance cultural evolution has not yet been actualized. Employing psychoanalysis in the service of prevention could assist with this goal if it could be made "exportable," "user-friendly," and available to a large segment of the population. PATHS (Promoting Alternative THinking Strategies) is one specific application of psychoanalytic prevention that was developed with these objectives in mind. PATHS is a comprehensive, developmentally-based curriculum for teachers to use in their classrooms with latency-aged children throughout the elementary school years. Some of the major goals of PATHS include teaching emotional literacy, improving social competence, alleviating and preventing emotional distress and behavior problems, reducing risk factors, improving classroom atmosphere, enhancing student-teacher relationships, and promoting optimal development. The present paper provides an overview of the content and process of PATHS, discusses PATHS as psychoanalytic prevention, and summarizes research conducted with PATHS over the past 15 years.

Lewis, K. M., et al. (2012). Direct and mediated effects of a social-emotional and character development program on adolescent substance use. *The International Journal of Emotional Education*, 4(1), 56-78.

Mitigating and preventing substance use among adolescents requires approaches that address the multitude of factors that influence this behavior. Such approaches must be tested, not only for evidence of empirical effectiveness, but also to determine the mechanisms by which they are successful. The aims of the present study were twofold: 1) To determine the effectiveness of a school-based social-emotional and character development (SECD) program, Positive Action (PA), in reducing substance use (SU) among a sample of U.S. youth living in a low-income, urban environment, and 2) to test one mechanism by which the program achieves its success. We used longitudinal mediation analysis to test the hypotheses that: 1) students attending PA intervention schools engage in significantly less SU than students attending control schools, 2) students attending PA intervention schools show significantly better change in SECD than students attending control schools, and 3) the effect of the PA intervention on SU is mediated by the change in SECD. Analyses revealed program effects on both SECD and SU, a relationship between SECD and SU, and the effects of PA on SU were completely mediated by changes in SECD. Future research directions and implications for school-based social-emotional and character development efforts and substance use prevention are addressed.

Program Profile: Positive Action

The Positive Action program is designed to promote a healthy self-concept and to establish positive actions for the body and mind. The program focuses on self-management, social skills, character, mental health and goal setting. Each grade has approximately 140 sequenced lessons which include a step-by-step script organized around themes. The underlying philosophy of the program is you feel good about yourself and do positive actions (positive self-concept) and there is a positive way (positive actions) to do everything. The program also includes components to support classroom-wide, school-wide, family and community involvement.

Lewis et al., 2012

Merrell, K. W., Juskelis, M. P., Tran, O. K., & Buchanan, R. (2008). Social and emotional learning in the classroom: Evaluation of strong kids and strong teens on students' social-emotional knowledge and symptoms. *Journal of Applied School Psychology, 24*(2), 209-224.

This article describes the results of three pilot studies that were conducted to evaluate the recently developed Strong Kids and Strong Teens social-emotional learning programs in increasing students' knowledge of healthy social-emotional behavior and decreasing their symptoms of negative affect and emotional distress. The first study included 120 middle school students (in grade 5) from a general education student population. The second study included 65 general education students in grades 7-8. The third study included 14 high school students (grades 9-12) from a regional special education high school, who were identified as having emotional disturbance. The three groups participated in either the Strong Kids (groups 1 and 2) or Strong Teens (group 3) programs, receiving one-hour lessons and associated assignments once a week for 12 weeks. Social-emotional knowledge and negative emotional symptoms of participants were assessed using brief self-report measures, in pretest-posttest intervention designs. All three studies showed that, following participation in the respective programs, students evidenced statistically significant and clinically meaningful changes in desired directions on the target variables. Implications for future research are discussed, as is the importance of social and emotional learning as a prevention and intervention strategy to promote mental health among students in schools.

Program Profile: Strong Kids/ Strong Teens

Strong Kids and Strong Teens social and emotional learning programs are semiscripted SEL curricula, focusing on prevention and early intervention of internalizing problems, promotion of social and emotional competence, and teaching students skills to increase their resilience to life stressors.

(Merrell et al., 2008)

2.5. School-based prevention programs (32)

2.5.a. Curriculum-based school programs

Berridge, B. J., Hall, K., Dillon, P., Hides, L., & Lubman, D. I. (2011). MAKINGtheLINK: A school-based health promotion programme to increase help-seeking for cannabis and mental health issues among adolescents. *Early Intervention in Psychiatry*, 5(1), 81-88.

Aim: There is increasing concern regarding the use of cannabis among adolescents, especially given recent evidence highlighting its link with later mental disorders. Encouraging young people with mental health or drug issues to seek professional help is an important early intervention strategy; however, adolescents are typically reluctant to do so and instead turn to their peers for help. Peers may not have the skills or knowledge required to assist their friends to access professional help. This paper describes the development and evaluation of MAKINGtheLINK, a school-based health promotion programme that promotes help-seeking behaviour for mental health and cannabis use issues among young people. **Methods:** The MAKINGtheLINK programme was piloted with 182 Year 10 students at a secondary school in Melbourne, Australia. Forty teachers received the MAKINGtheLINK staff professional development session. **Results:** The delivery of the MAKINGtheLINK programme was found to be both acceptable and feasible within a school setting. Students and teachers described it as a fun, engaging, helpful and important programme. Students reported increased confidence and awareness of how to seek help for themselves or a friend, and teachers indicated increased confidence and awareness of how to assist students to seek help for cannabis use and/or mental health problems. **Conclusions:** MAKINGtheLINK was successfully implemented within the school curriculum. This appears to be the first school-based programme that specifically focuses on facilitating professional help-seeking for cannabis use and mental health problems among young people, and demonstrates that utilizing peer models for help-seeking is a valuable resource for early intervention initiatives.

Program Profile: MAKINGtheLINK

MAKINGtheLINK is a school-based health promotion programme that promotes help-seeking behaviour for mental health and cannabis use issues among young people. Most of the activities are based on fictional scenarios or 'vignettes' and cover topics such as recognizing when a friend needs help and what types of helpers are available. There are 5 class activities and a DVD multimedia component.

(Berridge et al., 2011)

★★ Botvin, G. J., & Griffin, K. W. (2004). Life Skills Training: Empirical Findings and Future Directions. *The Journal of Primary Prevention*, 25(2), 211-232.

Alcohol, tobacco, and other drug use are important problems that typically begin during adolescence. Fortunately, substantial progress has been made in developing effective drug abuse prevention programs for youth over the past two decades. The Life Skills Training (LST) program is an effective primary prevention program for adolescent drug abuse that addresses the risk and protective factors associated with drug use initiation and teaches skills related to social resistance and enhancing social and personal competence. This paper provides an overview of the theoretical underpinnings of the LST program, along with a description of the program's core components, materials, and methods. Findings from over two decades of evaluation research are reviewed, including results from a series of small scale efficacy studies and large scale effectiveness trials

with a variety of adolescent populations. These studies have demonstrated positive behavioral effects of LST on smoking, alcohol, marijuana use as well as the use of multiple substances and illicit drugs, with prevention effects lasting up until the end of high school. Further research is needed to understand the mediating mechanisms through which prevention programs such as LST are effective, and ways to widely disseminate research-based programs into schools.

- ★★ Botvin, G. J., Griffin, K. W., Diaz, T., Scheier, L. M., Williams, C., & Epstein, J. A. (2000). Preventing illicit drug use in adolescents: Long-term follow-up data from a randomized control trial of a school population. *Addictive Behaviors, 25*(5), 769-774.

National survey data indicate that illicit drug use has steadily increased among American adolescents since 1992. This upward trend underscores the need for identifying effective prevention approaches capable of reducing the use of both licit and illicit drugs. The present study examined long-term follow-up data from a large-scale randomized prevention trial to determine the extent to which participation in a cognitive-behavioral skills-training prevention program led to less illicit drug use than for untreated controls. Data were collected by mail from 447 individuals (mean age 18 yrs) who were contacted after the end of the 12th grade, 6.5 years after the initial pretest. Results indicated that students who received the prevention program (Life Skills Training) during junior high school reported less use of illicit drugs than controls. These results also support the hypothesis that illicit drug use can be prevented by targeting the use of gateway drugs such as tobacco and alcohol

- Botvin, G. J., & Griffin, K. W. (2007). School-based programmes to prevent alcohol, tobacco and other drug use. *International Review of Psychiatry, 19*(6), 607-615.

Substance use and abuse are important public health problems in the USA and throughout the world. In many developed countries, the initial stages of substance use typically include experimentation with alcohol, tobacco, or marijuana with one's peer group during adolescence. While there have been gradual decreases in the use of these substances in recent years among youth in the USA and other countries, increases have been observed in the use and misuse of other substances, such as the misuse of prescription drugs and over-the-counter cough medications in the USA. From a developmental perspective, data shows that rates of alcohol, tobacco, marijuana, and other illicit drug use typically escalate during adolescence and peak during young adulthood, corresponding with the increased freedom and independence of this time of life. Substance use decreases for most young people as they take on adult responsibilities, although a proportion will continue or increase their use and develop substance use problems. Given what is known about the onset and progression of substance use, implementing preventive interventions during early adolescence is critical. Most drug prevention or education programmes take place in school settings. A variety of theory-based school-based drug prevention programmes have been developed and tested. The most effective programmes are delivered interactively and teach skills to help young people refuse drug offers, resist pro-drug influences, correct misperceptions that drug use is normative, and enhance social and personal competence skills. A key challenge is to

Program Profile: Life Skills Training Program

The Life Skills Training (LST) program is an effective primary prevention program for adolescent drug abuse that addresses the risk and protective factors associated with drug use initiation and teaches skills related to social resistance and enhancing social and personal competence. LST emphasizes drug resistance skills training within the context of a generic personal and social skills training model.

(Botvin & Griffin, 2004)

identify mechanisms for the wide dissemination of evidence-based drug preventive interventions and ways to train providers to implement programmes effectively and thoroughly.

Caldwell, L. L., Baldwin, C. K., Walls, T., & Smith, E. (2004). Preliminary Effects of a Leisure Education Program to Promote Healthy Use of Free Time among Middle School Adolescents. *Journal of Leisure Research*, 36(3), 310-335.

This paper documents the development and first year evaluation of the TimeWise: Learning Lifelong Leisure Skills curriculum, which aims to increase positive free time use, and mitigate or prevent the initiation of substance use and abuse. The sample was comprised of 634 school youth attending nine middle schools in a rural area in eastern United States. Results from self-report data indicate that students who received the TimeWise curriculum reported being less amotivated and more motivated by identified and introjected forms of motivation. Students in TimeWise reported being better able to restructure boring situations into something more interesting; having higher levels of decision making skills, initiative, community awareness; and participating in new interests, sports, and nature-based activities.

Copeland, A. L., Williamson, D. A., Kendzor, D. E., Businelle, M. S., Rash, C. J., Kulesza, M., et al. (2009). A school-based alcohol, tobacco, and drug prevention program for children: The Wise Mind study. *Cognitive Therapy and Research*, 34(6), 522-532.

The Wise Mind pilot study compared the efficacy of an environmental Alcohol/Tobacco/Drug (ATD) prevention program with an obesity prevention program of Healthy Eating and Exercise (HEE) as an active control group for modifying expectancies related to alcohol and tobacco use in children. Four Catholic schools (N = 670 students) were randomly assigned to the treatment conditions (2 schools in each condition). Children were followed over two academic years. At an 18-month assessment, the ATD program resulted in healthier alcohol and tobacco expectancies as compared to the HEE program. Children in the ATD program did not differ from those in the HEE program in alcohol, tobacco, or drug use prevalence. However, prevalence rates of use were very low across all schools. Findings can benefit future prevention efforts with young children and suggest that strategies for preventing continued smoking in this age group are needed.

Program Profile: TimeWise

The TimeWise curriculum-based intervention was developed to promote personal development through healthy leisure engagement and prevent the onset of substance abuse and other unhealthy behaviour among rural middle school youth. TimeWise was designed so that students systematically learned about their own leisure and how to regulate or take action to achieve optimal experiences.

(Caldwell et al., 2004)

Program Profile: Wise Mind

The “Wise Mind” concept represents the idea that with knowledge and environmental changes, students could make “wise” decisions about substance use/abuse. The environmental changes were construed as large-scale modifications that altered the ecology of the school environments, including policy, personal, social, cultural, and physical environmental changes. There was also a family empowerment component.

(Copeland et al., 2009)

Dusenbury, L., Hansen, W. B., Jackson-Newsom, J., Pittman, D. S., Wilson, C. V., Nelson-Simley, K., et al. (2010). Coaching to enhance quality of implementation in prevention. *Health Education, 110*(1), 43-60.

Purpose - The purpose of this paper is to describe the topics covered by coaches assisting teachers implementing a research-based drug prevention program and explore how coaching affects student outcomes. **Design/methodology/approach** - The All Stars drug prevention curriculum is implemented by 16 urban teachers who received four coaching sessions. Two coaches participated. Coaches are interviewed by investigators to assess topics covered. Students completed pre-test-post-test measures of mediators and substance use behaviours. **Findings** - The average teacher is coached on 11.7 different topics, out of a total of 23 topics. Coaching topics most heavily emphasized include: introduction and wrap up; time management; general classroom management; teacher's movement around the class; asking open-ended questions; using students' questions, comments and examples to make desired points; general preparation; engaging high-risk youth; reading from the curriculum; implementing activities correctly; focusing on objectives and goals; maintaining a focus on the task; and improving depth of understanding. Seven coaching topics are found to relate to changes in student mediators and behaviour. **Research limitations/implications** - The current study is exploratory. Future research should explore how teachers develop the particular skills required by prevention programs and how coaches can assist them. **Practical implications** - Five levels of skill development are postulated, which coaches may address: fundamental teaching skills, mechanics of program delivery, development of an interactive teaching style, effective response to student input, and effective tailoring and adaptation. **Originality/value** - The paper is one of a very few studies that explores how coaching impacts outcomes in substance abuse prevention.

- ★ Eisen, M., Zellman, G. L., Massett, H. A., & Murray, D. M. (2002). Evaluating the Lions-Quest 'Skills for Adolescence' drug education program: First-year behavior outcomes. *Addictive Behaviors, 27*(4), 619-632.

Thirty-four schools (n=7426 consented sixth graders, 71% of the eligible population) were randomized to conditions to test the hypothesis that "Skills for Adolescence" (SFA) is more effective than standard care in deterring and delaying substance use through middle school. Females comprised 52% of the sample with a mean age of 11 yrs at baseline. One-year posttest data were collected from 6239 seventh graders (84% of those eligible). Initiation of "ever" and "recent" use of five substances for baseline nonusers and changes in recent use for baseline users by experimental condition were compared using mixed model regression to control for school clustering. For pretest nonusers, recent cigarette smoking was lower for SFA than controls ($P < .05$), as was lifetime marijuana use ($P < .06$). There were also three Treatment x Ethnicity interactions around drinking behaviors. Hispanics in SFA were less likely to ever and recently drink, and to recently binge drink than Hispanic controls; there were no treatment differences among non-Hispanics. For baseline users, there were three significant SFA delays in transition to experimental

Program Profile: Lions-Quest 'Skills for Adolescence'

The Lions-Quest Skills for Adolescence (SFA), is a multicomponent life skills education program for children in grades 6-8. Included are "Making Healthy Choices" units covering drug, alcohol and tobacco use; interactive, student-focused lessons; sessions on anger, conflict and stress management; and cross-curricular activities to encourage team-teaching. There is one lesson per week and three lessons per month, for a total of 30 lessons per school year.

(Eisen et al., 2002;
www.lions-quest.org)

or recent use of more "advanced" substances: drinking to smoking, drinking to marijuana use, and binge drinking to marijuana.

- ✓ Fagan, A. A., & Mihalic, S. (2003). Strategies for enhancing the adoption of school-based prevention programs: Lessons learned from the blueprints for violence prevention replications of the Life Skills Training program. *Journal of Community Psychology*, 31(3), 235-253.

Widespread implementation of effective programs is unlikely to affect the incidence of violent crime unless there is careful attention given to the quality of implementation, including identification of the problems associated with the process of implementation and strategies for overcoming these obstacles. Here the results of a process evaluation focused on discovering common implementation obstacles faced by schools implementing the Life Skills Training (LST) drug prevention program are described. The evaluation was conducted by the Center for the Study and Prevention of Violence (CSPV) under the Blueprints for Violence Prevention Initiative in conjunction with the designer of the LST program, Dr. Gilbert Botvin and his dissemination agency, National Health Promotion Associates (NHPA), and was funded by the Office of Juvenile Justice and Delinquency Prevention (OJJDP).

- ★★ Faggiano, F., Minozzi, S., Versino, E., & Buscemi, D. (2014). Universal school-based prevention for illicit drug use. *Cochrane Database of Systematic Reviews*(12).

Drug addiction is a long-term problem caused by an uncontrollable compulsion to seek drugs. It is a serious and growing problem. This makes it important to reduce the number of young people first using drugs, and to prevent the transition from experimental use to addiction. Schools offer the most systematic and efficient way of reaching them.

School programmes are categorised into four main groups:

1. Knowledge-focused curricula(courses of study) give information about drugs, assuming that information alone will lead to changes in behaviour.
2. Social competence curricula are based on the belief that children learn drug use by modelling, imitation and reinforcement, influenced by the child's pro-drug cognitions (perceptions), attitudes and skills. These programmes use instruction, demonstration, rehearsal, feedback and reinforcement, etc. They teach generic self management personal and social skills, such as goal-setting, problem-solving and decision-making, as well as cognitive skills to resist media and interpersonal influences, to enhance self esteem, to cope with stress and anxiety, to increase assertiveness and to interact with others.
3. Social norms approaches use normative education methods and anti-drugs resistance skills training. These include correcting adolescents' overestimates of the drug use rates of adults and adolescents, recognising high-risk situations, increasing awareness of media, peer and family influences, and teaching and practising refusal skills.
4. Combined methods draw on knowledge-focused, social competence and social influence approaches together.

Review question: We reviewed the evidence about the effect of school-based prevention interventions on reducing the use and intention to use drugs and increasing knowledge about the harms of drugs in primary or secondary school pupils.

Study characteristics: We found a total of 51 studies (73 reports) with 127,146 participants involved. Twenty-seven studies compared 28 programmes adopting a social competence approach versus usual curricula, eight studies compared a social influence approach versus usual curricula, seven studies compared a combined approach versus usual curricula, two studies compared a programme based on knowledge only versus usual curricula, four studies compared other approaches versus

usual curricula, seven studies assessed 11 different comparisons. They were mainly delivered in sixth and seven grade pupils (12 to 13 years). Most of the trials were conducted in the USA. The interventions were mainly interactive and five of them lasted one school year, 18 more than one school year and 29 less than one school year. In all other cases the duration was not clearly specified. Follow-up ranged from immediately after the end of the intervention up to 10 years. Key results: Programmes based on social competence were mostly represented and showed a similar tendency to reduce the use of substances and the intention to use, and to improve knowledge about drugs, compared to usual curricula, but the effects were seldom statistically significant. Programmes based on social influence showed weak effects that were rarely significant. Programmes based on a combination of social competence and social influence approaches seemed to have better results than the other categories, with effective results in preventing marijuana use at longer follow-up, and in preventing any drug use. Knowledge-based interventions showed no differences in outcomes, apart from knowledge, which was improved among participants involved in the programme.

Quality of evidence: The quality of evidence was moderate for some outcomes and comparisons, and was high for others. Most of the studies did not report adequately the way in which the study was conducted. Moreover, many studies did not report their results in a way that allowed them to be combined in a statistical summary.

Fraguela, J. A., Martín, Á. L., & Trinanés, E. R. (2003). Drug abuse prevention in the school: Four-year follow-up of a programme. *Psychology in Spain*, 7, 29-38.

This work presents the results obtained on applying a drug-abuse prevention programme, an adaptation of Botvin's "Life skills training" programme. The initial sample comprised 1029 adolescents from five secondary schools in the city of Santiago de Compostela (NW Spain), distributed in three experimental conditions, two treatment, in which the programme was applied by teachers or by members of the research team, and a control condition. The article presents the results on the use of different drugs over four years of follow-up. The results obtained show how for the treatment condition lower levels of tobacco and alcohol consumption are found after a year of follow-up. In later evaluations these effects fade, but important differences emerge in the use of other drugs, such as cannabis, tranquillizers or amphetamines.

- ★ Gabrhelik, R., Duncan, A., Miovsky, M., Furr-Holden, C. D. M., Stastna, L., & Jurystova, L. (2012). 'Unplugged': A school-based randomized control trial to prevent and reduce adolescent substance use in the Czech Republic. *Drug and Alcohol Dependence*, 124(1-2), 79-87.

Background: The Czech Unplugged Study, inspired by the European Drug Addiction Prevention Trial, is a prospective, school-based, randomized controlled prevention trial designed to reduce the risk of alcohol, tobacco, inhalant, and illegal drug use in 6th graders in the Czech Republic. The intervention uses the comprehensive social influence model to affect alcohol and drug using norms among primary school students. Methods: Descriptive statistics and chi-square analyses were used to assess differences between the experimental and control groups on demographic characteristics and study outcomes. Multilevel techniques were used to take the hierarchical structure of the data into account. Prevalence odds ratios using the Bonferroni correction were calculated to assess the differences between the experimental (N = 914) and control (N = 839) groups on each outcome 1, 3, 12, 15, and 24 months after the end of the intervention. Results: Multilevel analysis using the Bonferroni correction showed statistically significant intervention effects at the final follow-up for any smoking (OR = 0.75, 99.2% CI 0.65–0.87), daily smoking (OR = 0.62, 99.2% CI 0.48–0.79), heavy smoking (OR = 0.48, 99.2% CI 0.28–0.81), any cannabis use

(OR = 0.57 99.2% CI 0.42–0.77), frequent cannabis use (OR = 0.57, 99.2% CI 0.36–0.89), and any drug use (OR = 0.78, 99.2% CI 0.65–0.94). Conclusions: This study adds new evidence on the effectiveness of the Unplugged school-based prevention program for primary school students in the Czech Republic.

Giles, S. M., Harrington, N. G., & Fearnow-Kenney, M. (2001). Evaluation of the All Stars program: Student and teacher factors that influence mediators of substance use. *Journal of Drug Education, 31*(4), 385-397.

Examined the relationship between students' perceptions of the All Stars drug abuse prevention program and behavior changes. 30 All Stars teachers and 1,092 6th and 7th grade students (mean age 12.6 yrs) who completed the All Stars program were assessed concerning the 4 mediating variables of normative beliefs, ideals, commitment, and bonding and the 3 targeted behaviors of drug use, sexual activity, and violence. Student Ss reported perceptions of the All Stars program and their All Stars teachers. Results show that the 3 factors of program enjoyment, student engagement, and teacher relationship predicted changes in the 4 mediating variables. Student engagement was related to greater changes in student idealism, commitment, and bonding. Program enjoyment was related to positive changes in student idealism and normative beliefs. Teacher relationship exerted little effect on the program variables. Students who were taught All Stars by regular classroom teachers reported greater program enjoyment and student engagement than did students taught by health education specialists.

- ✓ Gorman, D. M. (2002). The 'science' of drug and alcohol prevention: The case of the randomized trial of the Life Skills Training program. *International Journal of Drug Policy, 13*(1), 21-26.

Changes requiring greater accountability among federal agencies in the US have led to an increased emphasis on what are called "science-based" or "research-based" interventions in recent years. The most widely advocated of these prevention interventions is the Life Skills Training (LST) program, the effectiveness of which, its supporters argue, has been demonstrated using rigorous research methods. The research study that has attracted most attention is the randomized trial conducted with white middle-class adolescents in New York State, as this purports to demonstrate that the LST program can reduce alcohol and illicit drug use 6 yrs after initial implementation. In contrast to the advocates for the LST program, I argue that this longitudinal trial does not meet the rigorous methodological standards claimed on its behalf. Indeed, it violates one of the fundamental principles of a randomized trial by restricting key analyses to selective subsamples of the experimental group. I estimate that about 7.5% of those who initially received the LST intervention in the trial were included in the most recent set of analyses reported. This falls considerably short of the proportion of intervention group participants required at follow-up in a methodologically sound controlled trial.

Guo, J.-L., Lee, T.-C., Liao, J.-Y., & Huang, C.-M. (2015). Prevention of Illicit Drug Use Through a School-Based Program: Results of a Longitudinal, Cluster-Randomized Controlled Trial. *Journal of Adolescent Health, 56*(3), 314-322.

Purpose: To evaluate the long-term effects of an illicit drug use prevention program for adolescents that integrates life skills into the theory of planned behavior. **Methods:** We conducted a cluster-randomized trial in which 24 participating schools were randomized to either an intervention group (12 schools, n = 1,176 students) or a control group (12 schools, n = 915 students). Participants were grade 7 students. The intervention comprised a main intervention of 10 sessions and two booster interventions. Booster 1 (four sessions) and booster 2 (two sessions) were performed at 6 months and 12 months, respectively, after completion of the main intervention. Assessments were made at baseline, after the main intervention, and after each booster session using specific questionnaires for measuring participants' attitudes, subjective norms, perceived behavioral control, and life skills. **Results:** Retention rates were 71.9% (845/1,176) in the intervention group and 90.7% (830/915) in the control group after the 12-month follow-up. A significantly lower proportion of intervention group participants reported illicit drug use after the first and second booster sessions compared with control group participants (.1% vs. 1.7% and .2% vs. 1.7%, respectively; both $p < .05$). Attitudes, subjective norms, perceived behavioral control, life skills, and behavioral intention scores of the intervention group were significantly higher than those of control group after the first and second booster sessions (all $p < .001$), suggesting that intervention group students tended to avoid drug use. **Conclusions:** A drug use prevention program integrating life skills into the theory of planned behavior may be effective for reducing illicit drug use and improving planned behavior-related constructs in adolescents.

- ★ Harrington N, Hoyle R, Giles SM, Hansen WB (2000). The All-Stars Prevention Program. In W. B. Hansen, S. M. Giles, & M. D. Fearnow-Kenney (Eds.), *Improving Prevention Effectiveness*. Greensboro, NC: Tanglewood Research, pp. 203-212.

All Stars was designed with the intent of being data-driven. The specific data which have driven the development of this program are summarized in other chapters in this book, including the chapter by Donaldson, Hansen & Graham (1999), Fearnow-Kenney, Hansen, and McNeal (1999) and the chapter by Ennett (1999). The program has several goals. First, *All Stars* seeks to keep youths from experimenting with and regularly using or abusing alcohol, tobacco, marijuana, and other substances. The program also attempts to keep adolescents from becoming sexually active. The final behavioral goal of the program is to keep youths from becoming violent and destructive.

Program Profile: All Stars

All Stars seeks to keep youths from experimenting with and regularly using or abusing alcohol, tobacco, marijuana, and other substances. All Stars shapes normative beliefs by correcting students' perceptions of what their group thinks is normal or acceptable. Through programmed activities and discussion, participants see that the majority of the people in their peer group actually act in conventional ways and believe in conventional standards for behavior.

(Harrington et al., 2000)

- ★★ Kellam, S. G., Mackenzie, A. C. L., Brown, C. H., Poduska, J. M., Wang, W., Petras, H., & Wilcox, H. C. (2011). The Good Behavior Game and the Future of Prevention and Treatment. *Addiction Science & Clinical Practice, 6*(1), 73-84.

The Good Behavior Game (GBG), a universal classroom behavior management method, was tested in first- and second-grade classrooms in Baltimore beginning in the 1985–1986 school year. Follow-up at ages 19–21 found significantly lower rates of drug and alcohol use disorders, regular smoking, antisocial personality disorder, delinquency and incarceration for violent crimes, suicide ideation, and use of school-based services among students who had played the GBG. Several replications with shorter follow-up periods have provided similar early results. We discuss the role of the GBG and possibly other universal prevention programs in the design of more effective systems for promoting children’s development and problem prevention and treatment services.

- ★ Lennox, R. D., & Cecchini, M. A. (2008). The NARCONON drug education curriculum for high school students: A non-randomized, controlled prevention trial. *Substance Abuse Treatment, Prevention, and Policy*, 3.

Background: An estimated 13 million youths aged 12 to 17 become involved with alcohol, tobacco and other drugs annually. The number of 12- to 17-year olds abusing controlled prescription drugs increased an alarming 212 percent between 1992 and 2003. For many youths, substance abuse precedes academic and health problems including lower grades, higher truancy, drop out decisions, delayed or damaged physical, cognitive, and emotional development, or a variety of other costly consequences. For thirty years the Narconon program has worked with schools and community groups providing single educational modules aimed at supplementing existing classroom-based prevention activities. In 2004, Narconon International developed a multimodule, universal prevention curriculum for high school ages based on drug abuse etiology, program quality management data, prevention theory and best practices. The curriculum was reviewed and its rationale in order to test its ability to change drug use behavior, perceptions of risk/benefits, and general knowledge. Methods: After informed parental consent, approximately 1000 Oklahoma and Hawai'i high school students completed a modified Center for Substance Abuse Prevention (CSAP) Participant Outcome Measures for Discretionary Programs survey at three testing points: baseline, one month later, and six month follow-up. Schools assigned to experimental conditions scheduled the Narconon curriculum between the baseline and one-month follow-up test; schools in control conditions received drug education after the six-month follow-up. Student responses were analyzed controlling for baseline differences using analysis of covariance. Results: At six month follow-up,

Program Profile: The Good Behavior Game

The Good Behavior Game was developed to help teachers manage classrooms without having to respond on an individual basis each time a student disrupted class. It is designed for primary students. Early in the first grade, the teacher displays a poster with the list of rules for proper student behaviour. Toward the end of the first quarter, teachers divide students into three teams that are balanced with respect to gender, aggressive and disruptive behaviours and shy or isolated behaviour. The ‘game’ is played with teams getting rewarded when all members behave during the interval. As the year progresses, the game length increases and also includes individual working time.

Lewis et al., 2012

Program Profile: Narconon

The eight module Narconon drug education curriculum for high school ages incorporates a unique combination of prevention strategies with content addressing tobacco, alcohol, marijuana and common "hard drugs." Health motivation, social skills, social influence recognition and knowledge-developing activities address a number of risk and protective factors in the etiology of substance abuse and addiction.

(Lennox & Cecchini, 2008)

youths who received the Narconon drug education curriculum showed reduced drug use compared with controls across all drug categories tested. The strongest effects were seen in all tobacco products and cigarette frequency followed by marijuana. There were also significant reductions measured for alcohol and amphetamines. The program also produced changes in knowledge, attitudes and perception of risk. Conclusion: The eight-module Narconon curriculum has thorough grounding in substance abuse etiology and prevention theory. Incorporating several historically successful prevention strategies this curriculum reduced drug use among youths.



LeNoue, S. R., & Riggs, P. D. (2016). Substance abuse prevention. *Child and Adolescent Psychiatric Clinics of North America*.

Substance use disorders account for approximately 6% of deaths worldwide and cost about \$700 billion in the United States. Approximately 80% of drug users begin using during adolescence, underscoring the public health importance of effective substance prevention programs for youth and families. Prevention science designates 3 intervention categories: (1) universal prevention, targeting all individuals in the population, (2) selective interventions, targeting high-risk groups, and (3) indicated prevention interventions for youth with risk-taking behaviors. School-based and non-school-based interventions are reviewed, as well as the limitations of existing research, gaps in access and availability, and directions for future research and development.

Parker, A. E., Kupersmidt, J. B., Mathis, E. T., Scull, T. M., & Sims, C. (2014). The impact of mindfulness education on elementary school students: Evaluation of the Master Mind program. *Advances in School Mental Health Promotion*, 7(3), 184-204.

Children need to be equipped with the skills to respond effectively to stress and prevent poor decision-making surrounding alcohol and tobacco use. Training and practice in mindfulness is one possible avenue for building children's skills. Recent research has revealed that mindfulness education in the classroom may play a role in enhancing children's self-regulatory abilities. Thus, the goal of the current study was to extend existing research in mindfulness education in classrooms and conduct an assessment of the feasibility and effectiveness of a new mindfulness education, substance abuse prevention program for fourth- and fifth-grade children (Master Mind). Two elementary schools were randomly assigned to be an intervention group (n = 71) or wait-list control group (n = 40). Students in the intervention group were taught the four-week Master Mind program by their regular classroom teachers. At pre- and post-intervention time points, students completed self-reports of their intentions to use substances and an executive functioning performance task. Teachers rated students on their behavior in the classroom. Findings revealed that students who participated in the Master Mind program, as compared to those in the wait-list control condition, showed significant improvements in executive functioning skills (girls and boys), as well as a marginally significant increase in self-

Program Profile: Mastermind

The Mastermind program is divided into four sections representing the four foundations of mindfulness.

- Awareness of the body
- Awareness of feelings
- Awareness of thoughts
- Awareness of relationships

Throughout each of the four sections of the program, students are provided with opportunities to discuss how mindfulness practices might assist them when facing decisions about whether to engage in risky unhealthy behaviours.

(Parker et al., 2014)

control abilities (boys only). In addition, significant reductions were found in aggression and social problems (girls and boys), as well as anxiety (girls only). No significant differences across groups were found for intentions to use alcohol or tobacco. Teachers implemented the program with fidelity; both teachers and students positively rated the structure and content of the Master Mind program, providing evidence of program satisfaction and feasibility. Although generalization may be limited by the small sample size, the findings suggest that mindfulness education may be beneficial in increasing self-regulatory abilities, which is important for substance abuse prevention.

- ✓ Sloboda, Z., Pyakuryal, A., Stephens, P. C., Teasdale, B., Forrest, D., Stephens, R. C., et al. (2008). Reports of substance abuse prevention programming available in schools. *Prevention Science*, 9(4), 276-287.

Evaluations of school-based substance abuse prevention programs with schools or school districts randomly assigned to either the treatment or control condition have demonstrated effective strategies over the past 30 years. Although control schools were never considered "pure" (i.e., no other interventions were being offered), school-based programming in the 1980s did not include evidence-based interventions. Since the late 1990s, funding agencies have required schools either to select programming from approved lists of prevention strategies or to demonstrate the efficacy of the strategies that would be used. This has increased the number of schools delivering evidence-based programs to their students. As a result, "treatment as usual" is more challenging to researchers. This paper describes exposure to prevention programming as reported by 204 school administrators from 83 districts and their 19,200 students who are participating in the Adolescent Substance Abuse Prevention Study, a national randomized evaluation trial of the program, Take Charge of Your Life. In order to determine the extent of student exposure to prevention programming in both the control and treatment schools, data were collected in each of the 5 years of the study from two sources: principals and prevention coordinators and from students. The data provided by the principals and prevention coordinators indicate that the vast majority of schools assigned to the control condition offered students drug prevention programming. This finding has implications for the evaluation of Take Charge of Your Life but also for other evaluation studies. The students were asked questions regarding participation in drug education posed on annual surveys. When their responses were compared to the reports from their school principals and prevention coordinators, it was found that the students underreported exposure to drug education. A follow-up qualitative study of a sample of students suggests the need for rewording of the questions for students in future studies. The implications of these findings for evaluation studies are discussed.

Program Profile: Take Charge of Your Life

Take Charge of Your Life specifically targets normative beliefs regarding the perceived prevalence of substance use among teens, consequences of substance use, and strengthening life skills including decision-making, communications, and refusal skills. The curriculum is based on a model of prevention that suggests that challenging existing beliefs through the use of objective data (e.g., survey data from MTF) leads students to an adjustment in their perceptions of the rates of peer use and in the level of acceptance of substance use by those who are important to them.

(Sloboda et al., 2008)

Wolfe, D. A., Crooks, C. V., Chiodo, D., Hughes, R., & Ellis, W. (2012). Observations of adolescent peer resistance skills following a classroom-based healthy relationship program: A post-intervention comparison. *Prevention Science, 13*(2), 196-205.

This study examines peer resistance skills following a 21-lesson classroom-based intervention to build healthy relationships and decrease abusive and health-risk behaviors among adolescents. The Fourth R instructs students in positive relationship skills, such as negotiation and delay, for navigating challenging peer and dating scenarios. Observational data from 196 grade 9 students participating in a larger cluster randomized controlled trial were used to evaluate post-intervention acquisition of peer resistance skills. Pairs of students engaged in a role play paradigm with older student actors, where they were subjected to increasing pressure to comply with peer requests related to drugs and alcohol, bullying, and sexual behavior. Specific and global measures of change in peer resistance responses were obtained from two independent sets of observers, blinded to condition. Specific peer resistance responses (negotiation, delay, yielding to pressure, refusal, and compliance) were coded by research assistants; global peer resistance responses were rated by teachers from other schools (thinking / inquiry, application, communication, and perceived efficacy). Students who received the intervention were more likely to demonstrate negotiation skills and less likely to yield to negative pressure relative to controls. Intervention students were also more likely to use delay than controls; control girls were more likely to use refusal responses; the number of times students complied with peer requests did not differ. Teacher ratings demonstrated significant main effects favoring intervention youth on all measures. Program and research implications are highlighted.

Wright, L. S. (2007). A norm changing approach to drug prevention. *Journal of Drug Education, 37*(2), 191-215.

This article describes the implementation of an innovative curriculum called Drugs-At-Work (DAW), which was evaluated in three phases. In phase-one, data collected after the third year of the study suggested that the curriculum had a significant impact on the fifth-grade participants, who in turn influenced their sixth-grade classmates the following year. In comparison to their sixth-grade baseline counterparts, the DAW participants and their classmates were significantly less likely to have used tobacco, alcohol or other illicit drugs (ATOD) and less likely

Program Profile: Fourth R

The Fourth R is a 21-lesson classroom-based intervention to build healthy relationships and decrease abusive and health-risk behaviors among adolescents. The program is based on the belief that relationship knowledge and skills should be taught the same way as reading, writing and arithmetic (hence the Fourth R). More than this, the Fourth R also can be a comprehensive approach involving students, teachers, parents and the community.

(Wolfe et al, 2012)

Program Profile: Drugs-At-Work

The Drugs-At-Work (DAW) curriculum combines components of school-based drug prevention and ethics-education programs. Instead of stressing the harmful health consequences of abusing ATOD, the DAW emphasizes the indirect detrimental impact that drug-related problems have on non-users. Second, instead DAW attempts to directly change the social norms by portraying substance abuse as a shared problem that hurts families, hurts businesses, and damages our country's economy. DAW spends more time trying to reduce peer pressure than it does on coaching youth to resist peer pressure.

(Wright, 2007)

to know other elementary students who did so. In phase-two, data were examined on a year-by-year basis using a modified A-B-A design. These data revealed a drop from baseline in ATOD use during the intervention years and a return-to-baseline after the program ended. In phase-three, comparisons were made among participants in the Combined Baseline Group, the Combined DAW Group and the Transition Group (those exposed to DAW but not surveyed until a year after the grant closed). These analyses revealed that the DAW significantly reduced ATOD use for the total sample and for the Mexican-American, the Anglo, and the African-American students examined separately.

2.5.b. Other in-school and afterschool programs (10)

Corrigan, M. J., Newman, L. J., Videka, L., Loneck, B., & Rajendran, K. (2011). Characteristics of students and services in New York State student assistance and prevention counseling programs. *Journal of Child & Adolescent Substance Abuse, 20*(2), 155-165.

This article reports on a review of selected New York State school prevention program student case records. Methods: Data were extracted from Office of Alcoholism and Substance Abuse Services (OASAS) standardized Prevention Activity Summary forms. A total of 407 records from 12 high schools throughout New York State were reviewed. Results: The age range of students in this sample was 12 to 18 years old with a mean age of 15.5 years in an approximately normal distribution. Students in this sample were typically referred to services by school sources or were self-referred. The most frequently cited reasons for admission were personal problems, family problems, and alcohol or substance use or abuse. The majority of students are referred to individual sessions. Counselors rated services as producing positive change in all problem areas, with the largest change for adolescents whose parents used alcohol or other substances.

Conclusions: Findings suggest positive outcomes for prevention counseling. Severity of alcohol and drug use decreased and severity of risk factors for alcohol and drug use likewise decreased.

Cummings, M., Whitlock, A., Draper, M., Renschler, L., Bastian, K., Cox, C. C., & Visker, J. D. (2014). 'All Stars' for at-risk middle school students in an afterschool setting: A pilot program. *Journal of Substance Use, 19*(6), 444-447.

Introduction: The evidenced-based program, All Stars, usually conducted in the in-school setting and taught by classroom teachers; was implemented in an afterschool setting for at-risk middle school students by local university student volunteers. The classroom-based program was moved to the after-school setting in this study in order to target the most at-risk students, and university student volunteers served as instructors to decrease program costs. Methods: Middle school students enrolled in an afterschool program for the most academically and socially at-risk participated in an evidence-based substance abuse prevention program and study as a part of their overall afterschool curriculum. The Pre-Post Post All Stars Student Survey was used as the data collection instrument and included 45 demographic, behavior, and core mediator Likert-scale questions. A series of paired samples t-tests were used to assess pre-post differences in the following: Commitment to Avoid Risky Behaviors, Normative Beliefs, and Lifestyle Incongruence. Results: At the conclusion of the program, participants' lifestyle incongruence about substance abuse improved significantly, their commitment to avoid risky behaviors improved, but their normative beliefs decreased. Discussion/conclusion: For those youth at high-risk, providing the program in the afterschool setting and using non-classroom teachers as instructors does seem to have potential for successful program delivery.

D'Amico, E. J., & Edelen, M. O. (2007). Pilot test of Project CHOICE: A voluntary afterschool intervention for middle school youth. *Psychology of Addictive Behaviors*, 21(4), 592-598.

The current study reports findings from a pilot evaluation of a voluntary alcohol and marijuana intervention for young teens. Students at 2 middle schools completed 4 surveys over 2 years. During Year 2, an intervention, Project CHOICE (PC), was implemented at 1 school and was voluntarily attended by 13% of adolescents. Participants ranged from 10 to 15 years of age and were approximately 45% male, 45% White, 30% Latino, and 15% of mixed ethnic origin. Outcomes included assessments of self use and perceptions of friends' and schoolmates' past-month use of alcohol and marijuana. Analyses that compared PC participants (n=64) with a matched control sample of students (n=264) revealed that PC participants reported lower rates of alcohol use and lower perceptions of friends' marijuana use and of schoolmates' use of these substances. Random-effects growth models indicated that self use and perceptions of friends' use of alcohol and marijuana increased more sharply among control school students (n=178) relative to students from the PC school (n=270), regardless of participation. Results suggest that a brief voluntary intervention attended by a small proportion of students can impact both individual and school-wide substance-related outcomes.

Program Profile: Project CHOICE

Project CHOICE was guided by a community-based participatory approach. It included components used successfully in other interventions with teens, such as providing normative feedback, challenging unrealistic positive expectancies, resisting pressure to use substances through the use of role-playing, and discussing coping strategies and how to anticipate and plan for high-risk situations and then evaluating that plan. PC focused on alcohol and marijuana use. Five sessions were repeated throughout the school year.

(D'Amico & Edelen, 2007)

Macdonald, G., & Nehammer, S. (2003). An evaluation of a drug education play for schools in south Wales. *Health Education*, 103(2), 83-87.

Schools are often seen as a key setting for health education and health promotion. Theatre in education offers a valuable way of tackling difficult subjects within schools, particularly for those children open to risk and lifestyle choices. This paper reports on a play about drugs, written and acted by a local theatre in education group in south Wales. The play was written for 10-12 year olds and has been performed, with revisions, over the last ten years in local schools. This paper reports on a simple evaluation of the effects of the play on the understanding of, and feelings about, drugs in the target group exposed to the play. A total of 133 children responded to the survey and were generally positive about the play, identified with the main characters and could remember some of the illicit drugs mentioned in the drama. Six teachers were also questioned and they were positive about the play's contribution to the curriculum and its approach to drug education.

Sale, E., Weil, V., & Kryah, R. (2012). An exploratory investigation of the promoting responsibility through education and prevention (PREP) after school program for African American at-risk elementary school students. *School Social Work Journal*, 36(2), 56-72.

The promoting responsibility through education and prevention (PREP) program is an after school substance abuse and violence prevention program for at-risk fourth and fifth grade youths in St. Louis, Missouri. Staffed by licensed clinical social workers and professional volunteers, PREP offers cultural cooking classes, yoga, and art as well as social skills building, substance use prevention, conflict resolution, and behavior management classes. Pre- and post-behavioral checklists were completed for four cohorts of PREP students, all of whom were African American (n = 88). For the latter two cohorts, there were significant improvements in social skills, a key protective factor in the prevention of substance abuse and violence. Youths in these cohorts received more programming and more therapeutic one-on-one support than students in the first two cohorts, suggesting that the expanded version of PREP may be an effective prevention program for African American at-risk children.

Salmon, D., Orme, J., Kimberlee, R., Jones, M., & Murphy, S. (2005). Implementing the Rock Challenge: Young people's perspectives on a drug-prevention and performing arts programme. *Journal of Research in Nursing*, 10(3), 339-353.

This paper presents the qualitative process findings from an evaluation of a school-based performing arts programme, 'Rock Challenge'. Rock Challenge aims to promote healthy life styles 'by building resilience amongst young people involved'. The research aimed to capture the experiences and perceptions of young people's involvement in the programme, particularly in relation to the concept of the 'drug-free high', support offered throughout the programme and participants' response to Rock Challenge as a drug-prevention initiative. Findings from the study suggest young people felt very positive about their involvement and, in particular, valued the skills and experiences associated with organising a performance, team-working, developing confidence, friendship, fun and excitement. The excitement felt during dance rehearsals and the live performance was associated with the concept of a 'drug-free high', feeling good in the absence of drugs and alcohol, and was seen as a key benefit of the programme. While support from teachers and families was perceived as high, difficulties were identified in the recruitment of males and students vulnerable to substance misuse and recommendations are made for improvement. The health promotion opportunities for school nurses and other public health

Program Profile: PREP

PREP is based on the theoretical foundation that strengthening protective factors and reducing risk factors leads to lower substance use and violent behaviours among youth. The program focuses on social and practical skill-building as well as educating youth about substance abuse, violence and their negative outcomes. Features of the program include cultural cooking, yoga, art, social skills and development lessons, conflict resolution lessons, recreational activities and structured behaviour management. The expanded program includes case management and therapeutic support.

(Sale et al., 2012)

Program Profile: Rock Challenge

Rock Challenge aims to promote healthy life styles 'by building resilience amongst young people involved'. Findings from the study suggest young people felt very positive about their involvement and, in particular, valued the skills and experiences associated with organising a performance, team-working, developing confidence, friendship, fun and excitement. Difficulties were identified in the recruitment of males and students vulnerable to substance misuse

(Salmon et al., 2005)

practitioners and personal, social and health education co-coordinators are highlighted.

Sharma, M. (2010). Photovoice in alcohol and drug education. *Journal of Alcohol and Drug Education*, 54(1), 3-6.

Over the past few years photovoice has been gaining popularity in health education. There is a growing body of literature around this technique. The photovoice process entails use of photographic images taken by people who are usually disadvantaged and may have less money, less power, or lower status. Photovoice has been used in the context of alcohol and drug education. Photovoice as a technique for use in alcohol and drug education offers several advantages and has some disadvantages. The first advantage of this technique is that it is an excellent means to initiate dialogue in a community setting. It is especially useful for those people who do not have a say in matters of importance since it gives them a way to express themselves. To conclude, it can be said that photo voice is an emerging technique in the repertoire of alcohol and drug educators. It must be used and evaluated in a variety of contexts and settings within the field.

Program Profile: Photovoice

The photovoice process entails use of photographic images taken by people who are usually disadvantaged and may have less money, less power, or lower status. Photovoice has been used in the context of alcohol and drug education. An advantage of this technique is that it is an excellent means to initiate dialogue in a community setting. It is especially useful for those people who do not have a say in matters of importance since it gives them a way to express themselves

(Sharma, 2010)

Sharma, M. (2001). Freire's adult education model: An underutilized model in alcohol and drug education? *Journal of Alcohol and Drug Education*, 47(1), 1-3.

Discusses the youth centered, intergenerational, experiential prevention program developed by Wallerstein and Bernstein (1988) called the Adolescent Social Action Program (ASAP). ASAP was found to be efficacious in influencing process variables such as empathy, critical thinking, belief in the group action, and some impact variables such as extent of participation in social interaction among the participants. It is stated that the unique feature of the program was adoption of the ideas of Paulo Freire, a Brazilian adult educator, for the first time in a health education program in the US. Five distinct constructs of Freire's model are discussed with perspective to their application to alcohol and drug education. These are dialogue, conscientization, praxis, transformation, and critical consciousness.

Program Profile: ASAP

The Adolescent Social Action Program (ASAP) describes a pedagogical approach to behaviour change. Freire's model uses a discussion-based, peer-centred approach of 1) problematizing the issue (e.g., drug use), 2) conscientization, 3) praxis, 4) transformation, and 5) critical consciousness.

(Sharma, 2001)

Wenzel, V., Weichold, K., & Silbereisen, R. K. (2009). The life skills program IPSY: Positive influences on school bonding and prevention of substance misuse. *Journal of Adolescence*, 32(6), 1391-1401.

The present study investigated whether a life skills program (LSP) for the prevention of adolescent substance misuse can have positive influences on a school context and on school bonding. The study also explored whether effects on alcohol use are mediated by positive effects on school bonding resulting from program participation. The LSP IPSY (Information + Psychosocial Competence = Protection) was implemented over a 3-year period via specially trained teachers.

Analyses were based on a German evaluation study utilizing a quasi-experimental design (intervention/control) with school-wise assignment to the respective groups. Analyses were based on four measurement points (N = 952, 10 years at pre-test). Results indicated that IPSY was well implemented, highly accepted by teachers and students, and that teachers profited regarding their teaching methods. ANCOVAS revealed positive program effects on alcohol use and school bonding. Multiple regressions indicated that positive influences on school bonding following program participation partially mediated effects on alcohol use.

2.6. Family-centred programs (12)

Cervantes, R., Goldbach, J., & Santos, S. M. (2011). Familia Adelante: A multi-risk prevention intervention for Latino families. *The Journal of Primary Prevention*, 32(3-4), 225-234.

A comprehensive approach for providing behavioral health services to youth is becoming increasingly emphasized. Latino youth are at increased risk for substance abuse, mental health concerns, unsafe sexual practices and HIV, and these outcomes have been empirically connected to individual, family and community-based stress. Despite this knowledge, there is a lack of evidence-based approaches that target these negative outcomes by reducing stress in Latino families in a culturally relevant manner. The current study examined the use of research-based strategies for reducing multiple risk behaviors in a predominantly Mexican–American sample of families. Through a modular approach, participants engaged in a psycho-educational curriculum to enhance communication and psychosocial coping, increase substance abuse and HIV knowledge and perception of harm, and improve school behavior. Over 12 sessions, the curriculum aimed to achieve these outcomes through an overall decrease in family and community-based stress by focusing on acculturative stress. Findings indicate that communication and perception of substance use harm were significantly enhanced, while social norms regarding sexual behavior, HIV anxiety and past use of marijuana and other illegal drugs were significantly reduced. While many of measures were reliable ($\alpha > .80$), further changes are necessary to improve the accuracy of future studies. Despite these limitations, Familia Adelante improves many areas of participant’s family life, and points toward the feasibility of multi-risk reduction behavioral health prevention approaches.

- ★ Duncan, L. G., Coatsworth, J. D., & Greenberg, M. T. (2009). Pilot study to gauge acceptability of a mindfulness-based, family-focused preventive intervention. *The Journal of Primary Prevention*, 30(5), 605-618.

The purpose of the present study was to conduct a test of acceptability of a new model for family-focused drug prevention programs for families of early adolescents. An existing evidence-based behavioral intervention, the Strengthening Families Program: For Parents and Youth 10-14 (SFP), was adapted to include concepts and activities

Program Profile: Familia Adelante

Familia Adelante consists of twelve - 90 minute group sessions for youth and their parents (separate sessions). The curriculum covers is structured and covers the following topics: feelings, a variety of stress factors, gang prevention, and substance abuse education.

(Cervantes et al., 2011)

Program Profile: Strengthening Families Program (Mindfulness-adaptation)

“Mindful parenting” is conceptualized as a higher-order construct that encompasses parent caring and compassion (beyond the simple expression of affection), parent social cognitions and awareness of and reactions to parenting-related emotions. Bringing nonjudgmental acceptance to parenting may encourage a healthy balance between child-oriented, parent-oriented, and relationship-oriented goals, and a reduction in self-directed concerns on the part of the parent.

(Duncan et al., 2009)

related to mindfulness and mindful parenting (an extension of mindfulness to the interpersonal domain of parent-child relationships). The foundation for this innovative intervention approach stems from research on the effects of mind-body treatments involving mindfulness meditation and the function of stress and coping in relation to parenting and parent well-being. One group of families participated in a seven-week pilot of this mindfulness-enhanced version of SFP. Results of a mixed-method implementation evaluation suggest that the new intervention activities were generally feasible to deliver, acceptable to participants, and perceived to yield positive benefits for family functioning and parent psychological well-being. The next phase of this research will involve curriculum refinement based upon results of this initial study, and a larger pilot efficacy trial will be conducted.

Gonzales, N. A., et al. (2012). Randomized trial of a broad preventive intervention for Mexican American adolescents. *Journal of Consulting and Clinical Psychology, 80*(1), 1-16.

Objective: This randomized trial of a family-focused preventive intervention for Mexican American (MA) adolescents evaluated intervention effects on adolescent substance use, internalizing and externalizing symptoms, and school discipline and grade records in 8th grade, 1 year after completion of the intervention. The study also examined hypothesized mediators and moderators of intervention effects. **Method:** Stratified by language of program delivery (English vs. Spanish), the trial included a sample of 516 MA adolescents (50.8% female; M = 12.3 years, SD = 0.54) and at least one caregiver that were randomized to receive a low-dosage control group workshop or the 9-week group intervention that included parenting, adolescent coping, and conjoint family sessions. **Results:** Positive program effects were found on all 5 outcomes at 1-year posttest but varied depending on whether adolescents, parents, or teachers reported on the outcome. Intervention effects were mediated by posttest changes in effective parenting, adolescent coping efficacy, adolescent school engagement, and family cohesion. The majority of intervention effects were moderated by language, with a larger number of significant effects for families who participated in Spanish. Intervention effects also were moderated by baseline levels of mediators and outcomes, with the majority showing stronger effects for families with poorer functioning at baseline. **Conclusion:** Findings not only support the efficacy of the intervention to decrease multiple problem outcomes for MA adolescents but also demonstrate differential effects for parents and adolescents receiving the intervention in Spanish vs. English, and depending on their baseline levels of functioning.

Program Profile: Bridges/Puentes

Bridges/Puentes is a multicomponent intervention that brings parents and students together in the school settings to strengthen the home-school connection and develop competencies for successful transition through middle and high school. The program recognizes that developing youth need to adapt to multiple social contexts simultaneously. The program is delivered over 9 sessions and 2 home visits has three primary components

- **Parenting intervention**
- **Adolescent coping intervention**
- **Family strengthening intervention**

Gonzales et al., 2012

Harachi, T. W., Catalano, R. F., & Hawkins, J. D. (1997). Effective recruitment for parenting programs within ethnic minority communities. *Child & Adolescent Social Work Journal*, 14(1), 23-39.

This article describes the results of a demonstration project which focused on exploring recruitment and retention of ethnic minority families to a parent training program aimed to prevent substance abuse among their children. The Parenting for Drug-Free Children project sought to deliver a curriculum to parents from several ethnic groups in an urban setting. The targeted ethnic communities were African American, Latino, Native American, and Samoan. The project successfully recruited diverse groups of families to participate in a drug prevention program, many of whom had never participated before in a parenting program. The identification of key individuals for recruiting and accessing networks of potential participants proved to be an effective means of recruitment.

Program Profile: Parenting for Drug-Free Children

Parenting for Drug-Free Children is a drug prevention curriculum designed to reach parents when children are in the late elementary and early middle school grades and targets children who have not initiated drug use. Pairs of community members were recruited to deliver workshops in targeted ethnic communities.

(Harachi et al., 1997)

Kosterman, R., Hawkins, J. D., Haggerty, K. P., Spoth, R., & Redmond, C. (2001). Preparing for the drug free years: Session-specific effects of a universal parent-training intervention with rural families. *Journal of Drug Education*, 31(1), 47-68.

Like their urban counterparts, adolescents from rural areas are at risk for health and behavior problems, including alcohol and other drug use. This study tested the effects on parenting practices of specific sessions of a parent-training intervention. Preparing for the Drug Free Years, designed to prevent adolescent substance abuse and other problem behaviors. 209 rural families were randomly assigned to an intervention or a wait-list control condition. Post-test scores revealed that parents (mean age 38.9 yrs for mothers and 41.0 yrs for fathers) in the intervention condition reported significant improvements in parenting behaviors targeted by specific intervention sessions when compared with controls. Effects were most pronounced among mothers. No significant effects were found for nontargeted parenting behaviors, and targeted behaviors were most improved among parents attending relevant program sessions. These results strengthen the internal validity of the study and increase the plausibility that reported improvements were due to the intervention.

★★ Kumpfer, K. L., Xie, J., & O'Driscoll, R. (2012). Effectiveness of a culturally adapted strengthening families program 12–16 years for high-risk Irish families. *Child & Youth Care Forum*, 41(2), 173-195.

Background: Evidence-based programs (EBPs) targeting effective family skills are the most cost effective for improving adolescent behavioural health. Cochrane Reviews have found the Strengthening Families Program (SFP) to be the most effective substance abuse prevention intervention. Standardized cultural adaptation processes resulted in successful outcomes in several countries. Objective: To promote wide-scale implementation and positive outcomes in Ireland, a unique model of inter-agency collaboration was developed plus guidelines for cultural adaptation with fidelity. Methods: 250 high-risk youth and families were recruited to complete SFP and its parent questionnaire. A quasi-experimental 2 group pre- and post-test design was employed where the norms were the comparison group. A 2 x 2 analysis of variance (ANOVA) generated the outcome tables including p values and Cohen's d effect sizes. Evaluation feedback was used to improve outcomes the next year. Results: All 21 measured outcomes had statistically

significant positive results. Larger effect sizes were found for the Irish families than the USA families ($d = 0.57$ vs. 0.48 for youth outcomes, $d = 0.73$ vs. 0.65 for parenting and $d = 0.76$ vs. 0.70 for family outcomes). Overt and covert aggression, criminality and depression decreased more in Irish youth, but the USA youth improved more in social skills. Conclusions: This study suggests that SFP 12–16 is quite effective in reducing behavioural health problems in Irish adolescents, improving family relationships and reducing substance abuse. Additionally, the Irish interagency collaboration model is a viable solution to recruitment, retention and staffing in rural communities where finding five skilled professionals to implement SFP can be difficult.

Pinto, R. M., & Queely, T. (2003). Parents and Children Come Together to Prevent Drug Use: A Mutual Aid Approach. *Social Work with Groups: A Journal of Community and Clinical Practice*, 26(3), 77-92.

Theoretical and empirical evidence suggests that participants in drug use prevention programs can help one another learn the necessary skills to develop protective factors against drug use. This article focuses on Shulman's (1992) dynamics of mutual aid as they apply to group members in Preparing for the Drug Free Years (PDFY), a drug prevention program designed for parents and their adolescent children. The article demonstrates how specific dynamics of mutual aid can serve as sources of encouragement to prevent drug use, as a mechanism for discovery of new skills and protection against drug use, and as a path to the awareness that parents and children can work together to prevent drug use. Recommendations for group facilitators are discussed.

- ★ Spoth, R., Trudeau, L., Gyll, M., Shin, C., & Redmond, C. (2009). Universal intervention effects on substance use among young adults mediated by delayed adolescent substance initiation. *Journal of Consulting and Clinical Psychology*, 77(4), 620-632.

In this article, the authors examine whether delayed substance initiation during adolescence, achieved through universal family-focused interventions conducted in middle school, can reduce problematic substance use during young adulthood. Sixth-grade students enrolled in 33 rural midwestern schools and their families were randomly assigned to 3 experimental conditions. Self-report questionnaires provided data at 7 time points for the Iowa Strengthening Families Program (ISFP), Preparing for the Drug Free Years (PDFY), and control groups through young adulthood. Five young adult substance frequency measures (drunkenness, alcohol-related problems, cigarettes, illicit drugs, and polysubstance use) were modeled as distal outcomes affected by the average level and rate of increase in substance initiation across the adolescent years in latent growth curve analyses. Results show that the models fit the data and that they were robust across outcomes and interventions, with more robust effects found for ISFP. The addition of direct intervention effects on young adult outcomes was not supported, suggesting long-term effects were primarily indirect. Relative reduction rates were calculated to quantify intervention-control differences on the estimated proportion of young adults indicating problematic substance use; they ranged from 19% to 31% for ISFP and from 9% to 16% for PDFY.

Program Profile: Strengthening Families Program

The ISFP is based upon the Biopsychosocial Model. The long-range goal of ISFP is to reduce youth substance use and other problem behaviors. Intermediate goals include the enhancement of parental skills in nurturing, limit-setting, and communication, as well as youth prosocial and peer resistance skills. The ISFP requires seven sets of sessions conducted once per week for 7 consecutive weeks and held on weekday evenings in participating schools.

(Spoth et al., 2008)

Spoth, R. L., Redmond, C., & Shin, C. (2001). Randomized trial of brief family interventions for general populations: Adolescent substance use outcomes 4 years following baseline. *Journal of Consulting and Clinical Psychology, 69*(4), 627-642.

This study examined the long-term substance use outcomes of 2 brief interventions designed for general population families of young adolescents. Thirty-three public schools were randomly assigned to 3 conditions: the 5-session Preparing for the Drug Free Years Program, the 7-session Iowa Strengthening Families Program, and a minimal contact control condition. The pretest involved 667 6th graders and their families. Assessments included multiple measures of initiation and current use of alcohol, tobacco, and marijuana. Pretest data were collected in the 6th grade and the reported follow-up data were collected in the 10th grade. Significant intervention-control differences in initiation and current use were found for both interventions. It is concluded that brief family skills-training interventions designed for general populations have the potential to reduce adolescent substance use and thus have important public health implications.

Spoth, R., Randall, G. K., & Shin, C. (2008). Increasing school success through partnership-based family competency training: Experimental study of long-term outcomes. *School Psychology Quarterly, 23*(1), 70-89.

An expanding body of research suggests an important role for parent or family competency training in children's social-emotional learning and related school success. This article summarizes a test of a longitudinal model examining partnership-based family competency training effects on academic success in a general population. Specifically, it examines indirect effects of the Iowa Strengthening Families Program (ISFP) on school engagement in 8th grade and academic success in the 12th grade, through direct ISFP effects on intervention-targeted outcomes--parenting competencies and student substance-related risk--in 6th grade. Twenty-two rural schools were randomly assigned to either ISFP or a minimal-contact control group; data were collected from 445 families. Following examination of the equivalence of the measurement model across group and time, a structural equation modeling approach was used to test the hypothesized model and corresponding hypothesized structural paths. Significant effects of the ISFP were found on proximal intervention outcomes, intermediate school engagement, and the academic success of high school seniors.

Miller-Day, M., & Dodd, A. H. (2004). Toward a descriptive model of parent-offspring communication about alcohol and other drugs. *Journal of Social and Personal Relationships, 21*(1), 69-91.

This study examined the narratives of 75 parent-offspring pairs who were asked to relate their shared drug prevention conversations. A descriptive model of parent-offspring drug talks (PODT) was developed to address the form, content, and function of parent-offspring discourse about drugs

Program Profile: Preparing for the Drug Free Years

Preparing for the Drug Free Years (PDFY), a program for parents of children in grades 4 through 8, is designed to reduce adolescent drug use and behavior problems. PDFY's skill-based curriculum helps parents address risks that can contribute to drug abuse while strengthening family bonding by building protective factors. PDFY is grounded theoretically in the social development model which emphasizes that young people should experience opportunities for active involvement in family, school, and community, should develop skills for success, and should be given recognition and reinforcement for positive effort and improvement.

Spoth et al., 2001

and drug use. Additionally, two temporal approaches to socializing conservative drug use norms were identified--targeted socialization and integrated socialization. Over two-thirds of the respondents reported integrating ongoing socialization efforts into the fabric of their everyday lives in contrast to more targeted one-shot 'drug talks.'

Trudeau, L., Spoth, R., Randall, G. K., & Azevedo, K. (2007). Longitudinal effects of a universal family-focused intervention on growth patterns of adolescent internalizing symptoms and polysubstance use: Gender comparisons. *Journal of Youth and Adolescence*, 36(6), 725-740.

This study evaluated effects of the Iowa Strengthening Families Program, a family-focused universal preventive intervention, on growth patterns of adolescent internalizing (anxiety and depressive symptoms) and monthly polysubstance use (alcohol, tobacco, marijuana, inhalants, and other illicit drugs), as well as the association between internalizing and polysubstance growth factors. The sample consisted of rural Midwestern adolescents (N = 383), followed from sixth through twelfth grade. Compared to the control group, the intervention group adolescents showed a slower rate of increase in internalizing symptoms and polysubstance use. Intervention effects on internalizing symptoms were similar for boys and girls; however, girls demonstrated a higher overall level and a greater rate of increase across time. The intervention slowed the rate of increase in polysubstance use significantly more for girls than for boys, although overall levels of use were lower in the intervention group for both genders. Associations between internalizing and polysubstance use growth factors were found for girls, but not for boys, suggesting gender differences in psychosocial development.

2.7. Family, school, community partnerships (27)

Abbey, A., Pilgrim, C., Hendrickson, P., & Buresh, S. (2000). Evaluation of a family-based substance abuse prevention program targeted for the middle school years. *Journal of Drug Education, 30*(2), 213-228.

A family-based substance abuse prevention program was evaluated which emphasizes family cohesion, school and peer attachment, self-esteem, and attitudes about adolescent use of alcohol and tobacco. The program was implemented in rural communities and targeted families with students entering middle or junior high school. Baseline surveys were conducted with students and parents in four schools and were re-administered one year later. Because the program was voluntary, a quasi-experimental design was used to compare participants (29 students and 28 parents) and nonparticipants (268 students and 134 parents). Analyses of covariance indicated that student participants, as compared to nonparticipants, had higher family cohesion, less family fighting, greater school attachment, higher self-esteem, and believed that alcohol should be consumed at an older age at the one year follow-up. There were fewer significant results for parent participants. Strategies for involving parents in prevention programs are discussed.

Ager, R. D., Parquet, R., & Kreuzinger, S. (2008). The youth video project: An innovative program for substance abuse prevention. *Journal of Social Work Practice in the Addictions, 8*(3), 303-321.

This article describes an innovative drug prevention pilot in which developing a substance abuse video served as a vehicle for teaching youth healthy attitudes and behaviors. Seven 10- to 12-year-old African Americans from a public housing development participated in 10 weekly sessions focusing on video skills and substance abuse. Based on the principles of capacity building and cognitive dissonance theory, the children learned about substance abuse in their community and movie-making, which they used to create an antidrug video. Six activities were identified as critical to the program's success: family involvement, community engagement, adapting drug education content to fit community characteristics, using the camcorder as a central vehicle for learning, community field assignments, and evaluation-based learning.

Alter, R. J., Jun, M. K., & J-McKyer, E. L. (2007). ATOD prevention programming in the non-school hours and adolescent substance use. *Journal of Drug Education, 37*(4), 365-377.

To reduce problems associated with youth substance use, Indiana developed funding streams and infrastructure to facilitate coordination of statewide prevention efforts. These prevention efforts aimed at youth include programming in the non-school hours. To examine the relationship between these efforts and youth substance abuse, students indicating participation in one or more prevention activities were compared to non-participant students. Results revealed that participating middle school students were less likely to have reported use of tobacco than their non-participating peers. Also, participation in prevention

Program Profile: Afternoons ROCK

Afternoons R.O.C.K. (Recreation, Object lessons, Culture and values, and Knowledge) in Indiana programs are a collection of local-level after-school substance abuse prevention programs for 10- to 14-year-old youth. These programs are designed to reduce risk factors and increase protective factors while providing youth with fun and engaging activities in a safe, supervised environment in the after-school hours.

(Alter et al., 2007)

activities in the non-school hours was related to a lower likelihood of alcohol use among high school students.

Baker, P. J. (2006). Developing a Blueprint for evidence-based drug prevention in England. *Drugs: Education, Prevention & Policy*, 13(1), 17-32.

Blueprint is a universal multi-component prevention programme involving young people aged 11 to 13. In 2005 Blueprint completed delivery of drug prevention through work with schools, parents and the media in communities in England, reinforced by increased action to restrict the availability of tobacco, alcohol and volatile substances to under-age youth. The programme evaluation includes process, impact, outcome and cost measures. This article describes the formative research and process of planning that formed the development of the Blueprint programme and the evidence base underpinning the approach. The process has established for the first time the systematic integration of research with the framework of the national school curriculum and Drug Strategy delivery partnerships. The completed evaluation in 2007 will be a major opportunity to reassess the role of drug education and prevention in meeting educational needs and as part of national drug and alcohol strategies.

Brown, A. (2006). Beyond 'just say no': Hopes and fears for Blueprint. *Drugs: Education, Prevention & Policy*, 13(4), 387-388.

There is a heavy burden placed on drug education in the public mind, it sometimes appears to be a cure-all; inoculating young people against the very real dangers of drugs, illicit or otherwise. Research shows that certain models of drug education can achieve modest reductions in the consumption of cannabis, alcohol and tobacco, and delay the onset of their use. There are also indications that drug education has a role in reducing the risks associated with drug use, reducing the amount of drugs used and helping people to stop. The positive interaction between universal drug education and broader preventative services that are focused on these risk and protective factors will make a difference to the lives of children and young people. This is something that the Blueprint programme, a universal multi-component prevention programme involving young people aged 11 to 13, which in 2005 completed delivery of drug prevention through work with schools, parents and the media in communities in England, has recognized and tries to address.

Program Profile: Blueprint

Blueprint is a universal multi-component prevention programme involving young people aged 11 to 13. The program involves six connected strategies for drug prevention focused on changes in practice and capacity across the domains of: curriculum; teacher training; School Drug Adviser (SDA) support; parental support; media and health policy. The program is delivered through work with schools, parents and the media in communities.

(Baker, 2006)

Berg, M., Coman, E., & Schensul, J. J. (2009). Youth action research for prevention: A multi-level intervention designed to increase efficacy and empowerment among urban youth. *American Journal of Community Psychology*, 43(3-4), 345-359.

Youth Action Research for Prevention (YARP), a federally funded research and demonstration intervention, utilizes youth empowerment as the cornerstone of a multilevel intervention designed to reduce and/or delay onset of drug and sex risk, while increasing individual and collective efficacy and educational expectations. The intervention, located in Hartford Connecticut, served 114 African-Caribbean and Latino high school youth in a community education setting and a matched comparison group of 202 youth from 2001 to 2004. The strategy used in YARP begins with individuals, forges group identity and cohesion, trains youth as a group to use research to understand their community better (formative community ethnography), and then engages them in using the research for social action at multiple levels in community settings (policy, school-based, parental etc.) Engagement in community activism has, in turn, an effect on individual and collective efficacy and individual behavioral change. This approach is unique insofar as it differs from multilevel interventions that create approaches to attack multiple levels simultaneously. The YARP intervention is described and qualitative and quantitative data from the quasi-experimental evaluation study design is employed to assess the way in which the YARP approach empowered individual youth and groups of youth (youth networks) to engage in social action in their schools, communities and at the policy level, which in turn affected their attitudes and behaviors.

Program Profile: YARP

Youth Action Research for Prevention (YARP), a federally funded research and demonstration intervention, utilizes youth empowerment as the cornerstone of a multilevel intervention designed to reduce and/or delay onset of drug and sex risk, while increasing individual and collective efficacy and educational expectations.

(Berg et al., 2009)

- ★ Collingwood, T. R., Sunderlin, J., Reynolds, R., & Kohl, H. W., III (2000). Physical training as a substance abuse prevention intervention for youth. *Journal of Drug Education*, 30(4), 435-451.

Program evaluation data from school and community applications of a physical fitness drug prevention program is presented. A train-the-trainer methodology was applied to install the program in 22 settings within the state of Illinois. The physical training program consisted of exercise and educational modules delivered over a twelve-week time period that focused on learning values and life skills through exercise. Complete pre-post data were obtained on 329 participating youth at six school and community based sites. Significant increases were demonstrated in physical activity and self-report data indicated significant decreases in risk factors such as low self-concept, poor school attendance, anxiety, depression, and number of friends who use alcohol and drugs. There were significant reductions in the percentage of youth who used cigarettes, smokeless tobacco, and alcohol. It was concluded that a strong relationship was demonstrated for increased fitness leading to lowered risk factors and usage patterns. Likewise, the train-the-trainer model was shown to be an effective installation approach to expand fitness programming within prevention settings.

Collins, D., Johnson, K., & Becker, B. J. (2007). A meta-analysis of direct and mediating effects of community coalitions that implemented science-based substance abuse prevention interventions. *Substance Use & Misuse*, 42(6), 985-1007.

This article reports results of a meta-analysis of the effects of a set of community coalitions that implemented science-based substance use prevention interventions as part of a State Incentive Grant (SIG) in Kentucky. The analysis included assessment of direct effects on prevalence of substance use among adolescents as well as assessment of what "risk" and "protective" factors mediated the coalition effects. In addition, we tested whether multiple science-based prevention interventions enhanced the effects of coalitions on youth substance use. Short-term results (using 8th-grade data) showed no significant decreases in six prevalence of substance use outcomes--and, in fact, a significant though small increase in prevalence of use of one substance (inhalants). Sustained results (using 10th-grade data), however, showed significant, though small decreases in three of six substance use outcomes--past month prevalence of cigarette use, alcohol use, and binge drinking. We found evidence that the sustained effects on these three prevalence outcomes were mediated by two posited risk factors: friends' drug use and perceived availability of drugs. Finally, we found that the number of science-based prevention interventions implemented in schools within the coalitions did not moderate the effects of the coalitions on the prevalence of drug use. Study limitations are noted.

Collins, D. A., Johnson, K. W., & Shamblen, S. R. (2012). Examining a home environmental strategy to reduce availability of legal products that can be misused by youth. *Substance Use & Misuse*, 47(12), 1339-1348.

This article presents results from a study of a home environmental strategy (HES) designed to reduce availability of harmful legal products (HLPs) in the home that can be used by youth to get high. HLPs include inhalants, prescription and nonprescription drugs, and household products that can be ingested to get high. Availability is one of the most consistent predictors of substance use among youth. Parents of 5th- to 7th-grade students in four Alaskan communities participated in telephone interviews as part of a larger study of a multicomponent Community Prevention Model (CPM) that included a HES. The strategy was designed to encourage parents to reduce availability of HLPs by removing them from the home, and by locking up and monitoring the supplies of HLPs in the home. Data from 402 parents at Wave 1 and 371 parents at Wave 2 were analyzed using Hierarchical Non-Linear Modeling (HNLM). Results show there was a significant decrease in HLPs in the home from Wave 1 to Wave 2, mostly inhalants and prescription and non-prescription drugs. Parents also reported a significant increase in locking up prescription and nonprescription drugs in the home. Parents' direct exposure to the HES was marginally associated with the change over time in HLP availability in the home. Indirect exposure through others and media was not associated with this change. Study lessons learned and conclusions are highlighted.

Cuijpers, P., Jonkers, R., de Weerd, I., & de Jong, A. (2002). The effects of drug abuse prevention at school: The 'Healthy School and Drugs' project. *Addiction*, 97(1), 67-73.

Examined the effects of the 'Healthy School and Drugs' project, a Dutch school-based drug prevention project that was developed in the late 1980s and disseminated during the 1990s. A quasi-experimental study in which students of 9 experimental (N=1,156) schools were compared with students of 3 control schools (N= 774). The mean age of the students was 12.4 yrs. The groups were compared before the intervention, 1 yr later, 2 yrs later and 3 yrs later. Self-report measures of tobacco, alcohol and marijuana use, attitudes towards substance use, knowledge about substances and self-efficacy were used. Results show that some effects on the use of tobacco, alcohol and cannabis were found. Two yrs after the intervention, significant effects could still be shown on alcohol use. Effects of the intervention were also found on knowledge, but there was no clear evidence for any effects on attitude towards substance use and on self-efficacy.

Program Profile: Healthy Schools and Drugs Project

The Healthy Schools and Drugs Project is a Dutch multi-component school-based program for high school students aged 12-18. There are five key components that are adopted and implemented over a five-year period.

- Development of a project coordinating committee
- Curriculum
- Development of school policies about drug use
- Development of a system of early detection of students with drug problems
- Involvement of parents in drug prevention

(Cuijpers et al., 2002)

Program Profile: LIFT

The Linking of Families and Teachers (LIFT) program is a universal preventive intervention based on moment-to-moment social interaction processes thought to be important in initiating and continuing youth problem behaviors. LIFT was designed to prevent the developmental of youth antisocial behaviors by positively influencing interactions within highly influential social arenas, namely between youth and parent(s) in the home, between youth and peers in the classroom and on the playground, and between parents and teachers about youth.

(DeGarmo et al., 2009)

★ DeGarmo, D. S., Eddy, J. M., Reid, J. B., & Fetrow, R. A. (2009). Evaluating mediators of the impact of the Linking the Interests of Families and Teachers (LIFT) multimodal preventive intervention on substance use initiation and growth across adolescence. *Prevention Science*, 10(3), 208-220.

Substance use outcomes were examined for 351 youth participating in a randomized controlled trial designed to assess the efficacy of a school-based multimodal universal preventive intervention, Linking the Interests of Families and Teachers (LIFT). Frequency of any use of tobacco, alcohol, and other drugs was assessed via self-report from grades 5 through 12. Latent variable growth models specified average level, linear growth and accelerated growth. The LIFT intervention had a significant effect on reducing the rate of growth in use of tobacco and illicit drugs, particularly for girls, and had an overall impact on average levels of use of tobacco, alcohol, and illicit drugs. Average tobacco use reductions were mediated by increases in family problem solving. The intervention had significant indirect effects on growth in substance use through intervention effects on reduced playground aggression and increased family problem solving. The intervention was also associated with roughly a 10% reduced risk in initiating tobacco and alcohol use. Implications for future studies of

multimodal preventive interventions are discussed.

Diamond, S., Schensul, J. J., Snyder, L. B., Bermudez, A., D'Alessandro, N., & Morgan, D. S. (2009). Building Xperience: A multilevel alcohol and drug prevention intervention. *American Journal of Community Psychology, 43*(3-4), 292-312.

"Xperience" is an innovative alcohol and drug prevention program that has adopted a multilevel, community-based strategy to promote drug-and-alcohol free social activities, venues and norms among urban youth ages 14-20. The intervention aims to strengthen protective factors and reduce risk factors for alcohol and other substance use among high school age youth by addressing multiple factors at the individual, peer, community and city level. The purpose of this paper is to discuss the process of building the different levels of this intervention during the 3-year formative phase. The following are explained: (1) The choice of a multilevel and participatory strategy, (2) Formative research leading to the intervention model, (3) The theoretical framework underlying the methodology, (4) Pilot intervention development (Years One and Two), (5) Current program methods and outcome goals, and lastly, (6) Some of the lessons learned, goals achieved, and plans for the future. This descriptive account of building a multilevel intervention aims to serve as a useful guide for others wishing to develop similar approaches, and for theorizing about some of the common challenges involved in this process.

- ★ Fosco, G. M., Frank, J. L., Stormshak, E. A., & Dishion, T. J. (2013). Opening the 'Black Box': Family check-up intervention effects on self-regulation that prevents growth in problem behavior and substance use. *Journal of School Psychology, 51*(4), 455-468.

Family-school interventions are a well-established method for preventing and remediating behavior problems in at-risk youth, yet the mechanisms of change underlying their effectiveness are often overlooked or poorly understood. The Family Check-Up (FCU), a school-based, family-centered intervention, has been consistently associated with reductions in youth antisocial behavior, deviant peer group affiliation, and substance use. The purpose of this study was to explore proximal changes in student-level behavior that accounts for links between implementation of the FCU and changes in youth problem behavior. Data were drawn from a randomized controlled trial study of the efficacy of the FCU among 593 ethnically diverse middle school students followed longitudinally from 6th through 8th grades. Latent growth curve analyses revealed that random assignment to the FCU intervention

Program Profile: Xperience

"Xperience" is an innovative alcohol and drug prevention program that has adopted a multilevel, community-based strategy to promote drug-and-alcohol free social activities, venues and norms among urban youth ages 14-20. The intervention aims to strengthen protective factors and reduce risk factors for alcohol and other substance use among high school age youth by addressing multiple factors at the individual, peer, community and city level.

(Diamond et al., 2009)

Program Profile: The Family Check-Up

The Family Check Up model has been adapted for various populations. For youth substance use prevention, services are delivered in the public school. A parent consultant trained in the model provides a infrastructure for collaboration between school and parents to promote family-centred norms, systems for evidence-based family management strategies, and facilitates identification and referrals of students in need of support services.

Fosco et al., 2013

condition was related to increased mean levels of students' self-regulation from 6th to 7th grades, which in turn reduced the risk for growth in antisocial behavior, involvement with deviant peers, and alcohol, tobacco, and marijuana use through the 8th grade. Overall, these findings highlight the robust implications of self-regulation as a proximal target for family-centered interventions.

- ★ Furr-Holden, C. D. M., Jalongo, N. S., Anthony, J. C., Petras, H., & Kellam, S. G. (2004). Developmentally inspired drug prevention: Middle school outcomes in a school-based randomized prevention trial. *Drug and Alcohol Dependence*, 73(2), 149-158.

In this randomized prevention trial, it was sought to quantify the potential early impact of two developmentally inspired universal preventive interventions on the risk of early-onset alcohol, inhalant, tobacco, and illegal drug use through early adolescence. Participants were recruited as they entered first grade within nine schools of an urban public school system. Approximately, 80% of the sample was followed from first to eighth grades. Two theory-based preventive interventions, (1) a family-school partnership (FSP) intervention and (2) a classroom-centered (CC) intervention, were developed to improve early risk behaviors in primary school. Generalized estimating equations (GEE) multivariate response profile regressions were used to estimate the relative profiles of drug involvement for intervention youths versus controls, i.e. youth in the standard educational setting. Intervention status was not associated with risk of starting alcohol, inhalants, or marijuana use, but assignment to the CC intervention was associated with reduced risk of starting to use other illegal drugs by early adolescence, i.e. heroin, crack, and cocaine powder. This study adds new evidence on intervention-associated reduced risk of starting illegal drug use.

Gates, S., McCambridge, J., Smith, L. A., & Foxcroft, D. (2009). Interventions for prevention of drug use by young people delivered in non-school settings. *Cochrane Database of Systematic Reviews* (4).

Background: Interventions intended to prevent or reduce use of drugs by young people may be delivered in schools or in other settings. This review aims to summarise the current literature about the effectiveness of interventions delivered in non schools settings.

Objectives

- (1) - To summarise the current evidence about the effectiveness of interventions delivered in non-school settings intended to prevent or reduce drug use by young people under 25;
- (2) - To investigate whether interventions' effects are modified by the type and setting of the intervention, and the age of young people targeted;
- (3) - To identify areas where more research is needed.

Search methods: We searched Cochrane Central Register of Controlled Trials (CENTRAL - The Cochrane Library Issue 4, 2004), MEDLINE (1966-2004), EMBASE (1980-2004), PsycInfo (1972-2004), SIGLE (1980-2004), CINAHL (1982-2004) and ASSIA (1987-2004). We searched also reference lists of review articles and retrieved studies.

Selection criteria: Randomised trials that evaluated an intervention targeting drug use by young people under 25 years of age, delivered in a non-school setting, compared with no intervention or another intervention, that reported substantive outcomes relevant to the review.

Data collection and analysis: Two authors independently assessed trial quality and extracted data. Results were tabulated, as studies were considered too dissimilar to combine using meta-analysis.

Main results: Seventeen studies, 9 cluster randomised studies, with 253 clusters, 8 individually randomised studies with 1230 participants, evaluating four types of intervention: motivational interviewing or brief intervention, education or skills training, family interventions and multi-component community interventions. Many studies had methodological drawbacks, especially high levels of loss to follow-up. There were too few studies for firm conclusions. One study of motivational interviewing suggested that this intervention was beneficial on cannabis use. Three family interventions (Focus on Families, Iowa Strengthening Families Program and Preparing for the Drug-Free Years), each evaluated in only one study, suggested that they may be beneficial in preventing cannabis use. The studies of multi component community interventions did not find any strong effects on drug use outcomes, and the two studies of education and skills training did not find any differences between the intervention and control groups.

Authors' conclusions: There is a lack of evidence of effectiveness of the included interventions. Motivational interviewing and some family interventions may have some benefit. Cost-effectiveness has not yet been addressed in any studies, and further research is needed to determine whether any of these interventions can be recommended.

Haines, K., & Case, S. (2005). Promoting Prevention: Targeting Family-Based Risk and Protective Factors for Drug Use and Youth Offending in Swansea. *British Journal of Social Work*, 35(2), 169-187.

The multi-agency, multiple-intervention Promoting Prevention initiative to prevent youth offending in Swansea was evaluated with a computer-based interactive questionnaire with five hundred and eighty young people (aged eleven to eighteen years). Results indicate that multiple exposure to risk factors within the family domain significantly increases the likelihood that a young person will become involved in school exclusion, drug-taking and offending, whilst exposure to multiple protective factors decrease the likelihood of these problem behaviours. The evaluation process indicates that Promoting Prevention's cross-cutting and consultative methodology is an empowering and engaging way of targeting family-based interventions.

Hernandez, L., Rodriguez, A. M., & Spirito, A. (2015). Brief Family-Based Intervention for Substance Abusing Adolescents. *Child and Adolescent Psychiatric Clinics of North America*, 24(3), 585-599.

Research has shown that a lack of parental involvement in their children's activities predicts initiation and escalation of substance use. Parental monitoring and supervision, parent-child communication including communication regarding beliefs and disapproval of substance use, positive parenting, and family management strategies, have been shown to protect against adolescent substance abuse and related problems. Family and parenting approaches to preventing and intervening on adolescent substance abuse have received support in the literature. This article discusses the theoretical foundations as well as the application of the Family Check-up, a brief, family-based intervention for adolescent substance use.

Hüsler, G., Werlen, E., & Blakeney, R. (2005). Effects of a national indicated preventive intervention program. *Journal of Community Psychology, 33*(6), 705-725.

As there have been few science-based evaluations of secondary prevention programs, the Federal Office of Public Health in Switzerland carried out a national program evaluation at 12 sites in the French- and German-speaking parts of Switzerland to study the question, "What works in secondary prevention?" These 12 centers offer different forms of assistance for young people aged 11 to 20 years old. The five types of center are distinguished according to their structure and the amount of time spent with each youth. The design of the study is quasi-experimental with intervention and comparison groups. Up to now, 1,400 youth have been involved in the 12 centers. The intervention lasts about 6 months. Data are collected on entry, at program completion, and at 12- and 24-months post-intervention. One of the main findings is that even "hard to reach" youths have a chance to be integrated in school, undertake vocational training, or to secure employment. More than 70% of all youths were integrated or re-integrated. The results of the study are presented in effect sizes (ES). Effects on mental health and substance use outcomes are contradictory and vary by age and gender of client, and by type of center. In general, effects on mental health outcomes are greater than for other variables such as substance use and self-concept, and they are greater for more symptomatic youths and for boys rather than girls. The authors conclude with proposals for ways to enhance program effectiveness and targeted assessment.

Johnson, K., et al. (2007). A community prevention intervention to reduce youth from inhaling and ingesting harmful legal products. *Journal of Drug Education, 37*(3), 227-247.

Youth use of harmful legal products, including inhaling or ingesting everyday household products, prescription drugs, and over-the-counter drugs, constitutes a growing health problem for American society. As such, a single targeted approach to preventing such a drug problem in a community is unlikely to be sufficient to reduce use and abuse at the youth population level. Therefore, the primary focus of this article is on an innovative, comprehensive, community-based prevention intervention. The intervention described here is based upon prior research that has a potential of preventing youth use of alcohol and other legal products. It builds upon three evidence-based prevention interventions from the substance abuse field: community mobilization, environmental strategies, and school-based prevention education intervention. The results of a feasibility project are presented and the description of a planned efficacy trial is discussed.

Longshore, D., Ghosh-Dastidar, B., & Ellickson, P. L. (2006). National Youth Anti-Drug Media Campaign and school-based drug prevention: Evidence for a synergistic effect in ALERT Plus. *Addictive Behaviors, 31*(3), 496-508.

This analysis examined the possible synergistic effect of exposure to the National Youth Anti-Drug Media Campaign and a classroom-based drug prevention curriculum among 9th grade students participating in a randomized trial of ALERT Plus. A total of 45 South Dakota high schools and their middle-school feeder(s) were randomly assigned to an ALERT condition (basic prevention curriculum delivered in 7th and 8th grades), an ALERT Plus condition (basic curriculum with booster lessons added for 9th and 10th grades), or a control condition. Marijuana use in the past month was significantly less likely among ALERT Plus students reporting at least weekly exposure to anti-drug media messages. The National Youth Anti-Drug Media Campaign may have led to

reductions in marijuana use among youth who simultaneously received school-based drug prevention.

- ★ Nelson, S. E., van Ryzin, M. J., & Dishion, T. J. (2015). Alcohol, marijuana, and tobacco use trajectories from age 12 to 24 years: Demographic correlates and young adult substance use problems. *Development and Psychopathology*, 27(1), 253-277.

Substance use trajectories were examined from early adolescence to young adulthood among a diverse sample of 998 youths. Analysis of longitudinal data from ages 12 to 24 identified distinct trajectories for alcohol, marijuana, and tobacco use. Modeling revealed 8 alcohol, 7 marijuana, and 6 tobacco use trajectories. Analyses assessed risk for substance use problems in early adulthood within each trajectory, as well as overlap among alcohol, marijuana, and tobacco use trajectories. Findings confirmed that adolescents with early- and rapid-onset trajectories are particularly vulnerable to the development of problematic substance use in early adulthood. However, analyses also identified an escalating high school onset trajectory for alcohol and for marijuana use that was equally prognostic of problem use in adulthood. Moreover, tobacco use in early adolescence was associated with developing high-risk marijuana and alcohol use patterns. Random assignment to the Family Check-Up intervention was found to reduce risk for membership in the high-risk marijuana use trajectories, suggesting that family-based approaches delivered during adolescence can prevent escalations to problematic substance use. These findings suggest the importance of developmental heterogeneity and equifinality in considering prevention for alcohol and drug use.

- ★ Slater, M. D., Kelly, K. J., Edwards, R. W., Thurman, P. J., Plested, B. A., Keefe, T. J., et al. (2006). Combining in-school and community-based media efforts: Reducing marijuana and alcohol uptake among younger adolescents. *Health Education Research*, 21(1), 157-167.

This study tests the impact of an in-school mediated communication campaign based on social marketing principles, in combination with a participatory, community-based media effort, on marijuana, alcohol and tobacco uptake among middle-school students. Eight media treatment and eight control communities throughout the US were randomly assigned to condition. Within both media treatment and media control communities, one school received a research-based prevention curriculum and one school did not, resulting in a crossed, split-plot design. Four waves of longitudinal data were collected over 2 years in each school and were analyzed using generalized linear mixed models to account for clustering effects. Youth in intervention communities (N = 4216) showed fewer users at final post-test for marijuana [odds ratio (OR) = 0.50, P = 0.019], alcohol (OR = 0.40, P = 0.009) and cigarettes (OR = 0.49, P = 0.039), one-tailed. Growth trajectory results were significant for marijuana (P = 0.040), marginal for alcohol (P = 0.051) and non-significant for cigarettes (P = 0.114). Results suggest that an appropriately designed in-school and community-based media effort can reduce youth substance uptake. Effectiveness does not depend on the presence of an in-school prevention curriculum.

- ★ Spoth, R., Redmond, C., Shin, C., Greenberg, M., Clair, S., & Feinberg, M. (2007). Substance-use outcomes at 18 months past baseline: The PROSPER community-university partnership trial. *American Journal of Preventive Medicine*, 32(5), 395-402.

Background: The study's objective was to examine the effects of "real-world," community-based implementation of universal preventive interventions selected from a menu, including effects specific to higher- and lower-risk subsamples. **Design:** School districts were selected based on size and location, and then randomly assigned to a control condition or to an experimental condition in a cohort sequential design. **Setting/Participants:** The study included 28 public school districts in Iowa and Pennsylvania that were located in rural towns and small cities, ranging in size from 6975 to 44,510. Sixth and seventh graders in these school districts participated in the study. **Intervention:** Community teams were mobilized; each team implemented one of three evidence-based, family-focused interventions (5 to 12 sessions) and one of three evidence-based school interventions (11 to 15 sessions), for 6th and 7th graders, respectively. Observations showed that interventions were implemented with fidelity. **Main Outcome Measures:** Outcomes included student reports of past month, past year, and lifetime use of alcohol, cigarettes, marijuana, methamphetamines, ecstasy, and inhalants, as well as indices of gateway and illicit substance initiation, at pretest and at a follow-up assessment 18 months later. **Results:** Intent-to-treat analyses demonstrated significant effects on substance initiation (marijuana, inhalants, methamphetamines, ecstasy, gateway index, illicit-use index), as well as past-year use of marijuana and inhalants, with positive trends for all substances measured. For three outcomes, intervention effects were stronger for higher-risk students than lower-risk students. **Conclusions:** Community-based implementation of brief universal interventions designed for general populations has potential for public health impact by reducing substance use among adolescents.

Spoth, R. L., Trudeau, L. S., Gyll, M., & Shin, C. (2012). Benefits of universal intervention effects on a youth protective shield 10 years after baseline. *Journal of Adolescent Health*, 50(4), 414-417.

Purpose: An earlier randomized controlled study found that a universal, family-focused preventive intervention produced protective shield effects—reduced adolescent

Approach Profile: PROSPER

PROSPER stands for PROMoting School-community-university Partnerships to Enhance Resilience. PROSPER isn't a program, rather it is a scientifically-proven delivery system that facilitates sustained, quality delivery of evidence-based programs that reduce risky youth behaviors, enhance positive youth development and strengthen families.

This delivery system links university-based prevention researchers with two established program delivery systems within a state—the Cooperative Extension System at the Land Grant University and the public school system. Extension offers knowledge of the community and experience in disseminating educational programs. The public school system offers access to youth in the community and to educators who care about making a difference in the lives of students. PROSPER starts with these existing resources and then adds partnerships among the other key youth and family service providers in the community to form small, strategic teams.

<http://helpingkidsprosper.org>

(Spoth et al., 2007)

exposures to illicit substance opportunities—among adolescents in grade 12. This study examined a follow-up assessment of the sample during young adulthood. Methods: A randomized controlled trial evaluated the Iowa Strengthening Families Program that was implemented in 22 rural schools (N = 446 families) when the participants were in grade six. Measures included adolescent exposure to illicit substance use and young adult lifetime substance use (age 21; N = 331). Growth curve modeling examined indirect intervention effects through growth factors of adolescent exposure. Results: Findings from this study confirm protective shield effects that mediate long-term reduction of illicit substance use ($\beta = -.14$, $p = .02$, Relative Reduction Rate = 28.2%). Conclusions: The benefits of decreasing exposure to substance use during adolescence through universal interventions were supported, with positive effects extending into young adulthood.

- ★★ Spoth, R., Trudeau, L., Redmond, C., & Shin, C. (2014). Replication RCT of early universal prevention effects on young adult substance misuse. *Journal of Consulting and Clinical Psychology*, 82(6), 949-963.

Objective: For many substances, more frequent and problematic use occurs in young adulthood; these types of use are predicted by the timing of initiation during adolescence. We replicated and extended an earlier study examining whether delayed substance initiation during adolescence, resulting from universal preventive interventions implemented in middle school, reduces problematic use in young adulthood. Method: Participants were middle school students from 36 Iowa schools randomly assigned to the Strengthening Families Program: For Parents and Youth 10–14 (Molgaard, Spoth, & Redmond, 2000) plus Life Skills Training (LST; Botvin, 1995, 2000), LST-only, or a control condition. Self-report questionnaires were collected at 11 time points, including 4 during young adulthood. The intercept (average level) and rate of change (slope) in young adult frequency measures (drunkenness, alcohol-related problems, cigarettes, and illicit drugs) across ages 19–22 were modeled as outcomes influenced by growth factors describing substance initiation during adolescence. Analyses entailed testing a 2-step hierarchical latent growth curve model; models included the effects of baseline risk, intervention condition assignment, and their interaction. Results: Analyses showed significant indirect intervention effects on the average levels of all young adult outcomes, through effects on adolescent substance initiation growth factors, along with Intervention \times Risk interaction effects favoring the higher risk subsample. Additional direct effects on young adult use were observed in some cases. Relative reduction rates were larger for the higher risk subsample at age 22, ranging from 5.8% to 36.4% on outcomes showing significant intervention effects. Conclusions: Universal preventive interventions implemented during early adolescence have the potential to decrease the rates of substance use and associated problems into young adulthood.

- Spoth, R. L., Redmond, C., Trudeau, L., & Shin, C. (2002). Longitudinal substance initiation outcomes for a universal preventive intervention combining family and school programs. *Psychology of Addictive Behaviors*, 16(2), 129-134.

This study evaluated the substance initiation effects of an intervention combining family and school-based competency-training intervention components. Thirty-six rural schools were randomly assigned to 1 of 3 conditions: (a) the classroom-based Life Skills Training (LST) and the Strengthening Families Program: For Parents and Children 10-14, (b) LST only, or (c) a control condition. Outcomes were examined 1 year after the intervention posttest, using a substance initiation index (SII) measuring lifetime use of alcohol, cigarettes, and marijuana and by rates of each individual substance. Planned intervention-control contrasts showed significant effects for

both the combined and LST-only interventions on the SII and on marijuana initiation. Relative reduction rates for alcohol initiation were 30.0% for the combined intervention and 4.1% for LST only.

Stead, M., Mackintosh, A. M., Eadie, D., & Hastings, G. (2001). Preventing adolescent drug use: The development, design and implementation of the first year of 'NE Choices'. *Drugs: Education, Prevention & Policy*, 8(2), 151-175.

Illicit drug use by adolescents in the UK is of major concern. Recent surveys suggest that increasing proportions of young people are using drugs, that the number of different drugs used has increased, and that young people are experimenting at a younger age (C. Roberts et al, 1995). As part of its response to these problems, the UK government established the Home Office Drugs Prevention Initiative, a nationwide programme of interventions combining central guidance and local initiatives, and designed to establish best practice in the field (Home Office, 1996). 'NE Choices' was one of the largest interventions in the programme, a 3-yr multicomponent social influences intervention targeting -16 yr old school children in the north-east of England. Following a 3-yr development and pilot phase, the intervention began its full implementation in January 1997 and ran until April 1999. A longitudinal quasi-experimental study measured drug use behaviour before, during and after the programme, while process and impact evaluation studies examined delivery and immediate response. This paper describes the development, design, and delivery of the programme's first year, the 'Year Nine intervention'.

Program Profile: NE Choices

'NE Choices' is a 3-yr multi-component social influences intervention targeting 16 yr old school children. NE Choices is underpinned by social marketing theory and practice. Social marketing is founded on exchange theory which argues that, given behavioural options, people will ascribe values to the alternatives and select the one that offers greatest benefit – or enhancement - to themselves.

(Stead et al., 2001)

2.8. Multimedia, computer- and internet-based programs (15)

Chambers, M., Connor, S. L., & McElhinney, S. (2005). Substance use and young people: The potential of technology. *Journal of Psychiatric and Mental Health Nursing*, 12(2), 179-186.

There is widespread concern about alcohol and drug use and abuse among young people in the United Kingdom, Europe and the United States. Evaluations of current drug and alcohol education approaches have mixed findings and some methodological difficulties. This paper reports on exploratory research to explore the potential of technology to provide information and support to young people regarding substance use and abuse. Eight focus groups were conducted with young people (n = 78) and three with key informants (n = 22). The findings revealed that technology has potential to provide information on this topic, and that young people are critical of some of the more traditional methods of provision. The young people were prepared to experiment with technology, felt competent to do so, and made suggestions of information they would like. These findings are discussed and recommendations made for future research in the area.

Champion, K. E., Newton, N. C., Stapinski, L., Slade, T., Barrett, E. L., & Teesson, M. (2016). A cross-validation trial of an Internet-based prevention program for alcohol and cannabis: Preliminary results from a cluster randomised controlled trial. *Australian and New Zealand Journal of Psychiatry*, 50(1), 64-73.

Objective: Replication is an important step in evaluating evidence-based preventive interventions and is crucial for establishing the generalizability and wider impact of a program. Despite this, few replications have occurred in the prevention science field. This study aims to fill this gap by conducting a cross-validation trial of the Climate Schools: Alcohol and Cannabis course, an Internet-based prevention program, among a new cohort of Australian students. **Method:** A cluster randomized controlled trial was conducted among 1103 students (MAGE: 13.25 years) from 13 schools in Australia in 2012. Six schools received the Climate Schools course and 7 schools were randomized to a control group (health education as usual). All students completed a self-report survey at baseline and immediately post-intervention. Mixed-effects regressions were conducted for all outcome variables. Outcomes assessed included alcohol and cannabis use, knowledge and intentions to use these substances. **Results:** Compared to the control group, immediately post-intervention the intervention group reported significantly greater alcohol (d = 0.67) and cannabis knowledge (d = 0.72), were less likely to have consumed any alcohol (even a sip or taste) in the past 6 months (odds ratio = 0.69) and were less likely to intend on using alcohol in the future (odds ratio = 0.62). However, there were no effects for binge drinking, cannabis use or intentions to use cannabis. **Conclusion:** These preliminary results provide some support for the Internet-based Climate Schools: Alcohol and Cannabis course as a feasible way of delivering alcohol and cannabis prevention. Intervention effects for alcohol

Program Profile: Climate Schools

Climate Schools is an innovative and engaging way to empower students to gain knowledge about their health and well-being. Currently, there are three modules.

- Alcohol education
- Alcohol and cannabis education
- Psychostimulant and cannabis education

Climate Schools has offered an internet-based version of the program to youth.

<https://www.climateschools.com.au/>

(Champion et al., 2016)

and cannabis knowledge were consistent with results from the original trial; however, analyses of longer-term follow-up data are needed to provide a clearer indication of the efficacy of the intervention, particularly in relation to behavioral changes.

Di Noia, J., Schwinn, T. M., Dastur, Z. A., & Schinke, S. P. (2003). The relative efficacy of pamphlets, CD-ROM, and the Internet for disseminating adolescent drug abuse prevention programs: An exploratory study. *Preventive Medicine: An International Journal Devoted to Practice and Theory*, 37(6,Pt1), 646-653.

Background: Despite the availability of an increasing array of empirically validated adolescent drug abuse prevention programs, program materials and evaluation findings are poorly disseminated. CD-ROM and the Internet hold promise for disseminating this information to schools and agencies that directly serve youth, and to policy-making bodies that exercise control over funds to support adolescent drug abuse prevention programming. However, data on the relative efficacy of these newer technologies over conventional print means of dissemination are lacking. Methods: Recruited through schools, community agencies, and policy-making bodies, 188 professionals were randomized to receive prevention program materials via pamphlets (55 participants), CD-ROM (64 participants), and the Internet (69 participants). Participants completed pretest, post-test, and 6-month follow-up measures that assessed their access to prevention program materials; self-efficacy for identifying, obtaining, and recommending these programs; and their likelihood of requesting, implementing, and recommending prevention programs to their constituents. Results: Participants exposed to dissemination via CD-ROM and the Internet evidenced the greatest short- and long-term gains on accessibility, self-efficacy, and behavioral intention variables. Conclusions: CD-ROM and the Internet are viable means for disseminating adolescent drug abuse prevention programs to schools, community agencies, and policy-making bodies, and should be increasingly used for dissemination purposes.

Elias-Lambert, N., Boyas, J. F., Black, B. M., & Schoech, R. J. (2015). Preventing substance abuse and relationship violence: Proof-of-concept evaluation of a social, multi-user, tablet-based game. *Children and Youth Services Review*, 53, 201-210.

Increasing evidence suggests that using technology and Internet-based methods in prevention programming can be an efficacious delivery practice. This literature implies that applying digital technologies to prevention may provide a unique opportunity to carry out interventions with reliability and in a manner that is more appealing and suitable to youth. This exploratory study reports on a proof-of-concept evaluation of Choices & Consequences, a substance abuse and relationship violence prevention program that integrates digital technologies and devices with game-based behavior change techniques. Six focus groups (N = 44) were conducted with youth living in a Southwestern city. Results suggest that youth preferred various aspects of this prevention game to traditional methods. They especially liked that the game was engaging and that they were able to learn in both formal and informal environments, that is interacting with each other and a facilitator or playing the game on their own. Results also found that youth learned many lessons while playing the game and they believe the game may help prevent substance abuse and relationship violence among the target population of early adolescents. Thus, this research suggests that prevention programs for youth that combine interactive methods, mobile technology, social networking, and competitive gaming could be a strong alternative to traditional delivery methods.

Epstein, J., Thomson, N. R., Collins, K. K., & Pancella, T. (2009). A longitudinal comparison of two versions of an interactive multimedia substance abuse education program. *Journal of Child & Adolescent Substance Abuse, 18*(3), 302-321.

Using a grant from the National Institute on Drug Abuse, The Missouri Institute of Mental Health produced a series of media tools designed to teach fourth-, fifth-, and sixth-grade children from African-American churches about the science of drug addiction. Beginning with a core curriculum, two separate interventions were created. In the SpaceScouts version of the program, the content is embedded within a narrative storyline delivered via an interactive DVD. In the LockerTalk version of the program, content is delivered in a more didactic form via an interactive CD-ROM. Youths from a dozen churches were randomly assigned to one of these two conditions or to a wait-list control. A pretest, posttest, and four- and eight-month follow-up evaluations were conducted. An additional sample of youths went through the programs during a summer camp. Analyses of the programs revealed that students who received these interventions demonstrated some modest gains in knowledge. Specifically, students who viewed SpaceScouts demonstrated improvements from baseline on one of the three sub-modules at post-test. Students who viewed LockerTalk, however, showed greater overall mastery of the content as compared to the students who viewed SpaceScouts or were in the wait-list control condition.

Epstein, J., Collins, K. K., Thomson, N. R., Pancella, T., & Pauley, D. (2007). The Doubles: Evaluation of a substance abuse education curriculum for elementary school students. *Journal of Child & Adolescent Substance Abuse, 16*(4), 1-22.

"The Doubles," funded by the National Institute on Drug Abuse, is a seven-episode series of media tools designed to teach third and fourth-grade students about the science of drug addiction. The program's curriculum was delivered through a set of DVDs, interactive CD-ROMs, workbooks, or an Internet Site. Results indicate that although the interventions were successful in teaching students about the biological bases of substance abuse, they had little effect on student attitudes. Implications for future studies are discussed.

Gropper, M. (2002). Computer-integrated drug prevention--Combining multi-media and social group work practice to teach inner city Israeli 6th graders how to say no to drugs. *Journal of Technology in Human Services, 20*(1-2), 49-65.

Describes an integrated 10-session educational multi-media program to teach groups of Israeli youth to avoid drugs, called

Program Profile: SpaceScouts vs. LockerTalk

This study compared an identical curriculum delivered two different ways:

SpaceScouts embedded substance abuse content within a narrative story about space alien teenagers. This was a video that resembled many teen-targeted television shows.

LockerTalk used a much more straightforward didactic approach as opposed to a story. Each of the three lessons took on a similar form, patterned on the theme of a basketball team's locker room.

(Epstein, 2009)

Program Profile: The Doubles

The Doubles is a seven-episode series of media tools designed to teach third and fourth-grade students about the science of drug addiction. The program's curriculum is delivered through a set of DVDs, interactive CD-ROMs, workbooks, or an Internet Site. Each delivery format features a fictional up-and-coming teen pop band called "The Doubles," which is made up of a set of identical twins and a set of fraternal twins.

(Epstein, 2004)

"Say No with Donny". The program uses an older brother model who provides information and advice to youthful Israeli players regarding the adverse consequences of using drugs. The program targets primary drug prevention efforts on a high-risk preadolescent population of 6th graders in a poor community. Originally designed for use in a social work agency computer lab, the program is now being given at schools in their own computer classrooms. Issues discussed include the role of the facilitator/group leader, interaction of the software and group process, group work activities used with the program, community support, theoretical underpinnings, and program effectiveness. It is concluded that this integration of group work methods and the computer program represents a new development in social work practice in the area of health promotion and prevention with youth.

Marsch, L. A., Bickel, W. K., & Badger, G. J. (2007). Applying computer technology to substance abuse prevention science: Results of a preliminary examination. *Journal of Child & Adolescent Substance Abuse*, 16(2), 69-94.

Program Profile: Say No with Donny

"Say No with Donny" is a multi-media computer program that uses an older brother model who provides information and advice to youthful Israeli players regarding the adverse consequences of using drugs. The program targets primary drug prevention efforts on a high-risk preadolescent population of 6th graders in a poor community.

(Gropper, 2002)

This manuscript reports on the development and evaluation of a computer-based substance abuse prevention program for middle school-aged adolescents, called HeadOn: Substance Abuse Prevention for Grades 6-8™. This self-guided program was designed to deliver effective drug abuse prevention science to youth via computer-based educational technologies that effectively promote learning of key skills and information. Results of a controlled, school-based evaluation demonstrated that the HeadOn substance abuse prevention program promoted significantly higher levels of accuracy in objective knowledge about drug abuse prevention relative to the demonstrably effective Life Skills Training Program. Participants in the HeadOn and Life Skills groups also generally achieved comparable, positive outcomes after completing their substance abuse prevention intervention in actual self-reported rates of substance use, intentions to use substances, attitudes toward substances, beliefs about prevalence of substance use among both their peers and adults, and likelihood of refusing a drug offer. The HeadOn program may be of substantial benefit in providing drug abuse prevention to middle school-aged youth in a manner that ensures the fidelity of the intervention. It may also provide comprehensive substance abuse prevention science that is more cost-effective than the labor-intensive prevention interventions that have been demonstrated to be efficacious, and thereby expand the reach of effective drug abuse prevention science.

Newton, N. C., Andrews, G., Teesson, M., & Vogl, L. E. (2009). Delivering prevention for alcohol and cannabis using the internet: A cluster randomised controlled trial. *Preventive Medicine*, 48(6), 579-584.

Objective: To establish the efficacy of an internet based prevention program to reduce alcohol and cannabis use in adolescents. Method: A cluster randomised controlled trial was conducted with 764 13-year olds from ten Australian secondary schools in 2007–2008. Half the schools were randomly allocated to the computerised prevention program (n = 397), and half to their usual health classes (n = 367). The Climate Schools: Alcohol and Cannabis prevention course is facilitated by the internet and consists of novel, evidence-based, curriculum consistent lessons

aimed at reducing alcohol and cannabis use. Participants were assessed at baseline, immediately post, and at six months following the intervention. Results: Compared to the control group, students in the intervention group showed significant improvements in alcohol and cannabis knowledge at the end of the course and the six month follow-up. In addition, the intervention group showed a reduction in average weekly alcohol consumption and frequency of cannabis use at the six month follow-up. No differences between groups were found on alcohol expectancies, cannabis attitudes, or alcohol and cannabis related harms. Conclusions: The course is acceptable, scalable and fidelity is assured. It increased knowledge regarding alcohol and cannabis, and decreased use of these drugs.

- ★ Schinke, S. P., Fang, L., & Cole, K. C. (2009). Preventing substance use among adolescent girls: 1-year outcomes of a computerized, mother-daughter program. *Addictive Behaviors*, 34(12), 1060-1064.

This study tested a computerized gender-specific, parent-involvement intervention program grounded in family interaction theory and aimed at preventing substance use among adolescent girls. Following program delivery and 1 year later, girls randomly assigned to the intervention arm improved more than girls in a control arm on variables associated with reduced risks for substance use, including communication with their mothers, knowledge of family rules about substance use, awareness of parental monitoring of their discretionary time, non-acceptance of peer substance use, problem-solving skills, and ability to refuse peer pressure to use substances. Relative to control-arm girls, those in the intervention arm also reported less 30-day use of alcohol and marijuana and lower intentions to smoke, drink, and take illicit drugs in the future. Girls' mothers in the intervention arm reported greater improvements after the program and relative to control-arm mothers in their communication with their daughters, establishment of family rules about substance use, and monitoring of their daughters' discretionary time. Study findings lend support to the potential of gender-specific, parent-involvement, and computerized approaches to preventing substance use among adolescent girls.

Schinke, S. P., Schwinn, T. M., & Fang, L. (2010). Longitudinal outcomes of an alcohol abuse prevention program for urban adolescents. *Journal of Adolescent Health*, 46(5), 451-457.

Purpose: This randomized clinical trial examined longitudinal outcomes from an alcohol abuse prevention program aimed at urban youths. Methods: Study participants were an ethnically and racially heterogeneous sample of early adolescents, recruited from community-based agencies in greater New York City and its environs. Once they assented to study participation and gained parental permission, youths were divided into three arms: youth intervention delivered by CD-ROM (CD), the same youth intervention plus

Program Profile: Mother-Daughter Communication Program

Guided by family interaction theory, the intervention program aimed to reduce girls' substance use through mother-daughter interactions. The program helped mothers learn to better communicate with their daughters, monitor their daughters' behavior and activities, build their daughters' self-image and self-esteem, establish rules about and consequences for substance use, create family rituals, and refrain from communicating unrealistic expectations. Working together in their homes and at times convenient to them, mother-daughter dyads interacted with the computer program's nine sessions.

(Schinke et al, 2009)

parent intervention (CDP), and control. Once all youths completed baseline measures, those in CD and CDP arms received a computerized 10-session alcohol abuse prevention program. Parents of youths in the CDP arm received supplemental materials to support and strengthen their children's learning. All youths completed post-intervention and annual follow-up measures, and CD- and CDP-arm participants received annual booster intervention sessions. Results: Seven years following post-intervention testing and relative to control-arm youths, youths in CD and CDP arms reported less alcohol use, cigarette use, binge drinking, and peer pressure to drink; fewer drinking friends; greater refusal of alcohol use opportunities; and lower intentions to drink. No differences were observed between CD and CDP arms. Conclusions: Study findings lend support to the potential of computerized, skills-based prevention programs to help urban youth reduce their risks for underage drinking.

Schwinn, T. M., Schinke, S. P., & Di Noia, J. (2010). Preventing drug abuse among adolescent girls: Outcome data from an Internet-based intervention. *Prevention Science*, 11(1), 24-32.

This study developed and tested an Internet-based gender-specific drug abuse prevention program for adolescent girls. A sample of seventh, eighth, and ninth grade girls (N = 236) from 42 states and 4 Canadian provinces were randomly assigned to an intervention or control group. All girls completed an online pretest battery. Following pretest, intervention girls interacted with a 12-session, Internet-based gender-specific drug prevention program. Girls in both groups completed the measurement battery at posttest and 6-month follow-up. Analysis of posttest scores revealed no differences between groups for 30-day reports of alcohol, marijuana, poly drug use, or total substance use (alcohol and drugs). At 6-month follow-up, between-group effects were found on measures of 30-day alcohol use, marijuana use, poly drug use, and total substance use. Relative to girls in the control group, girls exposed to the Internet-based intervention reported lower rates of use for these substances. Moreover, girls receiving the intervention achieved gains over girls in the control group on normative beliefs and self-efficacy at posttest and 6-month follow-up, respectively.

Twombly, E. C., Holtz, K. D., & Tessman, G. K. (2008). Multimedia science education on drugs of abuse: A preliminary evaluation of effectiveness for adolescents. *Journal of Alcohol and Drug Education*, 52(1), 8-18.

Adolescent substance abuse is a significant public health problem in the United States. Physical consequences of adolescent drug use include short and long-term negative effects on the brain and body, including disease, impaired judgment, addiction, and even death. In particular, increasing knowledge about the negative effects of drugs may effectively delay the onset of use and prevent negative consequences of use among youth. Despite the benefits of school-based

Program Profile: RealTeen

RealTeen is a website comprised of 2 components: the homepage and 12 intervention sessions. The homepage features, available for access anytime, included news feeds, horoscopes, beauty tips, quotes of the day, fortunes, and access to their blog, pen pal, and the chat forum girls used optionally as a response to intervention session questions. The sessions incorporated not only general personal and social skills (self-efficacy, communication, asserting one's self), but also skills specific to dealing with drug use opportunities.

(Schwinn et al., 2010)

Brain Power!

Keys to Brain Power!, is a federally-funded product that provides students in grades 6-8 with interactive lessons on the normal functions of the brain, nervous system, and the body, and how drugs change these processes. The curriculum's goal is to increase knowledge about these topics and promote protective attitudes about drugs.

(Twombly et al., 2008)

prevention, the amount of this instruction that children receive declined significantly in recent years. The scientific concepts related to drug use, including information on brain function and neurotransmission and how drugs change these processes, are complex. The curriculum was predicated on the Theory of Reasoned Action (TRA), which posits that exposure to new persuasive information causes progressive changes in knowledge, attitudes, and ultimately behavior. The data reveal several key findings about the impact of the multimedia curriculum on knowledge and attitudes in the target population. Overall, the results suggest that the multimedia curriculum under evaluation is relatively effective at increasing knowledge about alcohol and drugs of abuse. The results of the evaluation point to the need for research on other innovative approaches that decrease barriers to delivery of critical health information to students in the current educational climate.

Vogl, L. E., Newton, N. C., Champion, K. E., & Teesson, M. (2014). A universal harm-minimisation approach to preventing psychostimulant and cannabis use in adolescents: A cluster randomised controlled trial. *Substance Abuse Treatment, Prevention, and Policy*, 9.

Background: Psychostimulants and cannabis are two of the three most commonly used illicit drugs by young Australians. As such, it is important to deliver prevention for these substances to prevent their misuse and to reduce associated harms. The present study aims to evaluate the feasibility and effectiveness of the universal computer-based Climate Schools: Psychostimulant and Cannabis Module. Methods: A cluster randomised controlled trial was conducted with 1734 Year 10 students (mean age = 15.44 years; SD = 0.41) from 21 secondary schools in Australia. Schools were randomised to receive either the six lesson computer-based Climate Schools program or their usual health classes, including drug education, over the year. Results: The Climate Schools program was shown to increase knowledge of cannabis and psychostimulants and decrease pro-drug attitudes. In the short-term the program was effective in subduing the uptake and plateauing the frequency of ecstasy use, however there were no changes in meth/amphetamine use. In addition, females who received the program used cannabis significantly less frequently than students who received drug education as usual. Finally, the Climate Schools program was related to decreasing students' intentions to use meth/amphetamine and ecstasy in the future, however these effects did not last over time. Conclusions: These findings provide support for the use of a harm-minimisation approach and computer technology as an innovative platform for the delivery of prevention education for illicit drugs in schools. The current study indicated that teachers and students enjoyed the program and that it is feasible to extend the successful Climate Schools model to the prevention of other drugs, namely cannabis and psychostimulants.

Williams, C., Griffin, K. W., Macaulay, A. P., West, T. L., & Gronewold, E. (2005). Efficacy of a Drug Prevention CD-ROM Intervention for Adolescents. *Substance Use & Misuse*, 40(6), 869-878.

The purpose of the present study was to examine the efficacy of a substance abuse-preventive intervention using CD-ROM technology among adolescents in the sixth and seventh grades (12- to 13-years-old). The CD-ROM program used interactive audio and video content to teach social resistance skills, general personal and social competence skills, and normative education. Rates of substance-use behavior, attitudes, knowledge, normative expectations, and related variables were examined. From approximately 23 schools, students (n = 123) were randomly assigned to either receive the CD-ROM preventive intervention (n = 61) or to serve as a control group (n = 62). Study participants were 50% male, predominantly white (75%), and 94% came from two-parent families. Self-report data were collected using a self-administered web-based survey. Findings indicated that

there were significant intervention effects on pro-drug attitudes, normative expectations for peer and adult substance use, anxiety reduction skills, and relaxation skills knowledge, with intervention students reporting improved scores on these outcomes at the posttest relative to control students. Findings indicate that a substance abuse-preventive intervention derived from an effective, school-based prevention approach is efficacious when delivered using CD-ROM technology. Research is needed to determine potential differences in the efficacy of CD-ROM prevention tools delivered in schools compared to home settings.

See also:

- Bhochohibhoya et al., 2015 (Section 2.13e)
- Moore et al., 2005 (Section 2.13e)
- Paschall et al., 2011 (Section 2.13e)

Program Profile: Life Skills Training CD-ROM

The *LST* Middle School CD-ROM intervention was modeled after the well-established and tested school-based *LST* curriculum. The *LST* CD-ROM teaches general social skills, personal self-management skills, and drug resistance skills, with the intention of increasing overall competence and promoting the development of characteristics associated with decreased risk of using drugs in the future. The *LST* CD-ROM consists of 10 sessions and was designed for use in the home and in after-school settings. The content is presented in an engaging manner using interactive audio and video content.

(Williams et al., 2005)

2.9. Peer-led education programs (4)

Cimini, M.D. et al. (2009). Assessing the Effectiveness of Peer-Facilitated Interventions Addressing High-Risk Drinking Among Judicially Mandated College Students. *Journal of Studies on Alcohol and Drugs, Supplement 16*, 57-66.

Objective: This study examined the effectiveness of three peer-facilitated brief alcohol interventions--small group motivational interviewing, motivationally enhanced peer theater, and an interactive alcohol-education program--with students engaging in high-risk drinking who were referred for alcohol policy violations. Method: Undergraduate students referred for alcohol policy violations (N = 695) at a large northeastern public university were randomized to one of the three conditions. Six-month follow-up data were collected on drinking frequency and quantity, negative consequences, use of protective behaviors, and perceptions of peers' drinking norms. Results: There were no statistically significant overall pre-post effects or treatment effects. However, exploratory analyses indicated that decreases in perceived norms and increases in use of protective behavioral strategies were associated with reductions in alcohol use and alcohol-related problems at follow-up ($p < .01$). Conclusions: The presence of nonsignificant pre-post or main effects is, in part, consistent with recent research indicating that sanctioned college students may immediately reduce drinking in response to citation and that brief interventions may not contribute to additional behavioral change. The presence of statistically significant correlations between alcohol use and related problems with corrections in norms misperceptions and increased use of protective behaviors at the individual level holds promise for both research and practice. The integration of elements addressing social norms and use of protective behaviors within brief cognitive-behavioral intervention protocols delivered by trained peer facilitators warrants further study using randomized clinical trials.

Cuijpers, P. (2002). Peer-led and adult-led school drug prevention: a meta-analytic comparison. *Journal Of Drug Education 32*(2), 107-119.

Several studies have suggested that peer-led drug prevention programs are more effective than adult-led programs, but the evidence is not conclusive. In this article the results are presented of a meta-analysis of studies that compare drug prevention programs led by peers to the same programs led by adults. Twelve studies were identified in a systematic literature search. The quality of these studies was not optimal, and the interventions and target groups differed considerably among studies. Overall, peer-led programs were found to be somewhat more effective than adult-led programs (standardized difference $d: 0.24$). Large differences between studies were found, with some studies indicating greater effects for peer-led programs and other studies showing greater effects for adult-led programs. It is concluded that the effectiveness of a prevention program is determined by several characteristics of the programs. The leader may constitute one of those characteristics.

Planken, M. J. E., & Boer, H. (2010). Effects of a 10-minutes peer education protocol to reduce binge drinking among adolescents during holidays. *Journal of Alcohol and Drug Education, 54*(2), 35-52.

Aim of this study was to evaluate a standard ten-minute peer education protocol to reduce binge drinking among Dutch adolescents at campsites during summer holidays. Using a quasi-

experimental design, the effects of the peer education protocol as applied by trained peer educators were evaluated. Data was collected by telephone interviews fourteen days after the holiday. Peer education significantly increased knowledge on the risks of alcohol abuse and promoted personal reflection on alcohol intake. After peer education, adolescents had a more realistic view of their alcohol intake, more frequently perceived alcohol intake of their friends as binge drinking, and reported a higher intention to drink less alcohol in the future. Contrary to expectations, adolescents reported less self-efficacy to reduce alcohol use after peer education.

Sanderson, C. A. (2000). The effectiveness of a sexuality education newsletter in influencing teenagers' knowledge and attitudes about sexual involvement and drug use. *Journal of Adolescent Research, 15*(6), 674-681.

Examined the effectiveness of a newsletter written by teenagers on sexual and health issues in changing knowledge and attitudes regarding sexual activity, condom use, and drug use. 419 high school students (aged 13-18 yrs) completed a pretest, were given a copy of an 8 page newsletter on sexual and health issues to read as homework, and then completed a posttest during the next class period. Findings indicate that reading the newsletter led to more positive attitudes toward postponing sexual involvement and more negative attitudes toward using drugs. The newsletter was particularly effective in changing the knowledge and attitudes of Black students. Discussion focuses on the implications of these findings for school-based sexuality education.

2.10. Mentoring programs (9)

- ★ Aseltine, R. H., Jr., Dupre, M., & Lamlein, P. (2000). Mentoring as a drug prevention strategy: An evaluation of Across Ages. *Adolescent & Family Health, 1*(1), 11-20.

Presents results of a 3-yr evaluation of Across Ages, an intergenerational approach to drug and alcohol prevention. The program consists of 3 elements: (1) a mentoring program in which youths are matched with older adults who provide ongoing support and encouragement in weekly interactions; (2) community service activities designed to promote involvement with and better understanding of the frail elderly; and (3) a school-based life skills curriculum. Approximately 400 6th grade students took part in the evaluation over a 3 yr period. Students' classes were randomly assigned to 1 of 3 experimental conditions: the mentor condition, the curriculum condition, and the control condition. Youths involved in the study completed questionnaires on 3 occasions: prior to the initiation of program activities, at the conclusion of the program, and again 6 mo following the cessation of program activities. Results indicate that mentoring is associated with lower levels of problem behavior and substance use and higher levels of self-confidence, self-control, cooperation, and attachment to both the school and the family. Students receiving mentoring report lower levels of alcohol use. In contrast, few positive effects of the life skills curriculum or community service activities are observed.

Johnson, V. L., Holt, L. J., Bry, B. H., & Powell, S. R. (2008). Effects of an integrated prevention program on urban youth transitioning into high school. *Journal of Applied School Psychology, 24*(2), 225-246.

The current study is a formative evaluation of an integrated, school-based program for urban minority youth transitioning into high school. The design of this pilot project was quasi-experimental in nature, with one freshman physical education class assigned to receive the intervention and one to receive no program or "treatment as usual." The program consisted of a universal peer-led weekly group session plus selective adult mentoring provided to those deemed at risk of dropping out of school. These findings point to program effects in terms of (a) increased ability to make friends, (b) increased ability to resist peer pressure to participate in negative behaviors, (c) decreased tolerance of friends' use of substances, and (d) decreased self-reported acts of school misconduct, when controlling for baseline academic risk status.

Program Profile: Across Ages

Across Ages is an intergenerational approach to drug and alcohol prevention. The program consists of 3 elements: (1) a mentoring program in which youths are matched with older adults who provide ongoing support and encouragement in weekly interactions; (2) community service activities designed to promote involvement with and better understanding of the frail elderly; and (3) a school-based life skills curriculum.

(Aseltine et al., 2000)

Program Profile: Peer Group Connection

The Peer Group Connection program is a school-year-long, weekly, peer-lead, activity-based curriculum with modules designed to focus on addressing issues important to students transitioning into high school. The peer leaders were upperclassmen chosen based on various leadership qualities and to mirror the freshmen's ethnicities. The weekly topics included: team building, stress and anger management, risk assessment, conflicts in relationships, normative beliefs about drug and alcohol use, refusal skills, decision making, and communication skills.

(Johnson et al., 2008)

Kuperminc, G. P., Thomason, J., DiMeo, M., & Broomfield-Massey, K. (2011). Cool Girls, Inc.: Promoting the positive development of urban preadolescent and early adolescent girls. *The Journal of Primary Prevention*, 32(3-4), 171-183.

The past two decades have seen a transformation in youth programming toward a comprehensive positive youth development (YD) framework. Cool Girls, Inc., a YD program, focuses on improving girls' life chances by promoting positive behaviors and attitudes in multiple domains. These include self-concept, academic orientation, future orientation, and healthy behaviors. The present study uses a quasi-experimental, non-equivalent comparison group design to examine short-term effects of participation in Cool Girls, Inc. on multiple indicators of each of these domains. Participants were predominately African American and included 86 program participants and 89 comparisons in grades 4–8. Self-report questionnaires were administered at pretest (September–October) and posttest (April–May) of the 2005–2006 academic school year. We hypothesized that program participants would show improvements across domains of self-concept, academic orientation, future orientation, and healthy behavior. Relative to comparisons, program participants experienced gains in scholastic competence, hope for the future, and physical activity. Cool Girls participants with a mentor experienced significant gains in social acceptance and body image relative to other Cool Girls and were more than four times as likely to have expectations of avoiding drug use in the future. The role of mentoring as well as the study's practical significance, strengths, and limitations are discussed.

LoSciuto, L., Rajala, A. K., Townsend, T. N., & Taylor, A. S. (1996). An outcome evaluation of Across Ages: An intergenerational mentoring approach to drug prevention. *Journal of Adolescent Research*, 11(1), 116-129.

Evaluated the outcomes of the Across Ages project, a comprehensive intergenerational mentoring drug prevention approach for high-risk middle school children (1991-94). Teachers were acquainted with the various risk factors facing the children, and trained about various components of the program, following which they were expected to administer the program. 562 Ss (6th graders) from schools in stressed areas completed the pre- and post-test versions of an evaluation battery comprising several measures, like reactions to drug use and stress or anxiety, self perception, and knowledge about older people. Measures of nominal vs actual participation in the program were also used. Results indicate that the program led to more positive changes in Ss' knowledge, attitudes, and substance abuse behavior and related life skills. Those whose mentors were most involved fared much better.

Program Profile: Cool Girls

Cool Girls is a community-based youth development program that takes a comprehensive approach to assisting girls in low-income communities in order to help them become self-assured and break the cycles of poverty, teen pregnancy, racism and sexism. The program's theory of change reflects the belief that increasing girls' access to internal and external resources will result in enhancing the likelihood of healthy behaviours and attitudes over time. After taking part in the program for one year, girls are eligible to have a mentor in the Cool Sisters program.

<http://www.thecoolgirls.org>

(Kuperminc et al, 2011)

Mogro-Wilson, C., Letendre, J., Toi, H., & Bryan, J. (2015). Utilizing mutual aid in reducing adolescent substance use and developing group engagement. *Research on Social Work Practice, 25*(1), 129-138.

Objective: This study assessed the effectiveness of mutual aid groups for high school students. Methods: A quasi-experimental design was applied to 242 adolescents, where every other adolescent was assigned to the intervention or the control condition. The study evaluated the influence of implementing mutual aid groups in decreasing perceived risk of substance use, favorable attitudes toward substance use, and reducing substance use while increasing group engagement. Participants were assessed at baseline, during Sessions 2 and 7, and treatment exit. General linear mixed-effects models were used to detect significant differences between treatment and control conditions. Results: Findings indicated mutual aid groups significantly reduced favorable attitudes toward drug use and decreased alcohol and marijuana usage compared to the control group. In addition, the adolescents in treatment significantly increased their group engagement. Conclusions: Results support mutual aid group work models for reducing alcohol use and increasing group engagement for high school youth.

Taylor, A. S., LoSciuto, L., Fox, M., Hilbert, S. M., & Sonkowsky, M. (1999). The mentoring factor: Evaluation of the Across Ages' intergenerational approach to drug abuse prevention. *Child & Youth Services, 20*(1-2), 77-99.

Across Ages is a comprehensive, intergenerational mentoring program designed to reduce adolescent drug abuse and to help older adults (55+) maintain active roles in their communities. For an outcome evaluation, 6th grade students in classrooms from Philadelphia public schools were randomly assigned to 1 of 3 conditions: A curriculum and community service condition (Program Group), a curriculum, service, and mentoring condition (Mentoring Group), or a Control Group. Eight modified scales and 3 original scales were completed by 562 students in a pretest and posttest design. Results suggest that the Program Group participants showed significant improvement in their sense of well-being, knowledge about elders, reactions to situations involving drug use, and attitudes toward community service. Participants in the Mentoring Group also improved in their attitudes toward school, the future, and elders.

Thomas, R. E., Lorenzetti, D., & Spragins, W. (2011). Mentoring adolescents to prevent drug and alcohol use. *Cochrane Database of Systematic Reviews*(11).

There are high rates of alcohol and drug use by many adolescents. Four randomised controlled trials (RCTs) were identified. All four RCTs were in the US and with adolescents described as deprived, and most were minority group adolescents. Two RCTs tested the "Across Ages" mentoring programme, one the Big Brothers/Big Sisters mentoring programme, and one an intervention with adolescents whose parents were HIV+. Two RCTs found that mentoring reduced rates of initiation of use of alcohol, and one reduced initiation of use of drugs. No adverse effects were identified. The relative youth of three of the samples made it unlikely that the interventions would be effective due to low baseline rates of usage. The studies assessed formal programmes, and as most mentors are informal their work remains unassessed.

Valentine, J., Griffith, J., Ruthazer, R., Gottlieb, B., & Keel, S. (1998). Strengthening causal inference in adolescent drug prevention studies: Methods and findings from a controlled study of the Urban Youth Connection Program. *Drugs & Society*, 12(1-2), 127-145.

Presents the methods and findings from the Urban Youth Connection, a substance abuse prevention program implemented in an urban public middle school and high school serving predominantly Hispanic and African American students. The program provides counseling, mentoring and academic support. A pre-test, post-test comparison group design estimated the impact of the program on ultimate outcomes of 30-day use of alcohol, tobacco, and other drugs, and intermediate outcomes of risk behaviors, psychosocial well-being, and school involvement, as measured by self-administered questionnaires given each fall and spring from 1993-1996. A comparison group was drawn from non-participants at each school. Unadjusted outcomes at follow-up were significantly worse in the treatment group than in the comparison group. Statistical adjustment eliminated significant differences between the treatment and comparison groups at follow-up, and higher program exposure was associated with better outcomes for some measures. Adjustment for differences between treatment and comparison groups and correction for variation in program exposure within the treatment group are essential for accurate estimation of the benefits of drug prevention interventions.

Program Profile: Urban Youth Connection Program

The core services of the Urban Youth Connection Program consist of individual, pair or group counseling provided to students attending a middle school and a high school. Students entered the program initially through referral from teachers, based upon a risk profile. Counseling services were provided by graduate student interns enrolled in a local university.

(Valentine et al., 1998)

Vigna-Taglianti, F., Vadrucchi, S., Faggiano, F., Burkhart, G., Siliquini, R., & Galanti, M. R. (2009). Is universal prevention against youths' substance misuse really universal? Gender-specific effects in the EU-Dap school-based prevention trial. *Journal of Epidemiology and Community Health*, 63(9), 722-728.

Background: Studies of effectiveness of school-based prevention of substance misuse have generally overlooked gender differences. The purpose of this work was to analyze gender differences in the effectiveness of a new European school-based curriculum for prevention of substance misuse among adolescents. Methods: The European Drug Abuse Prevention (EU-Dap) trial took place in seven European countries during the school year 2004-05. Schools were randomly assigned to either a control group or a 12-session standardized curriculum ("Unplugged") based on a comprehensive social influence model. The analytical sample consisted of 6,359 students (3,324 boys and 3,035 girls). The use of cigarettes, alcohol and illicit drugs, adolescents' knowledge and opinions about substances, as well as social and personal skills were investigated through a self-completed anonymous questionnaire administered at

Program Profile: Unplugged

Unplugged consisted of a 12-session standardised curriculum based on a comprehensive social influence model. The programme was taught using interactive techniques and focused on developing and enhancing interpersonal skills (group dynamics, assertiveness, problem-solving, creative thinking and self-control) and intrapersonal skills (verbal and non-verbal communication, expression of negative feelings, coping skills). Sessions on normative education and information on the effects of smoking and drug use were also provided.

(Vigna-Taglianti et al., 2009)

enrolment and 3 months after the end of the programme. Adjusted Prevalence Odds Ratios were calculated as the measure of association between the intervention and behavioral outcomes using multilevel regression modeling. Results: At enrolment, boys were more likely than girls to have used cannabis and illicit drugs, whereas girls had a higher prevalence of cigarette smoking. At the follow-up survey, a significant association between the programme and a lower prevalence of all behavioral outcomes was found among boys, but not among girls. Age and self esteem emerged as possible modifiers of these gender differences, but effects were not statistically significant. Conclusions: Comprehensive social influence school curricula against substance misuse in adolescence may perform differently among girls and boys, owing to developmental and personality factors.

2.11. Neuroscience-informed approaches (0)

None found at this time in PsycINFO.

2.12. Mass media campaigns (20)

Alvaro, E. M., Crano, W. D., Siegel, J. T., Hohman, Z., Johnson, I., & Nakawaki, B. (2013). Adolescents' attitudes toward anti-marijuana ads, usage intentions, and actual marijuana usage. *Psychology of Addictive Behaviors, 27*(4), 1027-1035.

The association of adolescents' appraisals of the antimarijuana TV ads used in the National Youth Antidrug Media Campaign with future marijuana use was investigated. The 12- to 18-year-old respondents (N = 2,993) were first classified as users, resolute nonusers, or vulnerable nonusers (Crano, Siegel, Alvaro, Lac, & Hemovich, 2008). Usage status and the covariates of gender, age, and attitudes toward marijuana were used to predict attitudes toward the ads (Aad) in the first phase of a multilevel linear analysis. All covariates were significantly associated with Aad, as was usage status: Resolute nonusers evaluated the ads significantly more positively than vulnerable nonusers and users (all ps < .001), who did not differ. In the second phase, the covariates along with Aad and respondents' usage status predicted intentions and actual usage 1 year after initial measurement. The lagged analysis disclosed negative associations between Aad and usage intentions and between Aad and actual marijuana use (both ps < .05); however, this association held only for users (p < .01), not vulnerable or resolute nonusers. Users who reported more positive attitudes toward the ads were less likely to report intention to use marijuana and to continue marijuana use at 1-year follow-up. These findings may inform designers of persuasion-based prevention campaigns, guiding preimplementation efforts in the design of ads that targeted groups find appealing and thus, influential.

Belenko, S., Dugosh, K. L., Lynch, K., Mericle, A. A., Pich, M., & Forman, R. F. (2009). Online illegal drug use information: An exploratory analysis of drug-related website viewing by adolescents. *Journal of Health Communication, 14*(7), 612-630.

Given the uncertain effects of antidrug media campaigns, and the ease of finding online illegal drug information, research is needed on the Internet role in disseminating drug information to youths. This exploratory study analyzes National Survey of Parents and Youth (NSPY) data on drug website viewing among 12-18 year olds (N = 7,145). Approximately 10.4% reported drug-related website exposure: 5.4% viewed only websites that communicated how to avoid drugs or bad things about drugs (antidrug websites); 1.7% only viewed websites that communicated how to use drugs and good things about drugs (prodrug websites); and 3.2% viewed both types of websites. The low rates of viewing antidrug websites occurred despite efforts in the National Youth Antidrug Media Campaign (NYAMC) to encourage youths to visit such websites. Prodrug website viewers had used inhalants and been offered marijuana, perceived little risk in trying marijuana, intended to use marijuana, had close friends who used drugs, reported low parental monitoring, and had been exposed to antidrug media messages. Viewing antidrug websites was related to gender, income, likelihood of using marijuana in the next 12 months, having close friends who use drugs and talking to friends about avoiding drugs, parental monitoring, and drug prevention exposure. Prior prevention exposure increased drug website viewing overall, perhaps by increasing general curiosity about drugs. Because adolescents increasingly seek health information online, research is needed on how they use the Internet as a drug information source, the temporal relationships of

prevention exposure and drug website viewing, and the effects of viewing prodrug websites on drug risk.

Block, L. G., Morwitz, V. G., Putsis, W. P., Jr., & Sen, S. K. (2002). Assessing the impact of antidrug advertising on adolescent drug consumption: Results from a behavioral economic model. *American Journal of Public Health, 92*(8), 1346-1351.

Examined whether recall of anti-drug advertising was associated with a decreased probability of using illicit drugs and, given drug use, a reduced volume of use, in 4,195 adolescents (aged 13-17 yrs). A behavioral economic model of influences on drug consumption was developed with survey data from the adolescents to determine the incremental impact of anti-drug advertising. The findings provided evidence that recall of anti-drug advertising was associated with a lower probability of marijuana and cocaine/crack use. Recall of such advertising was not associated with the decision of how much marijuana or cocaine/crack to use. The results suggest that individuals predisposed to try marijuana are also predisposed to try cocaine/crack. It is concluded that the findings provide support for the effectiveness of anti-drug advertising programs.

Comello, M. L. G. (2013). Comparing effects of 'My Anti-Drug' and 'Above the Influence' on campaign evaluations and marijuana-related perceptions. *Health Marketing Quarterly, 30*(1), 35-46.

Two national campaigns—My Anti-Drug and [Above the Influence](#)—have been implemented to prevent youth substance use. Although Above the Influence was conceptualized as a major shift in messaging from My Anti-Drug, no studies have reported head-to-head tests of message effects on behavior-relevant outcomes. An experiment was conducted in which participants viewed ads from one of the campaigns and answered questions about ad appeal and emotional tone; campaign appeal; and marijuana-related beliefs. Compared to My Anti-Drug ads, Above the Influence ads were associated with more positive emotional tone and with lower perceptions of marijuana risk. Implications for message design and evaluation are discussed.

D'Amico, E. J., Miles, J. N. V., & Tucker, J. S. (2015). Gateway to curiosity: Medical marijuana ads and intention and use during middle school. *Psychology of Addictive Behaviors, 29*(3), 613-619.

Over the past several years, medical marijuana has received increased attention in the media, and marijuana use has increased across the United States. Studies suggest that as marijuana has become more accessible and adults have become more tolerant regarding marijuana use, adolescents perceive marijuana as more beneficial and are more likely to use if they are living in an environment that is more tolerant of marijuana use. One factor that may influence adolescents' perceptions about marijuana and marijuana use is their exposure to advertising of this product. We surveyed sixth- to eighth-grade youth in 2010 and 2011 in 16 middle schools in Southern California (n = 8,214; 50% male; 52% Hispanic; mean age = 13 years) and assessed exposure to advertising for medical marijuana, marijuana intentions, and marijuana use. Cross-lagged regressions showed a reciprocal association of advertising exposure with marijuana use and intentions during middle school. Greater initial medical marijuana advertising exposure was significantly associated with a higher probability of marijuana use and stronger intentions to use 1 year later, and initial marijuana use and stronger intentions to use were associated with greater medical marijuana advertising exposure 1 year later. Prevention programs need to better explain medical marijuana to youth, providing information on the context for proper medical use of this drug and the potential harms from use during this developmental period. Furthermore, as this is a

new frontier, it is important to consider regulating medical marijuana advertisements, as is currently done for alcohol and tobacco products.

Ferri, M., Allara, E., Bo, A., Gasparri, A., & Faggiano, F. (2013). Media campaigns for the prevention of illicit drug use in young people. *Cochrane Database of Systematic Reviews* (6).

Background: Substance-specific mass media campaigns which address young people are widely used to prevent illicit drug use. They aim to reduce use and raise awareness of the problem.

Objectives: To assess the effectiveness of mass media campaigns in preventing or reducing the use of or intention to use illicit drugs amongst young people.

Search Methods: We searched the Cochrane Central Register of Controlled Trials (CENTRAL, The Cochrane Library 2013, Issue 1), including the Cochrane Drugs and Alcohol Group's Specialised Register; MEDLINE through PubMed (from 1966 to 29 January 2013); EMBASE (from 1974 to 30 January 2013) and ProQuest Dissertations & Theses A&I (from 1861 to 3 February 2013).

Selection Criteria: Cluster-randomised controlled trials, prospective and retrospective cohort studies, interrupted time series and controlled before and after studies evaluating the effectiveness of mass media campaigns in influencing drug use, intention to use or the attitude of young people under the age of 26 towards illicit drugs.

Data Collection and Analysis: We used the standard methodological procedures of The Cochrane Collaboration.

Main Results: We included 23 studies involving 188,934 young people, conducted in the USA, Canada and Australia between 1991 and 2012. Twelve studies were randomised controlled trials (RCT), two were prospective cohort studies (PCS), one study was both a RCT and a PCS, six were interrupted time series and two were controlled before and after (CBA) studies. The RCTs had an overall low risk of bias, along with the ITS (apart from the dimension 'formal test of trend'), and the PCS had overall good quality, apart from the description of loss to follow-up by exposure. Self reported or biomarker-assessed illicit drug use was measured with an array of published and unpublished scales making comparisons difficult. Pooled results of five RCTs (N = 5470) show no effect of media campaign intervention (standardised mean difference (SMD) -0.02; 95% confidence interval (CI) -0.15 to 0.12). We also pooled five ITS studies (N = 26,405) focusing specifically on methamphetamine use. Out of four pooled estimates (two endpoints measured in two age groups), there was evidence of a reduction only in past-year prevalence of methamphetamine use among 12 to 17 years old. A further five studies (designs = one RCT with PCS, two PCS, two ITS, one CBA, N = 151,508), which could not be included in meta-analyses, reported a drug use outcome with varied results including a clear iatrogenic effect in one case and reduction of use in another.

Author's Conclusions: Overall the available evidence does not allow conclusions about the effect of media campaigns on illicit drug use among young people. We conclude that further studies are needed.

Hornik, R. (2006). Personal Influence and the Effects of the National Youth Anti-Drug Media Campaign. *Annals of the American Academy of Political and Social Science*, 608, 282-300.

Personal Influence (Katz and Lazarsfeld 1955/2006) put forward and tested a variety of hypotheses about how social contexts constrain media effects. Five such hypotheses are described: three about interactions of media exposure with social context (Stability, Conformity, and Instrumental) and two about two-step flow effects (Relay and Message Interpretation). Each is tested here with data from the evaluation of the National Youth Anti-Drug Media Campaign. The evaluation of the campaign has suggested boomerang outcomes--more exposure to the campaign led to more interest in marijuana use. This article examined whether those effects were magnified through interactions with siblings. In general, no evidence showed that older siblings' beliefs or behavior interacted with younger siblings' exposure to campaign messages in producing effects. However, evidence showed that the two-step flow did operate: older siblings were themselves affected by their own exposure to the campaign and, in turn, affected the beliefs and behaviors of their younger brothers and sisters.

Hornik, R., Jacobsohn, L., Orwin, R., Piesse, A., & Kalton, G. (2008). Effects of the National Youth Anti-drug Media Campaign on youths. *American Journal of Public Health*, 98(12), 2229-2236.

Objectives: The cognitive and behavioral effects of the National Youth Anti-Drug Media Campaign on youths aged 12.5 to 18 years and report core evaluation results were examined. Methods: From September 1999 to June 2004, 3 nationally representative cohorts of US youths aged 9 to 18 years were surveyed at home 4 times. Sample size ranged from 8117 in the first to 5126 in the fourth round (65% first-round response rate, with 86%-93% of still eligible youths interviewed subsequently). Main outcomes were self-reported lifetime, past-year, and past-30-day marijuana use and related cognitions. Results: Most analyses showed no effects from the campaign. At one round, however, more ad exposure predicted less intention to avoid marijuana use ($\gamma = -0.07$; 95% confidence interval [CI] = -0.13, -0.01) and weaker anti drug social norms ($\gamma = -0.05$; 95% CI = -0.08, -0.02) at the subsequent round. Exposure at round 3 predicted marijuana initiation at round 4 ($\gamma = 0.11$; 95% CI = 0.00, 0.22). Conclusions: Through June 2004, the campaign is unlikely to have had favorable effects on youths and may have had delayed unfavorable effects. The evaluation challenges the usefulness of the campaign.

Jones, R., Finlay, F., Crouch, V., & Anderson, S. (2000). Drug information leaflets: Adolescent and professional perspectives. *Child: Care, Health and Development*, 26(1), 41-48.

Evaluated a range of drug information leaflets from both an adolescent and professional perspective. 72 adolescents aged 13, 15, and 17 yrs) were interviewed in focus groups within school settings. Fifteen pediatricians were also interviewed individually. Participants were asked to consider the leaflets under the following categories: initial impact, content and overall suitability for adolescents. Pediatricians were not good judges of which leaflets would appeal to adolescents. They tended to choose the leaflets with comic strip illustrations and those written in a "cool" or witty style. In contrast the adolescents seemed to prefer a more sober approach with high quality factual information combined with clear illustrations.

Lipczynska, S. (2006). Drugs are bad. *Journal of Mental Health*, 15(6), 709-712.

Reviews four websites: DrugScope (<http://www.drugscope.org.uk>); National Institute on Drug Abuse (<http://www.nida.nih.gov/NIDAHome.html>); Wired (<http://www.substancemisuse.net>); and HabitSmart (<http://www.habitsmart.com>). These are just four sites which deal with the issues of

substance abuse sensibly and calmly. Anyone who searches for this sort of information--children doing a project, concerned parents, adolescents wanting to know what it is they were offered--will all benefit from finding drug information which is reliable, and factual and which will give them a clear idea of the risks, problems and possible consequences without becoming sensationalist.

Morton, T. A., & Duck, J. M. (2006). Enlisting the influence of others: Alternative strategies for persuasive media campaigns. *Journal of Applied Social Psychology, 36*(2), 269-296.

This study investigated an Australian antidrug campaign that targeted adolescents directly and indirectly via recruiting parents into drug prevention. Eighty-six parent-child dyads completed surveys measuring campaign evaluations, discussions about drugs, and beliefs about risks to self (own child) and to the average young Australian. Adolescents were optimistic about risks, and media impact was evident only in perceptions of risk to others. Parents were less optimistic, and perceptions of campaign quality predicted perceived risk to own child and discussion about drugs. However, this was moderated by negative affect associated with the campaign. There was some evidence that discussions influenced adolescents' perceptions of personal risk. This demonstrates the importance of individual responses and communication processes in determining the impact of persuasive media messages.

Palmgreen, P., Lorch, E. P., Stephenson, M. T., Hoyle, R. H., & Donohew, L. (2007). Effects of the Office of National Drug Control Policy's marijuana initiative campaign on high-sensation-seeking adolescents. *American Journal of Public Health, 97*(9), 1644-1649.

Objectives: We evaluated the effects of the Marijuana Initiative portion of the Office of National Drug Control Policy's National Youth Anti-Drug Media Campaign on high-sensation-seeking and low-sensation-seeking adolescents. **Methods:** Personal interviews were conducted via laptop computers with independent monthly random samples of 100 youths from the same age cohort in each of 2 moderate-sized communities over 48 months (April 1999-March 2003) of the campaign, including the critical first 6 months of the 9-month initiative. The start of the initiative was treated as an "interruption" in time-series analyses of the combined community sample. **Results:** The Marijuana Initiative reversed upward developmental trends in 30-day marijuana use among high-sensation-seeking adolescents ($P < .001$) and significantly reduced positive marijuana attitudes and beliefs in this at-risk population. Use of control substances was not affected. As expected, low-sensation-seeking adolescents had low marijuana-use levels, and the campaign had no detectable effects on them. Other analyses indicated that the initiative's dramatic depiction of negative consequences of marijuana use was principally responsible for its effects on high-sensation-seeking youths. **Conclusions:** Substance use prevention campaigns can be effective within an approach using dramatic negative-consequence messages targeted to high-sensation seekers.

Roy, E., Denis, V. R., Gutierrez, N., Haley, N., Morissette, C., & Boudreau, J. (2007). Evaluation of a media campaign aimed at preventing initiation into drug injection among street youth. *Drugs: Education, Prevention & Policy, 14*(5), 401-414.

Aims: A campaign to prevent initiation into drug injecting among street youth who have never injected drugs (NIDUs) was carried out in Montreal, Canada in 2005. Evaluation objectives were (1) to assess the campaign's ability to reach NIDU street youth and (2) to understand the campaign's effects on this population. **Methods:** A survey was conducted, as well as semi-structured interviews. **Findings:** The campaign enjoyed a high degree of visibility. It spoke to young NIDUs, causing them

to reflect on both drug injecting and their own non-injection drug use. The campaign had a positive impact in terms of their views on drug injecting. Despite its limited scope, young NIDUs also considered the campaign to be a tool with the potential to contribute to preventing initiation into drug injecting among their peers. Conclusions: Media prevention campaigns are able to reach hidden populations through the use of bold and innovative techniques. Such campaigns can also contribute to influencing the attitudes and perceptions of these populations. However, more comprehensive injection prevention programs need to be established.

- ✓ Scheier, L. M., & Grenard, J. L. (2010). Influence of a nationwide social marketing campaign on adolescent drug use. *Journal of Health Communication, 15*(3), 240-271.

In this study, it was examined whether awareness (recall) of the National Youth Anti-Drug Media Campaign (NYADMC) benefited youth by attenuating their drug use. Data were obtained from the National Survey of Parents and Youth (NSPY), an evaluative survey tool designed to monitor campaign progress over 4 years. A growth modeling strategy was used to examine whether change in message recall or campaign brand awareness was related to declining patterns of drug use. Two distinct growth trajectories were modeled to account for growth among younger (12 to 14) versus older (15 to 18) youth. Growth trajectories indicated steady and positive increases in alcohol, cigarette, and marijuana use over time. During the early portion of adolescence, youth reported more “brand” awareness, remembered more of the video clips depicting campaign messages, recalled more media stories about youth and drugs and more anti-tobacco ads, and reported more radio listening and less television watching. When they were older, these same youth reported declines in these same awareness categories except for specifically recalling campaign ads and radio listening. Models positing simultaneous growth in drug use and campaign awareness indicated mixed findings for the campaign. Overall early levels of campaign awareness had a limited influence on rates of growth, and in a few cases higher levels were associated with quicker acquisition of drug use behaviors. When they were younger, these youth accelerated their drug use and reported increasing amounts of campaign awareness. When they were older, increasing awareness was associated with declines in binge drinking and cigarette smoking. No effects for marijuana were significant but trended in the direction of increased awareness associated with declining drug use. The findings are discussed in terms of how they depart from previous reports of campaign efficacy and the potential efficacy of social marketing campaigns to reach a large and impressionable youthful audience with strategically placed advertisements.

Scheier, L. M., Grenard, J. L., & Holtz, K. D. (2011). An empirical assessment of the Above the Influence advertising campaign. *Journal of Drug Education, 41*(4), 431-461.

This study evaluated the efficacy of Above the Influence (ATI), a national media-based health persuasion campaign to deter youth drug use. The campaign uses public service anti-drug prevention messages and targets youth between the ages of 14 and 16, a period of heightened susceptibility to peer influences. The evaluation utilized mall intercepts from geographically dispersed regions of the country. Theoretical impetus for the campaign combines elements of the theory of reasoned action (TRA), persuasion theory, and the health belief model. A series of structural equation models were tested with four randomly drawn cross-validation samples (N = 3,000). Findings suggest that awareness of ATI is associated with greater anti-drug beliefs, fewer drug use intentions, and less marijuana use. Congruent with the TRA, changes in beliefs and intentions are intermediate steps linking campaign awareness with behavior. This study provides further evidence of positive campaign effects and may strengthen reliance on mass media health persuasion campaigns as a useful adjunct to other programs targeting youth.

Slater, M. D., & Kelly, K. J. (2002). Testing alternative explanations for exposure effects in media campaigns: The case of a community-based, in-school media drug prevention project. *Communication Research*, 29(4), 367-389.

Examines longitudinal evidence for the impact of exposure to an in-school media campaign on adolescent substance use attitudes and behaviors, using data from 4 middle schools in 2 school districts. 665 6th- and 7th-graders participated. Amount of exposure to the campaign directly impacted perceptions that marijuana use was inconsistent with personal aspirations and intentions to use marijuana and appeared to reduce maturational decay in those attitudes. Path analyses suggested effects on behavior change, consistent with the theory of reasoned action, were via effects on intention and exposure effects on intention were via effects on aspirations. Reverse causation was tested and rejected, as were possible moderation models that might also qualify exposure effects. Analyses of a foil recognition measure using a treatment and control population suggested that response set artifacts were nominal in size and that response bias was slight and could be statistically controlled.

Slater, M. D., Kelly, K. J., Lawrence, F. R., Stanley, L. R., & Comello, M. L. G. (2011). Assessing media campaigns linking marijuana non-use with autonomy and aspirations: 'Be Under Your Own Influence' and ONDCP's 'Above the Influence'. *Prevention Science*, 12(1), 12-22.

Two media-based interventions designed to reduce adolescent marijuana use ran concurrently from 2005 to 2009. Both interventions used similar message strategies, emphasizing marijuana's inconsistency with personal aspirations and autonomy. "Be Under Your Own Influence" was a randomized community and school trial replicating and extending a successful earlier intervention of the same name (Slater et al. *Health Education Research* 21:157–167, 2006). "Above the Influence" is a continuing national television, radio, and print campaign sponsored by the Office of National Drug Control Policy (ONDCP). This study assessed the simultaneous impact of the interventions in the 20 U.S. communities. Results indicate that earlier effects of the "Be Under Your Own Influence" intervention replicated only in part and that the most plausible explanation of the weaker effects is high exposure to the similar but more extensive ONDCP "Above the Influence" national campaign. Self-reported exposure to the ONDCP campaign predicted reduced marijuana use, and analyses partially support indirect effects of the two campaigns via aspirations and autonomy.

Stephenson, M. T. (2003). Mass Media Strategies Targeting High Sensation Seekers: What Works and Why. *American Journal of Health Behavior*, 27(Suppl3), S233-S238.

Objectives: To examine strategies for using the mass media effectively in drug prevention campaigns targeting high sensation seekers. Methods: Both experimental lab and field studies were used to develop a comprehensive audience segmentation strategy targeting high sensation seekers. Results: A 4-pronged targeting strategy employed in an anti-

Program Profile: SENTAR

SENTAR (SENSation-seeking TARgeting) is a theoretically based and empirically tested mass media targeting strategy for reaching high sensation seekers with advertisements that appeal to their need for stimulation. Advertisements 1) employ sensation-seeking as a major targeting variable, 2) design prevention messages high in sensation value 3) employ pre-campaign research with members of the target audience, and 4) place prevention messages in contexts sensation-seekers are likely to be attending (e.g., certain TV shows).

(Stephenson, 2003)

marijuana media campaign yielded significant drops in 30- day marijuana use by adolescents. Other research demonstrates how high and low sensation seekers process antidrug ads differently. Conclusions: Mass mediated antidrug campaigns aimed at high sensation seekers are effective tools for drug prevention.

Stephenson, M. T., Quick, B. L., Atkinson, J., & Tschida, D. A. (2005). Authoritative Parenting and Drug-Prevention Practices: Implications for Antidrug Ads for Parents. *Health Communication, 17*(3), 301-321.

This research employed the theory of reasoned action to investigate the role of authoritative parenting in 3 drug-prevention behaviors: (a) parental monitoring, (b) parent-child discussions, and (c) awareness of the child's environment. A phone survey of 158 parents of adolescents in 7th, 9th, and 11th grades revealed that authoritative parenting was correlated with parenting practices that reduce the likelihood of adolescent drug use, including discussing family rules about drugs, discussing strategies to avoid drugs, discussing those in trouble with drugs, parental monitoring, knowing the child's plans for the coming day, and personally knowing the child's friends well. Additionally, authoritative parenting moderated the attitude-behavioral intention relation for parental monitoring and awareness of the child's environment, with the weakest relation detected for low-authoritative parents. The utility of these findings in helping design and target antidrug messages for parents more effectively is discussed.

- ★ Zimmerman, R. S., Cupp, P. K., Abadi, M., Donohew, R. L., Gray, C., Gordon, L., & Grossl, A. B. (2014). The effects of framing and fear on ratings and impact of antimarijuana PSAs. *Substance Use & Misuse, 49*(7), 824-835.

A laboratory experiment, funded by the U.S. National Institutes of Health, involved 243 U.S. undergraduate students and employed a 2 (gain-framed vs. loss-framed) × 2 (high vs. low threat) plus control group pretest-posttest experimental design to assess the combined effects of frame (gain vs. loss) and level of threat of public service announcements (PSAs) about marijuana on attitudes, beliefs, and intentions related to marijuana, as well as the relationship of message condition to ratings of PSAs. Results suggest that loss-framed messages may lead to greater perceived threat, as well as reactance, and gain-framed messages may lead to a greater reduction in positive attitudes toward marijuana than loss-framed messages. Finally, frame and threat may interact in a complex way. Further research is suggested to replicate these findings. A substantial body of carefully crafted and systematic research studies examining both content and features of messages increasingly informs mass media prevention efforts, including the development of public service announcements (PSAs). Although the significance of messages on commercial broadcast stations may be diminishing with the increasing role and impact of new media, many of the basic questions addressed by this research are likely to apply across media channels. Nonetheless, important questions about what makes a message effective in changing an individual's attitudes or behavior remain to be answered. In this paper, the authors focus on two theoretically derived strategies that offer possibilities for developing persuasive messages: framing and threat.

2.13. Targeted substance use prevention approaches (28)

2.13.a. Cannabis use prevention

- ★ Dupont, H. B., Candel, M. J. J. M., Kaplan, C. D., van de Mheen, D., & de Vries, N. K. (2015). Assessing the efficacy of moti-4 for reducing the use of cannabis among youth in the Netherlands: A randomized controlled trial. *Journal of Substance Abuse Treatment*.

The Moti-4 intervention, in which motivational interviewing, self-monitoring, and strengthening behavioral control are used, was developed in the Netherlands in response to several rapid assessments of problematic use of cannabis among vulnerable adolescents. The main goal of the study reported in this article was to determine whether the Moti-4 intervention was able to reduce two outcome measures pertaining to the level of cannabis use; the amount of Euros spent a week on cannabis and the mean number of cannabis joints (cigarettes) smoked in a week. In a randomized controlled trial (RCT) with a 6-month follow-up, 27 trained Dutch prevention workers recruited 71 Moti-4 participants and 60 controls assigned to usual care. Participants were Dutch youth aged 14–24 years who had used cannabis during the preceding month. At baseline (T0), post-test (T1) and 6-month follow-up (T2), participants completed a questionnaire with 51 items. The 27 prevention workers also completed a checklist to assess the fidelity of delivering each item to each participant in the Moti-4 protocol. Multilevel and binary logistic regression was used to assess the impact of the prevention worker and 14 participant variables on the likelihood of drop-out. Mean scores for cannabis use outcome measures by Moti-4 participants and controls at baseline, T1 and T2 were compared using paired sample t-tests. Top-down multiple regression was used to assess relationships between Moti-4 and 13 other variables on the one hand and changes in weekly cannabis use at T1 and T2 on the other. The Moti-4 experimental condition had a significant and positive influence in reducing the level of expenditure on cannabis ($p < 0.05$). There was no significant difference in outcome, neither for the 4 participating institutes nor for the professionals implementing the intervention. Baseline cannabis use was the strongest predictor ($p < 0.001$) of weekly cannabis expenditure at posttest and 6-month follow-up. This effect was still present at T2. Being female, having two Dutch parents and perceived behavioral control also made significant positive contributions ($p < 0.05$). Attitude at baseline was only related to cannabis expenditure after 6 months ($p = 0.005$). At T2 Moti-4 participants were found to have a significant reduction in the number of joints smoked weekly compared to T0 (on the average 4 joints). The study demonstrated that Moti-4 is an effective intervention to reduce cannabis use in youth.

Program Profile: Moti-4

Moti-4 is a brief motivational enhancement intervention designed for young vulnerable non-treatment-seeking cannabis users. The approach builds off a longstanding Dutch cannabis prevention practice but adds in two other theories: planned behaviour and self-determination theory. The intervention consists for 4 sessions that are structured in their focus.

(Dupont et al., 2015)



Norberg, M. M., Kezelman, S., & Lim-Howe, N. (2013). Primary Prevention of Cannabis Use: A Systematic Review of Randomized Controlled Trials. *PLoS ONE*, 8(1), e53187.

A systematic review of primary prevention was conducted for cannabis use outcomes in youth and young adults. The aim of the review was to develop a comprehensive understanding of prevention programming by assessing universal, targeted, uni-modal, and multi-modal approaches as well as individual program characteristics. Twenty-eight articles, representing 25 unique studies, identified from eight electronic databases (EMBASE, MEDLINE, CINAHL, ERIC, PsycINFO, DRUG, EBM Reviews, and Project CORK), were eligible for inclusion. Results indicated that primary prevention programs can be effective in reducing cannabis use in youth populations, with statistically significant effect sizes ranging from trivial (0.07) to extremely large (5.26), with the majority of significant effect sizes being trivial to small. Given that the preponderance of significant effect sizes were trivial to small and that percentages of statistically significant and non-statistically significant findings were often equivalent across program type and individual components, the effectiveness of primary prevention for cannabis use should be interpreted with caution. Universal multi-modal programs appeared to outperform other program types (i.e, universal uni-modal, targeted multi-modal, targeted unimodal). Specifically, universal multi-modal programs that targeted early adolescents (10–13 year olds), utilised non-teacher or multiple facilitators, were short in duration (10 sessions or less), and implemented booster sessions were associated with large median effect sizes. While there were studies in these areas that contradicted these results, the results highlight the importance of assessing the interdependent relationship of program components and program types. Finally, results indicated that the overall quality of included studies was poor, with an average quality rating of 4.64 out of 9. Thus, further quality research and reporting and the development of new innovative programs are required.

Shrier, L. A., Rhoads, A., Burke, P., Walls, C., & Blood, E. A. (2014). Real-time, contextual intervention using mobile technology to reduce marijuana use among youth: A pilot study. *Addictive Behaviors*, 39(1), 173-180.

We evaluated the feasibility, acceptability, and potential efficacy of MOMENT, an intervention to reduce youth marijuana use that combines brief motivational enhancement therapy with mobile self-monitoring and responsive messaging. At baseline, primary care patients ages 15–24 who used marijuana frequently (at least 3 times per week) completed a recall assessment, then 1 week of mobile momentary and daily reports on use-related factors. For the intervention, youth participated in two motivational enhancement therapy sessions, during which they identified their top-3 social and emotional triggers for use and discussed healthy ways to manage them. They then completed two weeks of mobile reports. Upon reporting a top-3 trigger for use, desire to use, or recent use, they received a message supporting self-efficacy and prompting consideration of coping strategies. Generalized estimating equations examined changes in momentary-, daily-, and individual-level measures on 3- month recall and mobile assessments. Twenty-seven youth (M = 19.2 years, 70% female) enrolled; there were 377–677 momentary and 50–106 daily reports

Program Profile: MOMENT

MOMENT is a ecological momentary intervention (EMI) that combines brief motivational therapy, administered by a counsellor in a clinic with mobile self-monitoring and responsive messaging, via an electronic mobile device. The approach extends treatment into the natural environment.

(Shrier et al., 2014)

per study phase. Participants reported reading the messages and finding them motivating, being comfortable with participation, and not experiencing the study as burdensome. Although proportion of momentary reports of being in a top-3 trigger context did not change (36%– 43%), marijuana desire in a top-3 trigger context and marijuana use after top-3 trigger exposure decreased over the study ($p < .0001$ and $p = .03$, respectively). Daily- and individual-level measures showed similar, non-significant, improvements. The MOMENT intervention appears feasible, well-accepted, and potentially efficacious for youth who use marijuana frequently.

See also:

- Champion et al., 2016 (Section 2.8)
- D’Amico et al., 2015 (Section 12.12)
- Newton et al., 2014 (Section 2.8)
- Slater et al., 2011 (Section 12.12)
- Vogl et al., 2014 (Section 2.8)
- Zimmerman et al., 2014 (Section 12.12)

2.13.b. Concurrent disorders and prevention

- ★ Berridge, B. J., Hall, K., Dillon, P., Hides, L., & Lubman, D. I. (2011). MAKINGtheLINK: A school-based health promotion programme to increase help-seeking for cannabis and mental health issues among adolescents. *Early Intervention in Psychiatry*, 5(1), 81-88.

Aim: There is increasing concern regarding the use of cannabis among adolescents, especially given recent evidence highlighting its link with later mental disorders. Encouraging young people with mental health or drug issues to seek professional help is an important early intervention strategy; however, adolescents are typically reluctant to do so and instead turn to their peers for help. Peers may not have the skills or knowledge required to assist their friends to access professional help. This paper describes the development and evaluation of MAKINGtheLINK, a school-based health promotion programme that promotes help-seeking behaviour for mental health and cannabis use issues among young people. Methods: The MAKINGtheLINK programme was piloted with 182 Year 10 students at a secondary school in Melbourne, Australia. Forty teachers received the MAKINGtheLINK staff professional development session. Results: The delivery of the MAKINGtheLINK programme was found to be both acceptable and feasible within a school setting. Students and teachers described it as a fun, engaging, helpful and important programme. Students reported increased confidence and awareness of how to seek help for themselves or a friend, and teachers indicated increased confidence and awareness of how to assist students to seek help for cannabis use and/or mental health problems. Conclusions: MAKINGtheLINK was successfully implemented within the school curriculum. We believe this is the first school-based programme that specifically focuses on facilitating professional help-seeking for cannabis use and mental health problems among young people, and demonstrates that utilizing peer models for help-seeking is a valuable resource for early intervention initiatives.

- Dembo, R., et al. (2013). Mental health, substance use, and delinquency among truant youth in a brief intervention project: A longitudinal study. *Journal of Emotional and Behavioral Disorders*, 21(3), 176-192.

The relationship between substance use, mental health disorders, and delinquency among youth is well documented. What has received far less attention from researchers is the relationship between these issues among truant youth, in spite of studies that document truants are a population at risk for negative outcomes. This study bridges this gap by (a) examining psychosocial functioning and delinquency among truants and (b) assessing the efficacy of a brief intervention (BI) in reducing delinquent behavior over time. To meet these objectives, data were collected from 183 truant youth enrolled in an ongoing National Institute on Drug Abuse (NIDA)-funded BI project. Informed by a developmental damage perspective, a structural equation model was formulated and estimated. Interim results provide overall support for the model and suggest that the BI may be a promising, innovative intervention for truant youth. Service delivery implications and directions for future analyses are discussed.

- Mason, W. A., Haggerty, K. P., Fleming, A. P., & Casey-Goldstein, M. (2012). Family intervention to prevent depression and substance use among adolescents of depressed parents. *Journal of Child and Family Studies*, 21(6), 891-905.

Parental depression places offspring at elevated risk for multiple, co-occurring problems. The purpose of this study was to develop and preliminarily evaluate Project Hope, a family intervention for the prevention of both depression and substance use among adolescent-aged

children (M = 13.9 years) of depressed parents. The program was created by blending two empirically supported interventions: one for depression and another for substance use. Thirty families were randomly assigned to either Project Hope (n = 16) or a wait-list control condition (n = 14). Pretests, posttests (n = 29), and 5-month follow-ups (n = 28) were conducted separately with parents and youth via phone interviews. Questions asked about the family depression experience, family interactions, family management, coping, adolescent substance use beliefs and refusal skills, adolescent depression, and adolescent substance use. Project Hope was fully developed, manualized, and implemented with a small sample of targeted families. Engagement in the program was relatively high. Preliminary outcome analyses were conducted using 2 (Group) x 3 (Time) analyses of covariance. Results provided some evidence for significant improvements among intervention compared to control participants in indicators of the family depression experience, family management, and coping, and a statistically significant decrease from pretest to posttest in alcohol quantity for intervention compared to control youth. Next steps for this program of research are discussed.

Salvo, N., et al. (2012). Prevention of substance use in children/adolescents with mental disorders: A systematic review. *Journal of the Canadian Academy of Child and Adolescent Psychiatry / Journal de l'Académie canadienne de psychiatrie de l'enfant et de l'adolescent*, 21(4), 245-252.

Objective: We conducted a systematic review to answer the question: Among youth ≤ 18 years of age with a mental disorder, does substance use prevention compared to no prevention result in reduced rates of substance use/abuse/disorder (SUD)? The review was requested by the Ontario Ministry of Health and Long-term Care through the Canadian Institutes for Health Research Evidence on Tap program. Methods: A four-step search process was used: Search 1 and 2: Randomized controlled trials (RCTs) that evaluated a SUD prevention intervention in individuals with a mental disorder who were: 1) ≤ 18 years; or, 2) any age. Search 3: Observational studies of an intervention to prevent SUD in those with mental disorder. Search 4: RCTs that evaluated a SUD primary prevention skills-based intervention in high-risk youth ≤ 18 years. Results: Searches 1 and 2: one RCT conducted in youth was found; Search 3: two observational studies were found. All three studies reported statistically significant reductions in substance use. Search 4: five RCTs were found with mixed results. Methodological weaknesses including inadequate study power may explain the results. Conclusions: Little is known about effective interventions to prevent SUD in youth with a mental disorder. Effective SUD primary prevention programs exist and should be evaluated in this high-risk group.

2.13.c. Drug-impaired driving prevention

Griffin, K. W., Botvin, G. J., & Nichols, T. R. (2004). Long-term follow-up effects of a School-Based Drug Abuse Prevention Program on Adolescent Risky Driving. *Prevention Science, 5*(3), 207-212.

This study examined long-term follow-up data from a large-scale randomized trial to determine the extent to which participation in a school-based drug abuse prevention program (Life Skills Training) during junior high school led to less risky driving among high school students. Self-report data collected from students in the 7th, 10th, and 12th grades were matched by name to students' department of motor vehicles (DMV) records at the end of high school. The DMV data included the total number of violations on students' driving records as well as the number of "points" that indicate the frequency and severity of the violations. A series of logistic regression analyses revealed that males were more likely to have violations and points on their driving records than females, and regular alcohol users were more likely to have violations and points than those who did not use alcohol regularly. Controlling for gender and alcohol use, students who received the drug prevention program during junior high school were less likely to have violations and points on their driving records relative to control group participants that did not receive the prevention program. Findings indicated that anti-drinking attitudes mediated the effect of the intervention on driving violations, but not points. These results support the hypothesis that the behavioral effects of competence-enhancement prevention programs can extend to risk behaviors beyond the initial focus of intervention, such as risky driving.

Jones, C., Donnelly, N., Swift, W., & Weatherburn, D. (2006). Preventing cannabis users from driving under the influence of cannabis. *Accident Analysis & Prevention, 38*(5), 854-861.

Face-to-face, structured interviews were conducted with 320 recent cannabis users in New South Wales, Australia to assess the likely deterrent effects of (a) increasing the certainty of apprehension for driving under the influence of cannabis (DUIC) and (b) doubling the severity of penalties for DUIC. Participants were presented with a drug-driving scenario and asked to indicate their likelihood of driving given that scenario. The perceived risk of apprehension and severity of punishment were manipulated in each scenario to create four different certainty/severity conditions and participants were randomly allocated to one of these four groups. A subsidiary aim was to assess the likely impact of providing factual information about the accident risk associated with DUIC. Recent drug drivers who felt at low risk of accident when DUIC were asked to rate their willingness to drive if convinced that it was dangerous. The results suggested that increasing the certainty but not severity of punishment would produce reductions in cannabis-intoxicated driving among recent cannabis users. Providing factual information about the risks associated with DUIC would appear to have little impact on drug-driving rates among this population.

Jones, C. G. A., Swift, W., Donnelly, N. J., & Weatherburn, D. J. (2007). Correlates of driving under the influence of cannabis. *Drug and Alcohol Dependence, 88*(1), 83-86.

Background: Identifying cannabis users who are most at risk of driving under the influence of cannabis (DUIC) has important implications for drug treatment and prevention efforts. This paper examined correlates of DUIC among a purposive sample of recent cannabis users. Methods: Interviews were carried out among a cross-sectional sample of 320 Australian cannabis users. Past-year prevalence of DUIC (without using alcohol or other drugs) was regressed against a

range of potential predictor variables. Results: Use of multiple drugs, believing that DUIC does not increase accident risk and cannabis dependence all predicted likelihood of DUIC. There was an interaction between age of first cannabis use and gender, whereby earlier onset cannabis use predicted DUIC but only among women. Conclusions: The correlates of drug driving reflected cannabis users' beliefs about the dangers of cannabis use as well as their patterns of drug consumption. The emergence of cannabis dependence and age of onset as predictors of DUIC suggests a clearly defined role for treatment and prevention efforts in reducing the potential harms associated with DUIC.

Teesson, M., et al. (2014). The CLIMATE schools combined study: A cluster randomised controlled trial of a universal Internet-based prevention program for youth substance misuse, depression and anxiety. *BMC Psychiatry*,

Background: Anxiety, depressive and substance use disorders account for three quarters of the disability attributed to mental disorders and frequently co-occur. While programs for the prevention and reduction of symptoms associated with (i) substance use and (ii) mental health disorders exist, research is yet to determine if a combined approach is more effective. This paper describes the study protocol of a cluster randomised controlled trial to evaluate the effectiveness of the CLIMATE Schools Combined intervention, a universal approach to preventing substance use and mental health problems among adolescents. Methods/design: Participants will consist of approximately 8400 students aged 13 to 14-years-old from 84 secondary schools in New South Wales, Western Australia and Queensland, Australia. The schools will be cluster randomised to one of four groups; (i) CLIMATE Schools Combined intervention; (ii) CLIMATE Schools—Substance Use; (iii) CLIMATE Schools—Mental Health, or (iv) Control (Health and Physical Education as usual). The primary outcomes of the trial will be the uptake and harmful use of alcohol and other drugs, mental health symptomatology and anxiety, depression and substance use knowledge. Secondary outcomes include substance use related harms, self-efficacy to resist peer pressure, general disability, and truancy. The link between personality and substance use will also be examined. Discussion: Compared to students who receive the universal CLIMATE Schools—Substance Use, or CLIMATE Schools—Mental Health or the Control condition (who received usual Health and Physical Education), we expect students who receive the CLIMATE Schools Combined intervention to show greater delays to the initiation of substance use, reductions in substance use and mental health symptoms, and increased substance use and mental health knowledge.

2.13.d. Prescription drug misuse prevention

- ★ Spoth, R., Trudeau, L., Shin, C., Ralston, E., Redmond, C., Greenberg, M., & Feinberg, M. (2013). Longitudinal effects of universal preventive intervention on prescription drug misuse: Three randomized controlled trials with late adolescents and young adults. *American Journal of Public Health, 103*(4), 665-672.

Objectives: We examined long-term prescription drug misuse outcomes in 3 randomized controlled trials evaluating brief universal preventive interventions conducted during middle school. Methods: In 3 studies, we tested the Iowa Strengthening Families Program (ISFP); evaluated a revised ISFP, the Strengthening Families Program: For Parents and Youth 10–14 plus the school-based Life Skills Training (SFP 10–14 + LST); and examined the SFP 10–14 plus 1 of 3 school-based interventions. Self-reported outcomes were prescription opioid misuse (POM) and lifetime prescription drug misuse overall (PDMO). Results: In study 1, ISFP showed significant effects on POM and PDMO, relative reduction rates (RRRs; age 25 years) of 65%, and comparable benefits for higher- and lower-risk subgroups. In study 2, SFP 10–14 + LST showed significant or marginally significant effects on POM and PDMO across all ages (21, 22, and 25 years); higher-risk participants showed stronger effects (RRRs = 32%–79%). In study 3, we found significant results for POM and PDMO (12th grade RRRs = 20%–21%); higher-risk and lower-risk participants showed comparable outcomes. Conclusions. Brief universal interventions have potential for public health impact by reducing prescription drug misuse among adolescents and young adults.

See also:

- David et al., 2011

2.13. e. Binge drinking prevention

Bhochhibhoya, A., Hayes, L., Branscum, P., & Taylor, L. (2015). The use of the Internet for prevention of binge drinking among the college population: A systematic review of evidence. *Alcohol and Alcoholism*, 50(5), 526-535.

Aims: There are many consequences of binge drinking compared with light or moderate drinking behaviors. The prevalence rate and intensity of binge drinking is highest among the college-aged population. Given the popularity and high use of the Internet among college students, a novel approach for programming is through Internet-based interventions. The purpose of this study was to conduct a systematic review of Internet-based interventions targeting binge drinking among the college population. **Methods:** Eligibility criteria included peer-reviewed articles evaluating Internet-based interventions for binge drinking prevention among college students published between 2000 and 2014. Only English language articles were included. Review articles and articles only explaining intervention pedagogies were not included. After a systematic screening process, a total of 14 articles were included for the final review. Each article was read thoroughly in order to extract the following variables: study design and sample size, average age of participants, underpinning theoretical framework, and intervention description and duration. This review also synthesized a methodological assessment with variables such as outcome measures, sample size justification, number of measurements and use of process evaluations. **Results:** All studies but one reported a significant reduction in the frequency and quantity of alcohol consumption and problems related with heavy drinking. Furthermore, Internet-based interventions appeared to be more effective than traditional print-based interventions; however, face-to-face interventions were typically more effective. **Conclusions:** This review supports using the Internet as a brief intervention approach that can effectively support efforts to reduce binge drinking among college students.

Borsari, B., & Carey, K. B. (2005). Two brief alcohol interventions for mandated college students. *Psychology of Addictive Behaviors*, 19(3), 296-302.

Encouraging but limited research indicates that brief motivational interventions may be an effective way to reduce heavy episodic drinking in college students. At 2 campuses, students (83% male) mandated to a substance use prevention program were randomly assigned to 1 of 2 individually administered conditions: (a) a brief motivational interview (BMI; n = 34) or (b) an alcohol education session (AE; n = 30). Students in the BMI condition reported fewer alcohol-related problems than the AE students at 3- and 6-month assessments. Trends toward reductions in number of binge drinking episodes and typical blood alcohol levels were seen in both groups. Process measures confirmed the integrity of both interventions. The findings demonstrate that mandated BMIs can reduce alcohol problems in students referred for alcohol violations.

Botvin, G. J., Griffin, K. W., Diaz, T., & Ifill-Williams, M. (2001). Preventing binge drinking during early adolescence: One- and two-year follow-up of a school-based preventive intervention. *Psychology of Addictive Behaviors*, 15(4), 360-365.

Examined the effectiveness of a school-based prevention program on reducing binge drinking in a sample of minority, inner-city, middle-school students. Rates of binge drinking were compared among 1,713 youths who received the program beginning in the 7th grade (n = 1,713) and a control group (n = 1,328) that did not. The prevention program had protective effects in terms of binge drinking at the 1-year (8th grade) and 2-year (9th grade) follow-up assessments. The

proportion of binge drinkers was over 50% lower in the intervention group relative to the control group at the follow-up assessments. There were also several significant program effects on proximal drinking variables, including drinking knowledge, pro-drinking attitudes, and peer drinking norms. These findings indicate that a school-based drug abuse prevention approach previously found to be effective among White youth significantly reduced binge drinking among urban minority youth.

Ceperich, S. D., & Ingersoll, K. S. (2011). Motivational interviewing + feedback intervention to reduce alcohol-exposed pregnancy risk among college binge drinkers: Determinants and patterns of response. *Journal of Behavioral Medicine, 34*(5), 381-395.

Many college women are at risk for pregnancy, and binge drinking college women are often at risk for alcohol-exposed pregnancy. Brief interventions with sustainable outcomes are needed, particularly for college women who are binge drinking, at risk for pregnancy, and at increased risk of alcohol-exposed pregnancy. Two-hundred-twenty-eight women at a Mid-Atlantic urban university at risk for alcohol-exposed pregnancy enrolled in the randomized clinical trial, and 207 completed the 4 month follow-up. The BALANCE intervention used Motivational Interviewing plus feedback to target drinking and contraception behaviors. Main outcome measures included (1) the rate of risk for alcohol-exposed pregnancy, (2) the rate of risk drinking, and (3) the rate of pregnancy risk. At 4-month follow-up, the rate of alcohol-exposed pregnancy risk was significantly lower in the intervention (20.2%) than the control condition (34.9%), ($P < .02$). Assignment to the intervention condition halved the odds of women remaining at risk for alcohol-exposed pregnancy, while not receiving the intervention doubled the odds of continued alcohol-exposed pregnancy risk (OR = 2.18; 95% CI = 1.16–4.09). A baseline history of blackouts, continued high blood alcohol drinking days at 1 month, and continued risk for pregnancy at 1 month independently contributed to a multivariate model of continued alcohol-exposed pregnancy risk at 4 month follow-up. BALANCE reduced alcohol-exposed pregnancy risk, with similar outcomes to longer interventions. Because early response predicted sustained alcohol-exposed pregnancy risk reduction, those who fail to achieve initial change could be identified for further intervention. The BALANCE intervention could be adopted into existing student health or university alcohol programs. The risks of unintended pregnancy and alcohol-exposed pregnancy among binge drinking women in college merit greater prevention efforts.

Conrod, P. J., O'Leary-Barrett, M., Newton, N., Topper, L., Castellanos-Ryan, N., Mackie, C., & Girard, A. (2013). Effectiveness of a selective, personality-targeted prevention program for adolescent alcohol use and misuse: A cluster randomized controlled trial. *JAMA Psychiatry, 70*(3), 334-342.

Context: Selective school-based alcohol prevention programs targeting youth with personality risk factors for addiction and mental health problems have been found to reduce substance use and misuse in those with elevated personality profiles. Objectives: To report 24-month outcomes of the Teacher-Delivered Personality-Targeted Interventions for Substance Misuse Trial (Adventure trial) in which school staff were trained to provide interventions to students with 1 of 4 high-risk (HR) profiles: anxiety sensitivity, hopelessness, impulsivity, and sensation seeking and to examine the indirect herd effects of this program on the broader low-risk (LR) population of students who were not selected for intervention. Design: Cluster randomized controlled trial. Setting: Secondary schools in London, United Kingdom. Participants: A total of 1210 HR and 1433 LR students in the ninth grade (mean [SD] age, 13.7 [0.33] years). Intervention: Schools were randomized to provide brief personality-targeted interventions to HR youth or treatment as

usual (statutory drug education in class). Main Outcome Measures: Participants were assessed for drinking, binge drinking, and problem drinking before randomization and at 6-monthly intervals for 2 years. Results: Two-part latent growth models indicated long-term effects of the intervention on drinking rates ($\beta = -0.320$, $SE=0.145$, $P=.03$) and binge drinking rates ($\beta = -0.400$, $SE=0.179$, $P=.03$) and growth in binge drinking ($\beta = -0.716$, $SE=0.274$, $P=.009$) and problem drinking ($\beta = -0.452$, $SE=0.193$, $P=.02$) for HR youth. The HR youth were also found to benefit from the interventions during the 24-month follow-up on drinking quantity ($\beta = -0.098$, $SE=0.047$, $P=.04$), growth in drinking quantity ($\beta = -0.176$, $SE=0.073$, $P=.02$), and growth in binge drinking frequency ($\beta = -0.183$, $SE=0.092$, $P=.047$). Some herd effects in LR youth were observed, specifically on drinking rates ($\beta = -0.259$, $SE=0.132$, $P=.049$) and growth of binge drinking ($\beta = -0.244$, $SE=0.073$, $P=.001$), during the 24-month follow-up. Conclusions: Findings further support the personality targeted approach to alcohol prevention and its effectiveness when provided by trained school staff. Particularly novel are the findings of some mild herd effects that result from this selective prevention program.

- ★ Cremeens, J. L., Usdan, S. L., Brock-Martin, A., Martin, R. J., & Watkins, K. (2008). Parent-child communication to reduce heavy alcohol use among first-year college students. *College Student Journal*, 42(1), 152-163.

With extreme rates of binge drinking among young adults, college students continue to be a primary focus for a range of alcohol prevention efforts. Most universities are attempting to change the alcohol environment by implementing a variety of strategies to reduce heavy drinking among college students. With the exception of parental notification policies, there have been relatively few strategies utilizing the role of parents in alcohol prevention programming. Guided by the constructs of the Health Belief Model, this paper presents an exploratory study of parent-child communication as a prevention strategy to reduce heavy drinking among first-year college students

Foxcroft, D. R., Moreira, T. M., Almeida Santimano, M. L. N., & Smith, L. A. (2014). Social norms information for alcohol misuse in university and college students. *Cochrane Database of Systematic Reviews*(7).

Background: Drinking is influenced by youth perceptions of how their peers drink. These perceptions are often incorrect, overestimating peer drinking norms. If inaccurate perceptions can be corrected, with social norms information or feedback, young people may drink less.

Study characteristics: 70 studies were included in this review, with 44,958 students overall. We were interested mainly in studies with a follow-up period of four or more months to assess whether any effects were sustained beyond the immediate short term. In 43 of the trials, the social norms intervention was targeted at higher-risk students. 55 trials were conducted in the USA, with others from Australia, Brazil, New Zealand, Sweden and the United Kingdom.

Delivery of social norms information included mailed feedback, web/computer feedback, individual face-to-face feedback, group face-to-face feedback and general social norms marketing campaigns across college campuses.

Key findings: Over the longer-term, after four or more months of follow-up, there was only a small effect of social norms information on binge drinking, drinking quantity, and peak BAC. For these outcomes, effects were not any different across the different delivery modes. Only small effects were found for web feedback and individual face-to-face feedback on frequency of alcohol consumed. Only a small effect of individual face-to-face feedback on alcohol related problems, but no effects were found for

mailed or web feedback. Similarly, no effects were found for group face-to-face feedback or for marketing campaigns on frequency of alcohol consumed and typical BAC.

Our reading of these results is that, although we found some significant effects of social norms information, the strength of the effects over the longer-term is very small and therefore this information is unlikely to provide any advantage in practice.

Quality of the evidence: Overall, only low or moderate quality evidence was noted for the effects reported in this review. Problems with study quality could result in estimates of social norms effects that are too high, so we cannot rule out the chance that the effects observed in this review may be overstated.

Authors' conclusions: The results of this review indicate that no substantive meaningful benefits are associated with social norms interventions for prevention of alcohol misuse among college/university students. Although some significant effects were found, we interpret the effect sizes as too small, given the measurement scales used in the studies included in this review, to be of relevance for policy or practice. Moreover, the significant effects are not consistent for all misuse measures, heterogeneity was a problem in some analyses and bias cannot be discounted as a potential cause of these findings.

- ★ Gerend, M. A., & Cullen, M. (2008). Effects of message framing and temporal context on college student drinking behavior. *Journal of Experimental Social Psychology, 44*(4), 1167-1173.

This study evaluated the interactive effects of message framing and temporal context on college student alcohol use. Participants (n = 228) were randomly assigned to read an alcohol prevention message that varied by message frame (gains vs. losses) and temporal context (short- vs. long-term consequences). Participants returned to the lab one month later to report their drinking behavior over the past month. As predicted, students exposed to the gain-framed message reported lower alcohol use (drank less frequently, drank fewer alcoholic beverages per drinking occasion, and engaged in less binge drinking) as compared to students exposed to the loss-framed message, but only if they read about short-term consequences of alcohol use. Message frame had no effect when participants were exposed to long-term consequences. This investigation extends previous research by demonstrating the effectiveness of message framing for reducing health-damaging behaviors and by identifying temporal context as a moderator of framing effects.

- Kazemi, D. M., Levine, M. J., Dmochowski, J., Nies, M. A., & Sun, L. (2013). Effects of motivational interviewing intervention on blackouts among college freshmen. *Journal of Nursing Scholarship, 45*(3), 221-229.

Purpose: Alcohol and illicit drug abuse is a serious public health issue facing college students. This study examined the impact of motivational interviewing (MI) as an intervention on the rate of blackouts among freshmen who engaged in high-risk drinking and illicit drug use. Design: A sample of 188 volunteer freshmen from a university were administered the Daily Drinking Questionnaire, the Rutgers Alcohol Problem Index, and the Government Performance and Results Act at baseline and again at 6 months post-intervention. MI was applied at baseline and then again at 2 weeks, 3 months, and 6 months. Methods: Generalized estimated equations and logistic regression models were used to determine associations between the rate of blackouts and time, ethnicity, gender, illicit drug use, and alcohol consumption. Findings: At 6 months, the rate of blackouts decreased from 40% at baseline to 16% (p < .0001). The average number, time, and days of drinking and frequency of drug use also decreased significantly (p < .0001). An

association between rate of blackouts and gender was observed, but not with ethnicity. Conclusions: MI had an impact on reducing alcohol consumption and the rate of blackouts among college freshmen who were engaging in high-risk drinking and illicit drug use. Clinical Relevance: The findings support the importance of using MI with freshmen college students to decrease drinking and the associated negative consequences, including blackouts, which has particular relevance for advanced practice registered nurses, physicians, and community health nurses who conduct MI as an intervention with college students.

Kelly-Weeder, S. (2008). Binge drinking in college-aged women: Framing a gender-specific prevention strategy. *Journal of the American Academy of Nurse Practitioners*, 20(12), 577-584.

Purpose: To provide an overview of binge drinking in college-aged women and to suggest strategies for nurse practitioners (NPs) to assist women in preventing the negative consequences associated with this behavior. Data sources: Original research articles and comprehensive review articles identified through Medline, CINAHL, and OVID databases. Conclusions: Researchers have shown that the rates of binge drinking in college-aged women are increasing, which places these women at increased risk for the long-term complications associated with alcohol use. Implications for practice: NPs must be aware of this phenomenon and carefully screen women for high-risk alcohol use. Prevention strategies are reviewed and include the use of brief motivational interviews delivered during individual client encounters as well as through Web-based programs.

Marcotte, T. D., Bekman, N. M., Meyer, R. A., & Brown, S. A. (2012). High-risk driving behaviors among Adolescent binge drinkers. *The American Journal of Drug and Alcohol Abuse*, 38(4), 322-327.

Background: Binge drinking is common among adolescents. Alcohol use, particularly binge drinking, has been associated with neurocognitive deficits and increased risk-taking behaviors, which may contribute to negative driving outcomes among adolescents even while sober. Objectives: To examine potential differences in self-reported risky driving behaviors between adolescent binge drinkers and a matched sample of controls on measures of (1) compliance with graduated licensing laws, (2) high-risk driving behaviors, and (3) driving outcomes (i.e., crashes, traffic tickets). Methods: This study examined driving behaviors and outcomes in adolescent recent binge drinkers (n = 21) and demographically and driving history matched controls (n = 17) between the ages of 16–18 years. Results: Binge drinkers more frequently violated graduated licensing laws (e.g., driving late at night) and engaged in more “high-risk” driving behaviors, such as speeding and using a cell phone while driving. Binge drinkers had more traffic tickets, crashes, and “near crashes” than the control group. Speeding was the behavior most associated with crashes within the binge drinkers. Conclusion: In this study, binge-drinking teens consistently engage in more dangerous driving behaviors and experience more frequent crashes and traffic tickets. They are also less compliant with preventative restrictions placed on youth while they are learning critical safe driving skills. Scientific Significance: These findings highlight a need to examine the contribution of underlying traits (such as sensation seeking) and binge-related cognitive changes to these high-risk driving behaviors, which may assist researchers in establishing alternative prevention and policy efforts targeting this population.

Moore, M. J., Soderquist, J., & Werch, C. (2005). Feasibility and Efficacy of a Binge Drinking Prevention Intervention for College Students Delivered via the Internet Versus Postal Mail. *Journal of American College Health, 54*(1), 38-44.

In this study, the authors evaluated the feasibility and efficacy of a binge drinking prevention intervention for college students delivered via the Internet versus a parallel print-based intervention delivered via postal mail. A total of 116 college students completed the baseline survey. The authors then randomized the students into the Web or print group and sent them intervention materials. One hundred and six students completed the posttest survey. The intervention consisted of a series of 4 weekly "newsletters" in electronic or print format. The authors collected data using a standardized online 42-item survey. They found that an Internet-based binge drinking prevention intervention for college students was feasible. Results supported the efficacy of this intervention for those students already binge drinking, regardless of delivery mode. The authors found no significant differences on outcome measures when delivered via the Internet or postal mail. Results lend support to the use of the Internet as a viable alternative to more traditional health intervention delivery methods.

Oei, T. P. S., & Morawska, A. (2004). A cognitive model of binge drinking: The influence of alcohol expectancies and drinking refusal self-efficacy. *Addictive Behaviors, 29*(1), 159-179.

While binge drinking--episodic or irregular consumption of excessive amounts of alcohol--is recognised as a serious problem affecting our youth, to date there has been a lack of psychological theory and thus theoretically driven research into this problem. The current paper develops a cognitive model using the key constructs of alcohol expectancies (AEs) and drinking refusal self-efficacy (DRSE) to explain the acquisition and maintenance of binge drinking. It is suggested that the four combinations of the AE and DRSE can explain the four drinking styles. These are normal/social drinkers, binge drinkers, regular heavy drinkers, and problem drinkers or alcoholics. Since AE and DRSE are cognitive constructs and therefore modifiable, the cognitive model can thus facilitate the design of intervention and prevention strategies for binge drinking.

- ★ Paschall, M. J., Antin, T., Ringwalt, C. L., & Saltz, R. F. (2011). Evaluation of an internet-based alcohol misuse prevention course for college freshmen: Findings of a randomized multi-campus trial. *American Journal of Preventive Medicine, 41*(3), 300-308.

Background: Internet-based alcohol misuse prevention programs are now used by many universities. One popular 2- to 3-hour online course known as AlcoholEdu for College is typically required for all incoming freshmen and thus constitutes a campus-level strategy to reduce student alcohol misuse.

Purpose: Multi-campus study to evaluate the effectiveness of an Internet-based alcohol misuse prevention course. Design: RCT with 30 universities: 21 entered the study in Fall 2007, nine in Fall 2008. Fifteen were randomly assigned to receive the online course and the other 15 were assigned to the control condition. The course was implemented by intervention schools during the late summer and/or fall semester. Cross-sectional surveys of

Program Profile: AlcoholEdu for College

AlcoholEdu for College is an interactive online program designed to reduce the negative consequences of alcohol amongst students. It is the most widely used alcohol prevention program in higher education in the US. The online programs deliver a personalized experience to all types of students dependent on their current drinking choices.

Paschall et al., 2011

freshmen were conducted at each university, beginning prior to the intervention in Spring 2008–2009; post-intervention surveys were administered in Fall 2008–2009 and Spring 2009–2010. Setting/participants: Public and private universities of varying sizes across the U.S. Random samples of 200 freshmen per campus were invited to participate in online surveys for the evaluation. Overall survey response rates ranged from 44% to 48% (M ≈ 90 participants per campus). Intervention: The online course includes five modules; the first four (Part I) are typically offered in the late summer before matriculation, and the fifth (Part II) in early fall. Course content includes defining a standard drink, physiologic effects of alcohol, the need to monitor blood alcohol level, social influences on alcohol use, alcohol laws, personalized normative feedback, and alcohol harm-reduction strategies. Students must pass an exam after Part I to advance to Part II. Main outcome measures: Past-30-day alcohol use, average number of drinks per occasion, and binge drinking. Results: Multilevel intent-to-treat analyses indicated significant reductions in the frequency of past-30-day alcohol use (beta = -0.64 , $p < 0.05$) and binge drinking (beta = -0.26 , $p < 0.05$) during the fall semester immediately after completion of the course. However, these effects did not persist when assessed in the spring semester. Post hoc comparisons suggested stronger course effects on these outcomes at colleges with higher rates of student course completion. No course effects were observed for average number of drinks per occasion or prevalence of binge drinking, regardless of the campus course completion rate. Conclusions: This study provides initial evidence that the Internet-based alcohol misuse prevention course has beneficial short-term effects on hazardous drinking behavior among first-year college students, which should be reinforced through effective environmental prevention strategies.

Sharma, M., & Kanekar, A. (2008). Binge drinking interventions among college students. *Journal of Alcohol and Drug Education*, 52(2), 3-8.

Binge drinking is defined as a pattern of drinking alcohol that brings blood alcohol concentration (BAC) to 0.08 gram percent and above. This pattern of drinking alcohol is common among college students across university campuses in the United States. Surveys done in 1993, 1997 and 1999 for college alcohol consumption trends asked about occurrence of binge drinking in the two weeks prior to completion of the questionnaire. The outcome of these surveys showed that the proportion of binge drinkers remained similar in all subgroups and in all type of colleges. Changing the attitudes of college students from binge drinkers by providing messages about responsible drinking was attempted by persuasive messages via the world wide web. Binge drinking continues to be an important problem on college campuses across the nation. Individual and societal level interventions have been implemented with variable successes. For reduction of binge drinking along with behavior change interventions it is equally important to maintain and enforce strict alcohol use prevention policies across the campuses.

Vicary, J. R., & Karshin, C. M. (2002). College alcohol abuse: A review of the problems, issues, and prevention approaches. *The Journal of Primary Prevention*, 22(3), 299-331.

Underage drinking and alcohol abuse by college students are of major concern both for the individuals and for all those in the campus community. This paper reviews the extent of the problem currently and in an historical perspective. It also reviews research concerning the immediate and long-term health and social outcomes of binge drinking, along with the "second hand" effects for those around the drinkers. Profiles of those individuals and groups most at risk for problem drinking are suggested. It also provides examples of efforts to prevent or reduce

collegiate drinking, including campus-community coalitions, environmental management and social marketing campaigns. Additional resources and further suggestions for a comprehensive prevention effort are included.

2.13.f. New psychoactive substance use prevention (x)

None found at this time in PsycINFO.

2.14. Targeted populations⁴

2.14.a. Indigenous youth

Brady, M. (1995). Culture in treatment, culture as treatment. A critical appraisal of developments in addictions programs for indigenous North Americans and Australians. *Social Science & Medicine*, 41(11), 1487-1498.

Examines comparative material from Native Americans and Australian Aborigines on the uses of culture as a form of healing and traces the rationale for the argument that cultural wholeness can serve as a preventive or curing agent in drug and alcohol abuse. There are certain dilemmas confronting native treatment directors attempting these syncretic approaches. Additionally, North American Indians have at their disposal a rich heritage of communal healing techniques; some (such as the sweat lodge) have been adapted and incorporated into the treatment both of solvent abuse by adolescents and alcohol abuse by adults. In Australia, on the other hand, traditional healing techniques have been less amenable to adaptation. On neither continent are indigenous people attempting to adapt recent mainstream models of intervention to suit their needs.

Boyd-Ball, A. J., Véronneau, M.-H., Dishion, T. J., & Kavanagh, K. (2014). Monitoring and peer influences as predictors of increases in alcohol use among American Indian youth. *Prevention Science*, 15(4), 526-535.

This study investigated the combined influence of parental monitoring, community monitoring, and exposure to substance-using peers on early-onset alcohol use in a sample of American Indian adolescents in three Pacific Northwest tribal communities. We used structural equation modeling, including tests of indirect effects, in the investigation of 281 American Indian youth between ages 8 and 16 years at the time of consent. The effects of parental monitoring and community monitoring, mediated by friends' substance use, were examined in terms of youth alcohol use outcomes. Parental monitoring practices and contagion in peer substance use were proximal predictors of early-onset alcohol use and the mediating effect of friends' substance use was not significant. Community monitoring accounted for unique variance in affiliation with substance-using friends.

Chami, G., Werb, D., Feng, C., DeBeck, K., Kerr, T., & Wood, E. (2013). Neighborhood of residence and risk of initiation into injection drug use among street-involved youth in a Canadian setting. *Drug and Alcohol Dependence*, 132(3), 486-490.

Background: While research has suggested that exposure to environments where drug use is prevalent may be a key determinant of drug-related risk, little is known regarding the impact of such exposure on the initiation of illicit injection drug use. We assessed whether neighborhood of residence predicted rates of injecting initiation among a cohort of street-involved youth in Vancouver, British Columbia. Methods: We followed street-involved injecting naïve youth aged 14–26 and compared rates of injecting initiation between youth residing in Vancouver's Downtown Eastside (DTES) neighborhood (the site of a large street-based illicit drug market) to

⁴ Please note this section covers existing programs as well as issues for targeted populations. More information on why these groups have been targeted for prevention can be found in Part III.

those living in other parts of the city. Univariate and multivariate Cox regression analyses were employed to determine whether residence in the DTES was independently associated with increased risk of initiation of injection drug use. Results: Between September, 2005 and November, 2011, 422 injection-naïve individuals were followed, among whom 77 initiated injecting for an incidence density of injecting of 10.3 (95% confidence interval [CI] 5.0–18.8) per 100 person years. In a multivariate model, residence in the DTES was independently associated with initiating injection drug use (adjusted hazard ratio [AHR] = 2.16, 95% CI: 1.33–3.52, $p = 0.002$). Conclusions: These results suggest neighborhood of residence affects the risk of initiation into injection drug use among street-involved youth. The development of prevention interventions should target high-risk neighborhoods where risk of initiating into injecting drug use may be greatest.

Coleman, H., Charles, G., & Collins, J. (2001). Inhalant use by Canadian aboriginal youth. *Journal of Child & Adolescent Substance Abuse*, 10(3), 1-20.

Examined 78 Canadian Aboriginal youths (aged 7-19 yrs) who received treatment for inhalant abuse in a program established by the federal government. Data were based on a secondary analysis of case files and follow-up information from community workers. Results show 74% of the Ss tracked during follow-up relapsed after discharge from treatment. Many of the Ss came from backgrounds marked by isolation, poverty, family violence, and substance abuse. The average age the Ss started using solvents was 9.72 yrs. Gasoline was the most common inhalant used. Inhalant use was often accompanied by alcohol and drug abuse. A logistic regression model predicting who would relapse indicated that youths who abused inhalants immediately before admission, those who were described as unmotivated in treatment, and those who were hospitalized during treatment had the greatest risk of relapsing during follow-up.

David, C., Melissa, H. A., Knowlton, J., Steve, S., & Thompson, D. K. (2011). Non-medical use of prescription drugs among youth in an Appalachian population: Prevalence, predictors, and implications for prevention. *Journal of Drug Education*, 41(3), 309-326.

This article examines prevalence of non-medical use of prescription drugs (NMUPD) in a sample of elementary and high school students in an Appalachian Tennessee county. We found that lifetime prevalence of NMUPD (35%) was higher than prevalence of cigarette use (28%) and marijuana use (17%), but lower than lifetime prevalence of alcohol use (46%). We examined characteristics, as well as risk and protective factors in several domains, as predictors of NMUPD. For comparison, we also examined these characteristics and factors as predictors of alcohol, cigarette, and marijuana use. Using survey data from a sample of late elementary school and high school students (grades 5, 7, 9, and 11), logistic regression analyses showed that the risk factors of friends' non-medical use and perceived availability, and the protective factors of perceived risk, parents' disapproval, school commitment, and community norms against youth NMUPD were significant predictors of lifetime prevalence of NMUPD. Implications for prevention are discussed.

Dieterich, S. E., Stanley, L. R., Swaim, R. C., & Beauvais, F. (2013). Outcome expectancies, descriptive norms, and alcohol use: American Indian and White adolescents. *The Journal of Primary Prevention*, 34(4), 209-219.

This study examined the relationships between adolescent alcohol use and outcome expectancies and descriptive norms for a sample of American Indian and white youth living on or near reservations. Three outcome expectancies proposed by the theory of normative social behavior (perceived benefits to self, perceived benefits to others, and anticipatory socialization) were examined. Survey data were collected from high school students in the 2009–2010, 2010–2011, and 2011–2012 school years. Stronger descriptive norms for use and higher perceived benefits to self from use were associated with alcohol use in the last month, drunkenness in the last month, and binge drinking. Perceived benefits to self also moderated the relationship between descriptive norms and both alcohol use in the last month and binge drinking, and the effect of descriptive norms on use became more robust as perceived benefits to self increased. Outcome expectancies of perceived benefits to others and anticipatory socialization did not moderate the relationship between norms and alcohol use. Implications for prevention are discussed.

Dickerson, D. L., Brown, R. A., Johnson, C. L., Schweigman, K., & D'Amico, E. J. (2015). Integrating motivational interviewing and traditional practices to address alcohol and drug use among urban American Indian/Alaska Native youth. *Journal of Substance Abuse Treatment*.

American Indians/Alaska Natives (AI/AN) exhibit high levels of alcohol and drug (AOD) use and problems. Although approximately 70% of AI/ANs reside in urban areas, few culturally relevant AOD use programs targeting urban AI/AN youth exist. Furthermore, federally-funded studies focused on the integration of evidence-based treatments with AI/AN traditional practices are limited. The current study addresses a critical gap in the delivery of culturally appropriate AOD use programs for urban AI/AN youth, and outlines the development of a culturally tailored AOD program for urban AI/AN youth called Motivational Interviewing and Culture for Urban Native American Youth (MICUNAY). We conducted focus groups among urban AI/AN youth, providers, parents, and elders in two urban communities in northern and southern California aimed at 1) identifying challenges confronting urban AI/AN youth and 2) obtaining feedback on MICUNAY program content. Qualitative data were analyzed using Dedoose, a team-based qualitative and mixed methods analysis software platform. Findings highlight various challenges, including community stressors (e.g., gangs, violence), shortage of resources, cultural identity issues, and a high prevalence of AOD use within these urban communities. Regarding MICUNAY, urban AI/AN youth liked the collaborative nature of the motivational interviewing (MI) approach, especially

Program Profile: Healing of the Canoe

The Healing of the Canoe addresses issues of youth substance abuse and the need for a sense of cultural belonging and cultural revitalization through a community based, culturally grounded prevention and intervention life skills curriculum for tribal youth that builds on the strengths and resources in the community. The curriculum uses the Canoe Journey as a metaphor, providing youth the skills needed to navigate their journey through life without being pulled off course by alcohol or drugs – with tribal culture, tradition and values as compass to guide them, and anchor to ground them.

(Donovan et al, 2015)

with regard to eliciting their opinions and expressing their thoughts. Based on feedback from the youth, three AI/AN traditional practices (beading, AI/AN cooking, and prayer/sage ceremony) were chosen for the workshops. To our knowledge, MICUNAY is the first AOD use prevention intervention program for urban AI/AN youth that integrates evidence-based treatment with traditional practices. This program addresses an important gap in services for this underserved population.

- ★ Donovan, D. M., et al. (2015). Healing of the Canoe: Preliminary results of a culturally grounded intervention to prevent substance abuse and promote tribal identity for Native youth in two Pacific Northwest tribes. *American Indian and Alaska Native Mental Health Research*, 22(1), 42-76.

Using Community-based and Tribal Participatory Research (CBPR/TPR) approaches, an academic-tribal partnership between the University of Washington Alcohol and Drug Abuse Institute and the Suquamish and Port Gamble S'Klallam Tribes developed a culturally grounded social skills intervention to promote increased cultural belonging and prevent substance abuse among tribal youth. Participation in the intervention, which used the Canoe Journey as a metaphor for life, was associated with increased hope, optimism, and self-efficacy and with reduced substance use, as well as with higher levels of cultural identity and knowledge about alcohol and drugs among high school-age tribal youth. These results provide preliminary support for the intervention curricula in promoting positive youth development, an optimistic future orientation, and the reduction of substance use among Native youth.

Einspruch, E. L., & Wunrow, J. J. (2002). Assessing youth/adult partnership: The Seven Circles (AK) experience. *Journal of Drug Education*, 32(1), 1-12.

Examined the development and implementation of the Seven Circles community substance abuse prevention coalition in Southeast Alaska, which incorporated a youth-adult partnership approach to accomplish its activities. Four annual partnership member surveys were conducted to assess the local projects, assess the value of the partnerships to the participants, and gather feedback about the functioning of the Seven Circles Coalition. Respondents included 22 youths and 36 adults for the 1997-2000 surveys. The results are described as supporting the youth/adult model and are discussed in the context of youth empowerment.

Elton-Marshall, T., Leatherdale, S. T., & Burkhalter, R. (2011). Tobacco, alcohol and illicit drug use among Aboriginal youth living off-reserve: Results from the Youth Smoking Survey. *Canadian Medical Association Journal*, 183(8), e480-e486.

Background: Despite the high prevalence of smoking among Aboriginal youth, there is a paucity of research related to tobacco use and other risk behaviours among Aboriginal youth living off-reserve in Canada. We used data from the national Youth Smoking Survey to characterize non-traditional tobacco use, exposure to second-hand smoke, and alcohol and drug use among Aboriginal youth living off-reserve. We examined whether these youth were at increased health risk compared with non-

Program Profile: Seven Circles Coalition

The Seven Circles Coalition is a Native-administered network. The goals of the network are to foster and change social attitudes and community perceptions and policies regarding alcohol, tobacco, and other drug (ATOD) use, and to support healthier lives for youth and their families by determining the effectiveness of local community ATOD prevention partnerships and utilizing that information to ensure program effectiveness and ultimately long-term sustainability.

(Einspruch & Wunrow, 2002)

Aboriginal youth. Methods: We examined cigarette smoking behaviour, use of other tobacco products, use of alcohol and other drugs, and exposure to second-hand smoke among 2620 Aboriginal youth living off-reserve and 26 223 non-Aboriginal youth in grades 9 to 12 who participated in the 2008/09 Youth Smoking Survey. Results: The prevalence of current smoking among the Aboriginal youth was more than double that among non-Aboriginal youth (24.9% v. 10.4%). Aboriginal youth also had a higher prevalence of regular exposure to second-hand smoke at home (37.3% v. 19.7%) and in cars (51.0% v. 30.3%). Aboriginal youth were more likely than non-Aboriginal youth to be current smokers, to be regularly exposed to second-hand smoke, to have tried marijuana and other illicit drugs, and to engage in binge drinking. They were less likely than non-Aboriginal youth to have tried to quit smoking. Interpretation: Current national estimates of smoking, and alcohol and illicit drug use among youth underestimate the prevalence of these behaviours among Aboriginal youth living off-reserve. Our findings highlight the need for culturally appropriate prevention and cessation policies and programs for this at-risk population.

Program Profile: UNYA

The model developed by UNYA (Urban Native Youth Association) is a powerful strategy for meeting the needs of urban Aboriginal youth. Values of autonomy, self-determination, and community wellness are recognized through offering a range of services for youth at various stages of change. Specifying a clear target audience, working with the whole family, addressing interrelated health issues, connecting youths with positive role-models, and integrating talking circles and ceremonies with sports activities are all highly effective approaches that have produced positive results among the children and adolescents.

(Ghelani, 2011)

- ✓ Ghelani, A. (2011). Evaluating Canada's drug prevention strategy and creating a meaningful dialogue with urban aboriginal youth. *Social Work with Groups: A Journal of Community and Clinical Practice*, 34(1), 4-20.

This article describes some of the risks and challenges faced by Aboriginal youth living in Canadian cities. It evaluates four current drug prevention/education programs for this group and other at-risk youth. The lessons learned from these strategies lead to a proposal for a reflective education approach directed toward opening meaningful dialogue about drugs and alcohol with urban Aboriginal youths in group settings. The objectives of the approach are to create an open dialogue with youths, enhance problem-solving skills, minimize harm, and initiate a process of reflection about the role of drugs in the lives of young people. The goal is for the proposed approach to be implemented in various group contexts, including classrooms, workshops, talking circles, treatment centers and sports clubs. The article also explores the practice and policy dimensions of prevention-focused social work with Aboriginal youth.

Johnson, K. W., Shamblen, S. R., Ogilvie, K. A., Collins, D., & Saylor, B. (2009). Preventing youths' use of inhalants and other harmful legal products in frontier Alaskan communities: A randomized trial. *Prevention Science*, 10(4), 298-312.

This study tests for the efficacy of a school-based drug prevention curriculum (Think Smart) that was designed to reduce use of Harmful Legal Products (HLPs, such as inhalants and over-the-counter drugs), alcohol, tobacco, and other drugs among fifth- and sixth-grade students in frontier Alaska. The curriculum consisted of 12 core sessions and 3 booster sessions administered 2 to 3 months later, and was an adaptation of the Schinke life skills training curriculum for Native

Americans. Fourteen communities, which represented a mixture of Caucasian and Alaska Native populations in various regions of the state, were randomly assigned to intervention or control conditions. Single items measuring 30-day substance use and multi-item scales measuring the mediators under study were taken from prior studies. Scales for the mediators demonstrated satisfactory construct validity and internal reliability. A pre-intervention survey was administered in classrooms in each school in the fall semester of the fifth and sixth grades prior to implementing the Think Smart curriculum, and again in the spring semester immediately following the booster session. A follow-up survey was administered 6 months later in the fall semester of the sixth and seventh grades. A multi-level analysis found that the Think Smart curriculum produced a decrease (medium size effect) in the proportion of students who used HLPs over a 30-day period at the 6 month follow-up assessment. There were no effects on other drug use. Further, the direct effect of HLPs use was not mediated by the measured risk and protective factors that have been promoted in the prevention field. Alternative explanations and implications of these results are discussed.

- ★ Kulis, S., Napoli, M., & Marsiglia, F. F. (2002). Ethnic pride, biculturalism, and drug use norms of urban American Indian adolescents. *Social Work Research, 26*(2), 101-112.

This study examined how strength of ethnic identity, multiethnic identity, and other indicators of biculturalism relate to the drug use norms of urban American Indian middle school students. The article distinguishes categories of norms that may affect drug use. Regression analysis of self-reports by 434 American Indian seventh graders (aged 11-15 yrs) attending middle schools in a large southwestern US city indicates that students who had a more intense sense of ethnic pride adhered more strongly to certain antidrug norms than those who did not. Whereas American Indian students with better grades in school held consistently stronger antidrug norms, there were few differences by gender, socioeconomic status, or age. These results have implications in social work practice for better understanding and strengthening the protective aspects of American Indian culture in drug prevention efforts.

- Kulis, S., & Brown, E. F. (2011). Preferred drug resistance strategies of urban American Indian youth of the Southwest. *Journal of Drug Education, 41*(2), 203-234.

This study explored the drug resistance strategies that urban American Indian adolescents consider the best and worst ways to respond to offers of alcohol, cigarettes, and marijuana. Focus group data were collected from 11 female and 9 male American Indian adolescents attending urban middle schools in the Southwest. The youth were presented with hypothetical substance offer scenarios and alternative ways of responding, based on real-life narratives of similar youth. They were asked to choose a preferred strategy, one that would work every time, and a rejected strategy, one they would never use. Using eco-developmental theory, patterns in the preferred and rejected strategies were analyzed to identify culturally specific and socially

Program Profile: Think Smart

The Think Smart curriculum is an adaptation of Steven Schinke's substance abuse curriculum for Native American youth. It emphasizes teaching drug refusal skills in an effort to resist drug offers, decrease motivation to use drugs and decrease vulnerability to drug use social influences. It consists of 12 core sessions and three booster sessions. The core sessions include talking about stereotypes, drug facts and a problem-solving model to support refusal and self-assertiveness skills.

(Johnson et al, 2009)

competent ways of resisting substance offers. The youth preferred strategies that included passive, non-verbal strategies like pretending to use the substance, as well as assertive strategies like destroying the substance. The strategies they rejected were mostly socially non-competent ones like accepting the substance or responding angrily. Patterns of preferred and rejected strategies varied depending on whether the offer came from a family member or non-relative. These patterns have suggestive implications for designing more effective prevention programs for the growing yet underserved urban American Indian youth population.

Kulis, S., Dustman, P. A., Brown, E. F., & Martinez, M. (2013). Expanding urban American Indian youths' repertoire of drug resistance skills: Pilot results from a culturally adapted prevention program. *American Indian and Alaska Native Mental Health Research*, 20(1), 35-54.

This article examines changes in the drug resistance strategies used by urban American Indian (UAI) middle school students during a pilot test of a substance use prevention curriculum designed specifically for UAI youth, Living in 2 Worlds (L2W). L2W teaches four drug resistance strategies (refuse, explain, avoid, leave [R-E-A-L]) in culturally appropriate ways. Data come from 57 UAI students (53% female; mean age = 12.5 years) who participated in L2W during an academic enrichment class for Native youth at two Phoenix schools. Students completed a pre-test questionnaire before the L2W lessons and a post-test 7 months later. Questions assessed the use of R-E-A-L and alternative strategies commonly reported by UAI youth (change the subject, use humor). Tests of mean differences from pre-test to post-test showed significant increases in use of refuse, explain, and leave, and an expanding R-E-A-L repertoire. Use of more passive strategies (avoid, use humor) did not change significantly, except for change the subject, which increased. Changes in the use of strategies did not differ significantly by gender, age, school grades, parental education, or length of urban residence. The L2W curriculum appears effective in teaching culturally relevant communication strategies that expand UAI youths' repertoire of drug resistance skills.

Program Profile: Living in 2 Worlds (L2W)

L2W is an urban American Indian adaptation of the keepin' it REAL curriculum. The cultural adaptation of the program incorporated drug refusal strategies that were more reflective of the American Indian culture as well as weaving in cultural heritage in the lessons.

(Kulis et al., 2013)

Kulis, S., Okamoto, S. K., Rayle, A. D., & Sen, S. (2006). Social contexts of drug offers among American Indian youth and their relationship to substance use: An exploratory study. *Cultural Diversity and Ethnic Minority Psychology*, 12(1), 30-44.

In this exploratory study the authors examined the social contexts of American Indian youths' encounters with drug offers and their relationship to substance use. Using an inventory of drug use-related problem situations developed specifically for American Indian youth, questionnaires were completed by 71 American Indian youth at public middle schools in a Southwest metropolitan area. Regression analyses highlight the importance of situational and relational contexts in understanding substance use among the youth in this sample. Exposure to drug offers through parents, other adults, cousins, friends and other peers was associated with different types of substance use. Exposure through parents was particularly salient in predicting the drug use of female respondents. The study underscores the need for development of culturally grounded prevention programs in schools, reservations, and nonreservation communities.

Lehti, V., Niemelä, S., Hoven, C., Mandell, D., & Sourander, A. (2009). Mental health, substance use and suicidal behaviour among young indigenous people in the Arctic: A systematic review. *Social Science & Medicine*, 69(8), 1194-1203.

The Arctic has been a subject to various socio-cultural changes; indigenous people living in the region have experienced injustice and oppression in different forms. Furthermore, there are currently various new social, political and environmental challenges. It has been assumed that the continuous socio-cultural transition has an influence on indigenous people's wellbeing. We conducted a systematic literature review with regard to epidemiological mental health research on Arctic indigenous children and adolescents. The aim was to describe the nature and scope of research conducted and to explore for possible regional and ethnic differences in mental health. It was found that current epidemiological knowledge is based mainly on cross-sectional studies from selected regions and limited to substance use and suicidal behaviour. Youth suicide rates are alarmingly high in many parts of the Arctic, particularly in Greenland and Alaska. Differences between indigenous and non-indigenous groups are also most evident and uniform across suicide studies, with rates being systematically higher among indigenous youth. Substance use is common throughout the Arctic, however, regional and ethnic differences in usage vary considerably. Other psychosocial problems remain largely unexplored. In addition, very little is known about the causes of mental health problems in general and the impact of rapid socio-cultural changes in particular. There are several methodological limitations in the studies included here, many related to the validity of research instruments in different cultural contexts. There is a need for longitudinal comparative studies from the entire Arctic with culturally relevant instruments addressing mental health in early childhood as well.

Moon, S. S., Blakey, J. M., Boyas, J., Horton, K., & Kim, Y. J. (2014). The influence of parental, peer, and school factors on marijuana use among Native American adolescents. *Journal of Social Service Research*, 40(2), 147-159.

Marijuana use among Native American (NA) adolescents continues to be an ongoing concern and is often cited as the most critical health issue facing this population. Despite this recognition, few studies have examined the roles played by parental monitoring and school relationships among NA youth. This cross-sectional study used secondary data from the 2010 National Survey in Drug Use and Health to examine the combined influence of parental, peer, and school indicators on marijuana use among NA adolescents aged 12 to 17 years old (N = 287). The results of structural equation modeling suggest that peer factors and parental monitoring were significantly associated with marijuana use. In fact, the peer network was the most influential predictor. However, a significant relationship was not found between school relationships and marijuana use. Given the insignificance of school relationships, further research should examine the influence of peer interactions on marijuana use and the development of family-based prevention and intervention programs.

Okamoto, S. K., Helm, S., McClain, L. L., & Dinson, A.-L. (2012). The development of videos in culturally grounded drug prevention for rural native Hawaiian youth. *The Journal of Primary Prevention, 33*(5-6), 259-269.

The purpose of this study was to adapt and validate narrative scripts to be used for the video components of a culturally grounded drug prevention program for rural Native Hawaiian youth. Scripts to be used to film short video vignettes of drug-related problem situations were developed based on a foundation of pre-prevention research funded by the National Institute on Drug Abuse. Seventy-four middle- and high-school-aged youth in 15 focus groups adapted and validated the details of the scripts to make them more realistic. Specifically, youth participants affirmed the situations described in the scripts and suggested changes to details of the scripts to make them more culturally specific. Suggested changes to the scripts also reflected preferred drug resistance strategies described in prior research, and varied based on the type of drug offerer described in each script (i.e., peer/friend, parent, or cousin/sibling). Implications for culturally grounded drug prevention are discussed.

Okamoto, S. K., Helm, S., McClain, L. L., Pel, S., Hayashida, J. K. P., & Hill, A. P. (2013). Gender differences in preferred drug resistance strategies of rural native Hawaiian youths. *Affilia: Journal of Women & Social Work, 28*(2), 140-152.

The study presented here examined the gender differences in preferred strategies used by rural Native Hawaiian youths to resist drugs and alcohol. Seventy-four youths (60% of whom were female) in eight middle/intermediate or high schools participated in 15 different focus groups as part of a pilot-feasibility drug prevention study funded by the National Institute on Drug Abuse. Consistent with relational-cultural theory, the qualitative findings indicated that the girls favored drug resistance strategies that maintained relational connectedness with the drug offerer and considered the long-term relational consequences of different drug resistance strategies. Implications of these findings for the indigenous- and gender-specific prevention of drug abuse are discussed.

Okamoto, S. K., Helm, S., Pel, S., McClain, L. L., Hill, A. P., & Hayashida, J. K. P. (2014). Developing empirically based, culturally grounded drug prevention interventions for indigenous youth populations. *The Journal of Behavioral Health Services & Research, 41*(1), 8-19.

This article describes the relevance of a culturally grounded approach toward drug prevention development for indigenous youth populations. This approach builds drug prevention from the "ground up" (i.e., from the values, beliefs, and worldviews of the youth that are the intended consumers of the program) and is contrasted with efforts that focus on adapting existing drug prevention interventions to fit the norms of different youth ethnocultural groups. The development of an empirically based drug prevention program focused on rural Native Hawaiian youth is described as a case example of culturally grounded drug prevention development for indigenous youth; the impact of this effort on the validity of the intervention and on community engagement and investment in the development of the program are discussed. Finally, implications of this approach for behavioral health services and the development of an indigenous prevention science are discussed.

Raghupathy, S., & Forth, A. L. G. (2012). The HAWK2 program: A computer-based drug prevention intervention for native American youth. *The American Journal of Drug and Alcohol Abuse*, 38(5), 461-467.

Background: American Indians and Alaska Natives (AI/ANs) have some of the highest rates of substance use compared with other ethnic groups. Native American youth start experimenting with drugs at younger ages, continue to use them after initial experimentation, and thus seem to mirror the same drug use patterns as their older peers. Despite the seriousness of the problem, there is a lack of evidence-based drug prevention interventions for AI/AN youth. **Objectives:** This review article describes the process by which an existing evidence-based, culturally relevant drug prevention intervention was transformed into a low-cost, computerized intervention digitized in order to extend its reach to Native American youth in reservations and rural locations. **Methods:** The intervention, titled HAWK² (Honoring Ancient Wisdom and Knowledge²: Prevention and Cessation) is aimed at young Native children in elementary school settings (grades 4 and 5) and uses engaging multimedia features such as games, animations, and video clips to impart substance abuse prevention knowledge and skills training. The development of this intervention was a collaborative process involving the participation of community experts, research scientists, school teachers, and practitioners, as well as Native youth. Specific examples are provided to illustrate the development processes. **Results:** Initial feedback from practitioners and youth suggest the feasibility and acceptability of computer-based interventions by Native youth and practitioners. **Scientific Significance:** Computer-based interventions are a cost-effective way of engaging youth in prevention programming. Future studies of HAWK² will provide an important means of testing the long-term effectiveness of self-administered, computer-based interventions for AI/AN youth.

Program Profile: HAWK2

HAWK2 consists of seven lessons of 25-30 minutes each, with a total exposure time of 3.5 hours. Teachers have the flexibility to integrate the lessons into an existing health curriculum or to implement them as separate units over several weeks. Each session includes video segments that demonstrated refusal skills, conflict resolution, negotiation skills, coping skills, assertive communication, and relaxation techniques. Problem solving exercises allow participants to walk through different scenarios, identify problems, consider alternative responses, practice behavioral responses, and solve problems. Animations were used to convey Native American tales and legends that illustrate the positive impact of empowerment. Interactive quizzes, polls, and learning exercises were developed to reinforce prevention program content during and at the end of each lesson.

(Raghupathy & Forth, 2012)

Tingey, L., et al. (2012). Exploring binge drinking and drug use among American Indians: Data from adolescent focus groups. *The American Journal of Drug and Alcohol Abuse*, 38(5), 409-415.

Background: Risk factors for binge substance use and non-suicidal self-injury (NSSI) are similar, suggesting the importance of exploring how binge substance use and self-injury interrelate. **Objectives:** To gain insight from a sample of American Indian (AI) adolescents regarding how binge drinking and drug use function in their lives, including as overlapping forms of self-injury, and to identify community-based ideas for dual prevention strategies. **Methods:** A total of N = 58

White Mountain Apache (Apache) adolescents participated in ten mixed gender (n = 33 males, 55.9%) focus group discussions. Results were interpreted and categorized by Apache researchers and compared to Nock's behavioral model of NSSI. Results: Participants reported substance use most commonly with "family" and "friends," "at a house," or "around the community." Substance use was not confined to a particular time of day, and often occurred "at school." Commonly endorsed reasons fell into two main categories: "to avoid problems" or "to reduce negative feelings," versus "to be cool" or "to feel part of a group." All adolescents but one thought that some youths use substances excessively as a way to harm/injure themselves (n = 25 responses). Prevention approaches included encouraging healthy relationships, teaching about consequences of use, providing alternative recreation, and changing/enforcing laws on the reservation. Conclusion: Tribal-specific data support the idea that binge substance use sometimes functions as a form of self-injury. Home/school environments are critical prevention settings, in addition to improved law enforcement and increased recreation. Scientific Significance: Understanding possible shared root causes and functions of binge substance use and self-injury may advance integrated prevention approaches.

Whitesell, N. R., et al. (2014). Trajectories of substance use among young American Indian adolescents: Patterns and predictors. *Journal of Youth and Adolescence*, 43(3), 437-453.

Substance use often begins earlier among American Indians compared to the rest of the United States, a troubling reality that puts Native youth at risk for escalating and problematic use. We need to understand more fully patterns of emergent substance use among young American Indian adolescents, risk factors associated with escalating use trajectories, and protective factors that can be parlayed into robust prevention strategies. We used growth mixture modeling with longitudinal data from middle-school students on a Northern Plains reservation (Wave 1 N = 381, M age at baseline = 12.77, 45.6 % female) to identify subgroups exhibiting different trajectories of cigarette, alcohol, and marijuana use. We explored how both risk (e.g., exposure to stressful events, deviant peers) and protective (e.g., positive parent-child relationships, cultural identity) factors were related to these trajectories. For all substances, most youth showed trajectories characterized by low rates of substance use (nonuser classes), but many also showed patterns characterized by high and/or escalating use. Across substances, exposure to stress, early puberty, and deviant peer relationships were associated with the more problematic patterns, while strong relationships with parents and prosocial peers were associated with nonuser classes. Our measures of emergent cultural identity were generally unrelated to substance use trajectory classes among these young adolescents. The findings point to the importance of early substance use prevention programs for American Indian youth that attenuate the impact of exposure to stressful events, redirect peer relationships, and foster positive parent influences. They also point to the need to explore more fully how cultural influences can be captured.

2.14.b. Asian community

Chang, F.-C., et al. (2015). Effects of a school-based drug use prevention programme for middle-school students in Taiwan. *Drugs: Education, Prevention & Policy*, 22(1), 43-51.

This study examined the effects of a school-based drug use prevention programme for middle-school students in Taiwan. The curriculum consisted of 10 lessons and 4 homework assignments involving parent–child activities. A quasi-experimental design was used. The study was conducted in an urban middle-school located in Taipei city and in a middle-school located in a rural area in Taoyuan county. A total of 327 middle-school students in the intervention group and 314 students in the comparison group successfully participated in the baseline (September 2011) and follow-up surveys (November 2011). A mixed-model approach was used to examine the effects. Multivariate analysis results indicated that the school-based drug-prevention programme increased the students' drug-related knowledge, drug-prevention attitudes, enhanced life skills, and improved perceived parental involvement in the prevention of drug use. The results of this study endorse the implementation of school-based drug use prevention programmes that include parent–child activities to enhance youth drug-prevention knowledge, attitudes, and life skills.

Harachi, T. W., Catalano, R. F., Kim, S., & Choi, Y. (2001). Etiology and prevention of substance use among Asian American youth. *Prevention Science*, 2(1), 57-65.

This paper begins with definitions of the Asian/Pacific Islander (API) communities, then examines rates of adolescent drug use, risk and protective factors, and preventive intervention effectiveness focused on API communities. The limited epidemiological data suggest that in general, APIs are at a relatively lower risk for drug use than youth from most other ethnic groups. However, data also suggest that use may not be as low as generally assumed with rates for alcohol use, smoking, and some illicit drugs being equal to or exceeding those of African Americans and European Americans. The data demonstrate that there are differences among API subgroups, underscoring the importance of identifying Asian subgroups when studying substance use and when planning prevention and treatment. The limited data examining the etiology of drug use across API subgroups suggests that some of the risk and protective factors derived from majority based research may also be predictors for these populations. These data support the utility of examining the generalizability of existing prevention approaches among different API communities. Finally, further efforts should be made to encourage and support the evaluation of community-based programs that already target and deliver services to API youth.

Lam, C. W., Shek, D. T. L., Ng, H. Y., Yeung, K. C., & Lam, D. O. B. (2005). An innovation in drug prevention programs for adolescents: The Hong Kong Astro Project. *International Journal of Adolescent Medicine and Health*, 17(4), 343-353.

Recent approaches to drug prevention have turned to focus on comprehensive strategies that target early risk factors and that strengthen protective factors in adolescence. Objective: To develop a drug prevention program that is evidence-based and conceptually sound for the Chinese community. Study group: The "Astro" project was designed for high-risk youths in Hong Kong and consisted of three psychosocial primary prevention programs conducted in structured group sessions. Methods: A three-year longitudinal study and control group comparisons are integrated in this project for the program evaluation. Results and conclusions: The findings showed that the experimental group, after participating in the programs, was generally better than the control group

in terms of social skills, knowledge of drugs, refusal skills, attitudes towards drugs, and the behavioral intention to avoid drug abuse. It suggests that this program could function well as a drug prevention program.

Lam, C.-W., & Shek, D. T. L. (2011). Objective outcome evaluation of a drug prevention program for high-risk youths in Hong Kong: The project Astro. *International Journal of Child Health and Human Development, 4*(4), 361-376.

Conscious of the need to develop an indigenous drug prevention program that is evidence-based and systematic, the Project Astro was designed in Hong Kong focusing on comprehensive strategies that target early risk factors and that strengthen protective factors in adolescence. It consisted of three psychosocial primary prevention programs conducted in structured group session. A three-year longitudinal study using a non-equivalent group design was carried out to evaluate the project. Taken as a whole, the findings showed that the participants in the experimental group generally performed better than the control group in terms of social skills, knowledge of drugs, refusal skills, attitudes towards drugs, and the behavioral intention to avoid drug abuse. The present study provides support for the effectiveness of the Project Astro in Hong Kong.

Lam, C.-W., & Shek, D. T. L. (2011). Subjective outcome evaluation of a drug prevention program in Hong Kong: Perspective of the social workers. *International Journal of Child Health and Human Development, 4*(4), 387-396.

Subjective outcome evaluation was carried out for workers implementing the Astro Kids and Astro Teens designed for high-risk youth in Hong Kong. Each social worker was invited to fill out a self-administered feedback form after each session. In addition, each respondent was asked to complete a Global Subjective Outcome Evaluation form after the completion of the training program. The subjective outcome evaluation data regarding the global evaluation of the Astro Teens and Astro Kids programs clearly indicate that most of the social workers were satisfied with the programs. They also perceived many positive features of the programs and felt that they were helpful in terms of knowledge acquisition, healthy attitude formation and building resistance against substance abuse.

Lee, C.-M., et al. (2011). Effects of a community prevention intervention on public awareness, knowledge, and risk perception of club drug use by youth in Taiwan. *Substance Use & Misuse, 46*(10), 1265-1274.

This study evaluated the effects of mobilizing community coalitions and implementing prevention intervention concerning public awareness, knowledge, and perception of the risks associated with club drug use by Taiwanese urban youth. A quasi-experimental design was used. Three communities in Taipei city were included in the present study. A total of 328 residents successfully participated in the baseline survey (April 2008), and 276 residents were successfully interviewed for the follow-up survey (September 2008). The generalized estimating equation (GEE) method was used. The percentage of the intervention respondents who reported having seen or heard antidrug messages increased significantly between the time of the baseline survey (63.7%) and the follow-up survey (77.4%), while the percentage of attendance at antidrug events increased from 23.1% to 38.7% during the same time interval. In addition, community knowledge and perception of the problem of club drug use by youth rose significantly between the baseline and the follow-up in the intervention communities. The study's limitations are noted.

Otsuki, T. A. (2003). Substance use, self-esteem, and depression among Asian American adolescents. *Journal of Drug Education, 33*(4), 369-390.

The relationship of self-esteem and depression with alcohol, tobacco, and other drug (ATOD) use was tested in a California statewide sample of more than 4,300 Asian American high school students comprising five subgroups: Chinese, Japanese, Korean, Filipino, and Vietnamese. Estimated prevalence rates of alcohol, tobacco, and marijuana use among males and females from these Asian American subgroups are presented. Correlations revealed that cigarette, alcohol, and marijuana use were generally more related to high depression and low self-esteem in females than in males. Logistic regression analysis with only the female subjects investigated whether the relationship between the psychological variables and ATOD use was maintained even after controlling for traditionally important constructs in ATOD use (grade level in school, born in the United States, ethnicity, and ATOD use by friends). These results indicated that for females, depression was significantly related to alcohol and tobacco use, but self-esteem was not. Neither self-esteem nor depression was a significant contributor to marijuana use. Issues related to the application of these results are discussed.

Shek, D. T. L., & Ma, C. M. S. (2011). Substance abuse in junior secondary school students in Hong Kong: Prevalence and psychosocial correlates. *International Journal of Child Health and Human Development, 4*(4), 433-442.

Smoking, drinking and abuse of illicit drug behavior were examined in 3,328 Secondary 1 students in Hong Kong. Results showed that 5.8% and 28% of the respondents indicated that they had smoked and consumed alcohol in the past year, respectively. Some students had consumed organic solvent (2.1%), cough mixture (0.5%) and ketamine (0.4%) in the past year. Results showed that different measures of positive youth development and family functioning were related to adolescent substance abuse behavior. Generally speaking, higher levels of positive youth development and favorable family functioning were related to lower levels of substance abuse. The contribution of positive youth development and family factors to adolescent substance abuse is discussed.

2.14.c. Developmental disability

McGillicuddy, N. B. (2006). A Review of Substance Use Research Among Those with Mental Retardation. *Mental Retardation and Developmental Disabilities Research Reviews*, 12(1), 41-47.

This article reviews research conducted on the cigarette, alcohol, and illicit drug use of adolescents and adults with mental retardation (MR). The majority of the research related to substance use conducted on this population has been limited to surveys. Overall, results of these studies suggest that, although substance use is slightly lower among those with MR than among nondisabled comparison groups, it is nonetheless a problem for many individuals. This research is reviewed and a discussion of both the general and specific flaws of these studies follows. Further, the examination of education, prevention, and treatment programs for this population has been overlooked, indicating that individuals with MR are likely not receiving the services most appropriate for them. The article concludes with a discussion of several topics that need to be addressed in future studies, including research on potential best practices in the overlooked areas of substance abuse interventions.

2.14.d. LGBTQ youth

Baiocco, R., D'Alessio, M., & Laghi, F. (2010). Binge drinking among gay, and lesbian youths: The role of internalized sexual stigma, self-disclosure, and individuals' sense of connectedness to the gay community. *Addictive Behaviors, 35*(10), 896-899.

We examined the prevalence of binge drinking among lesbian and gay (LG) youths, and evaluated whether experiences such as internalized sexual stigma, the experience of “coming out” to family and friends, and the individuals' sense of “connectedness” to the gay community could be associated with alcohol abuse. The research involved 119 gay (58.9%) and 83 lesbian (41.1%) Italian youths (18 to 24 years old). According to previous research, youths were categorized in non-drinkers, social, binge and heavy drinkers. Results showed that the estimated percentage of binge drinking among gay and lesbian youths is 43.6%. The survey revealed that social, binge, and heavy drinkers differ in terms of some drinking variables, internalized sexual stigma, family and peer self-disclosure, and connectedness gay community. Implications for the prevention of binge drinking in LG youths are currently under discussion even if further investigation is urgently needed.

Duncan, D. T., Hatzenbuehler, M. L., & Johnson, R. M. (2014). Neighborhood-level LGBT hate crimes and current illicit drug use among sexual minority youth. *Drug and Alcohol Dependence, 135*, 65-70.

Objective: To investigate whether past-30 day illicit drug use among sexual minority youth was more common in neighborhoods with a greater prevalence of hate crimes targeting lesbian, gay, bisexual, and transgender (LGBT, or sexual minority) individuals. Methods: We used a population-based survey of public school youth in Boston, Massachusetts, consisting of 1292 9th–12th grade students from the 2008 Boston Youth Survey Geospatial Dataset (sexual minority $n = 108$). Data on LGBT hate crimes involving assaults or assaults and battery between 2005 and 2008 were obtained from the Boston Police Department and linked to youths' residential address. Youth reported past-30 day use of marijuana and other illicit drugs. Wilcoxon–Mann–Whitney tests and corresponding p-values were computed to assess differences in substance use by neighborhood-level LGBT assault hate crime rate among sexual minority youth ($n = 103$). Results: The LGBT assault hate crime rate in the neighborhoods of sexual minority youth who reported current marijuana use was 23.7 per 100,000, compared to 12.9 per 100,000 for sexual minority youth who reported no marijuana use ($p = 0.04$). No associations between LGBT assault hate crimes and marijuana use among heterosexual youth ($p > 0.05$) or between sexual minority marijuana use and overall neighborhood-level violent and property crimes ($p > 0.05$) were detected, providing evidence for result specificity. Conclusions: We found a significantly greater prevalence of marijuana use among sexual minority youth in neighborhoods with a higher prevalence of LGBT assault hate crimes. These results suggest that neighborhood context (i.e., LGBT hate crimes) may contribute to sexual orientation disparities in marijuana use.

Goldbach, J. T., & Holleran Steiker, L. K. (2011). An examination of cultural adaptations performed by LGBT-identified youths to a culturally grounded, evidence-based substance abuse intervention. *Journal of Gay & Lesbian Social Services: The Quarterly Journal of Community & Clinical Practice, 23*(2), 188-203.

Historically, substance abuse prevention programs are created with samples that conform to the majority population. Research shows that substance use risk factors are higher for lesbian, gay, bisexual, and transgender (LGBT) youths (Eisenberg & Wechsler, 2003), and LGBT youths report

higher use of substances than their heterosexual counterparts (Lampinen, McGhee, & Martin, 2006; Marshal et al., 2008; Russell, Truong, & Driscoll, 2002). However, when compared to LGBT adults, knowledge of youth substance use is limited. Unfortunately, few interventions are tailored to LGBT youths. It is necessary to investigate the factors associated with substance use that are unique to this population in order to tailor interventions to their needs. A preliminary study was conducted which adapted an evidence-based prevention program with guidance from LGBT youths at a drop-in center. This article explores the qualitative findings of the curriculum adaptation and a focus group through use of a grounded theory method. Findings suggest that this population of youths are easily engaged in the adaptation process and provide unique and relevant adaptations. Implications for practice and research are discussed.

Goldbach, J. T., Schrage, S. M., Dunlap, S. L., & Holloway, I. W. (2015). The application of minority stress theory to marijuana use among sexual minority adolescents. *Substance Use & Misuse, 50*(3), 366-375.

Previous research indicates that lesbian, gay, and bisexual (LGB) adolescents are at increased risk for substance use, including heightened rates of marijuana use. Minority stress theory suggests that difficult social situations create a state of chronic stress that leads to poor health outcomes for LGB adults; however, the applicability of this model has not been well explored in relation to substance use among LGB adolescents. The current study is a secondary analysis of the OutProud survey, conducted in 2000. The original study used purposive sampling to collect data from 1,911 LGB adolescents (age 12–17) across the United States, and represents the largest known study to explore experiences specific to identifying as LGB, such as homophobia and gay-related victimization. We used structural equation modeling (SEM) to explore the feasibility of applying a minority stress framework to understand marijuana use in this population. The final structural model for marijuana use in the LGB adolescent sample displayed excellent fit and modest explanatory power for marijuana use. Two of the five factors, community connectedness and internalized homophobia, were significantly ($p < .05$) associated with marijuana use. Findings suggest that minority stress theory may be appropriately applied to marijuana use in this population; however, better measurement of minority stress concepts for LGB adolescents is needed.

Goldbach, J. T., Tanner-Smith, E. E., Bagwell, M., & Dunlap, S. (2014). Minority stress and substance use in sexual minority adolescents: A meta-analysis. *Prevention Science, 15*(3), 350-363.

Lesbian, gay, and bisexual (LGB) adolescents report disparate rates of substance use, and often consume more cigarettes, alcohol, marijuana, cocaine, and ecstasy than their heterosexual peers. It is therefore crucial to understand the risk factors for substance use among LGB adolescents, particularly those unique to their minority status. In an effort to organize the current knowledge of minority-related risk factors for substance use among LGB youth, this study presents results from a systematic review and meta-analysis of the published research literature. Results from 12 unique studies of LGB youth indicated that the strongest risk factors for substance use were victimization, lack of supportive environments, psychological stress, internalizing/externalizing problem behavior, negative disclosure reactions, and housing status. Results are discussed in terms of their implications for targeted intervention programs that address minority stress risk factors for substance use among LGB youth.

Huebner, D. M., Thoma, B. C., & Neilands, T. B. (2015). School victimization and substance use among lesbian, gay, bisexual, and transgender adolescents. *Prevention Science, 16*(5), 734-743.

Lesbian, gay, bisexual, and transgender (LGBT) adolescents are at increased risk for substance use, relative to their heterosexual counterparts. Although previous research has demonstrated that experiences of anti-LGBT harassment, discrimination, and victimization may explain some of this disparity, little is known about the mechanisms whereby such mistreatment leads to substance abuse. This study aimed to examine whether mechanisms suggested by the Social Development Model might explain the links between school-based victimization and substance use in this population. Five hundred and four ethnically diverse LGBT adolescents ages 14–19 reported their experiences with school victimization, substance abuse, school bonding, and deviant peer group affiliation. Anti-LGBT victimization in school was associated with substance abuse, and although causality cannot be established, structural equation modeling confirmed that the data are consistent with a theoretical model in which this association was mediated by increased affiliation with deviant peers. Preventive interventions for LGBT adolescents must not only attempt to make schools safer for these youth, but also help keep them engaged in healthy peer groups when they are confronted with mistreatment in school.

Jasinski, J. L., & Ford, J. A. (2007). Sexual orientation and alcohol use among college students: The influence of drinking motives and social norms. *Journal of Alcohol and Drug Education, 51*(4), 63-82.

Evidence indicates GLB individuals may be at greater risk for high rates of alcohol consumption; however, few studies have identified specific factors explaining why differences exist. Using data from the 2001 College Alcohol Study, we examined the ability of drinking motives and social norms to explain the relationship between sexual orientation and binge drinking among over 7,000 students. Findings suggest drinking motives and norms are important for all college students and may be more relevant than demographic characteristics such as sexual orientation. Prevention efforts focused on motivations for drinking, therefore, may be effective for all students regardless of sexual orientation.

Jordan, K. M. (2000). Substance abuse among gay, lesbian, bisexual, transgender, and questioning adolescents. *School Psychology Review, 29*(2), 201-206.

Recent studies have indicated that substance abuse is a growing problem among youth and that the problem is even greater among gay, lesbian, bisexual, transgender, and questioning youth. The origins of substance abuse in sexual minority teens may be linked with feeling marginalized by society, seeking relief for feelings of depression and isolation, or desiring alleviation of the chronic stress associated with being stigmatized both interpersonally and intrapersonally. Prevention and intervention efforts can be successful in working with sexual minority adolescents in jeopardy of developing substance abuse problems. School-based clubs or groups for sexual minority youth are one effective mode of prevention. School psychologists are uniquely poised to address this problem through education, prevention, and intervention efforts.

Kecojevic, A., Wong, C. F., Schrage, S. M., Silva, K., Bloom, J. J., Iverson, E., & Lankenau, S. E. (2012). Initiation into prescription drug misuse: Differences between lesbian, gay, bisexual, transgender (LGBT) and heterosexual high-risk young adults in Los Angeles and New York. *Addictive Behaviors*, 37(11), 1289-1293.

Objective: Prescription drug misuse is an important public health problem in the U.S., particularly among adolescents and young adults. Few studies have examined factors contributing to initiation into prescription drug misuse, including sexual orientation and childhood abuse and neglect. The purpose of the present study is to investigate the relationship between initiation into the misuse of prescription drugs (opioids, tranquilizers, and stimulants), sexual identity, and individual and family determinants. **Method:** Results are based upon data from a cross-sectional survey of 596 youth (polydrug users, homeless youth, and injection drug users) aged 16 to 25 who reported current prescription drug misuse. Participants were recruited in Los Angeles and New York City between 2009 and 2011. We compared initiation behaviors between sexual minority and heterosexual youth and examined factors modifying the relationship between sexual identity and earlier initiation into prescription drug misuse. **Results:** Sexual minority youth were more likely to report histories of initiation into misuse of prescription opioids and tranquilizers. Further, they were more likely to report various types of childhood abuse than heterosexual youth. However, multivariate analyses indicated that age of first prescribed drug was the most significant factor associated with initiation into misuse of all three categories of prescription drugs. **Conclusions:** The correlates of initiation into prescription drug misuse are multidimensional and offer opportunities for further research. Identifying additional factors contributing to initiation into prescription drug misuse is essential towards developing interventions that may reduce future drug use among young adults.

Marshal, M. P., Friedman, M. S., Stall, R., King, K. M., Miles, J., Gold, M. A., et al. (2008). Sexual orientation and adolescent substance use: A meta-analysis and methodological review. *Addiction*, 103(4), 546-556.

Aims: Several decades of research have shown that lesbian, gay and bisexual (LGB) adults are at high risk for substance use and substance use disorders (SUDs). These problems may often start prior to young adulthood; however, relatively little is known about risk for substance use in LGB adolescents. The primary aims of this paper were to conduct a meta-analysis of the relationship between sexual orientation and adolescent substance use and a systematic review and critique of the methodological characteristics of this literature. **Methods:** Medical and social science journals were searched using Medline and PsycINFO. Studies were included if they tested the relationship between sexual orientation and adolescent substance use. Eighteen published studies were identified. Data analysis procedures followed expert guidelines, and used National Institutes of Health (NIH)-sponsored meta-analysis software. **Results:** LGB adolescents reported higher rates of substance use compared to heterosexual youth (overall odds ratio = 2.89, Cohen's $d = 0.59$). Effect sizes varied by gender, bisexuality status, sexual orientation definition and recruitment source. None of the studies tested mediation and only one tested moderation. One employed a matched comparison group design, one used a longitudinal design, and very few controlled for possible confounding variables. **Conclusions:** The odds of substance use for LGB youth were, on average, 190% higher than for heterosexual youth and substantially higher within some subpopulations of LGB youth (340% higher for bisexual youth, 400% higher for females). Causal mechanisms, protective factors and alternative explanations for this effect, as well as long-term substance use outcomes in LGB youth, remain largely unknown.

Marshal, M. P., Friedman, M. S., Stall, R., & Thompson, A. L. (2009). Individual trajectories of substance use in lesbian, gay and bisexual youth and heterosexual youth. *Addiction, 104*(6), 974-981.

Aims: Several decades of research have shown that lesbian, gay and bisexual (LGB) adults are at high risk for substance use and substance use disorders, and a recent meta-analysis shows that these disparities most probably begin in adolescence; however, no studies to date have examined longitudinal growth in substance use in LGB youth and heterosexual youth to determine if they follow different trajectories into young adulthood. The primary aims of this paper were to estimate individual trajectories of substance use in youth and examine differences between self-identified LGB and heterosexual subsamples. **Method:** A school-based, longitudinal study of health-related behaviors of adolescents and their outcomes in young adulthood was used to test the hypotheses (The National Longitudinal Study of Adolescent Health). Participants were included if they were interviewed at all three waves and were not missing information regarding self-identified sexual orientation (n = 10 670). **Results:** Latent curve models (LCMs) showed that LGB identity was associated significantly with individual variability in substance use intercepts and slopes, above and beyond age, race and gender. Self-identified LGB youth reported higher initial rates of substance use and on average their substance use increased over time more rapidly than did substance use by heterosexual youth. Two other indicators of sexual orientation (same-sex romantic attraction and same-sex sexual behavior) were also associated with substance use trajectories, and differential results were found for youth who identified as “mostly heterosexual” and bisexual compared with youth who identified as completely heterosexual or homosexual. **Conclusions:** Sexual orientation is an important risk marker for growth in adolescent substance use, and the disparity between LGB and heterosexual adolescents increases as they transition into young adulthood. More research is needed in order to examine: causal mechanisms, protective factors, important age-related trends (using a cohort-sequential design), the influence of gay-related developmental milestones, curvilinear effects over time and long-term health outcomes.

Marshal, M. P., et al. (2013). Mental health and substance use disparities among urban adolescent lesbian and bisexual girls. *Journal of the American Psychiatric Nurses Association, 19*(5), 271-279.

Background: Sexual minority girls (SMGs) report large substance use disparities and victimization experiences, yet there is a dearth of research that focuses exclusively on SMGs. **Objective:** To examine substance use and mental health disparities among SMGs and to determine whether disparities were larger for African American compared with European American girls. **Method:** Data were used from Wave 11 of the Pittsburgh Girls Study, a multiple-cohort, prospective study of urban girls. Girls for the current analysis were aged 16 to 19 years. Fifty-five percent were African American. One hundred and seventy-three (8.3%) identified as SMGs, and 1,891 identified as heterosexual. Multiple regression analyses controlling for age, race, and parent education were conducted. **Results:** SMGs reported a robust pattern of large disparities in externalizing, internalizing, and borderline personality disorder symptoms. There was little evidence to suggest disparities were moderated by race. **Conclusion:** SMGs and their families would benefit from intervention and prevention programs to reduce disparities among this highly vulnerable population.

Needham, B. L. (2012). Sexual attraction and trajectories of mental health and substance use during the transition from adolescence to adulthood. *Journal of Youth and Adolescence*, 41(2), 179-190.

Previous research suggests that sexual minority youth have poorer health-related outcomes than their heterosexual peers. The purpose of this study is to determine whether sexual orientation disparities in mental health and substance use increase, decrease, or remain the same during the transition from adolescence to adulthood. Data are from Waves 1–4 of the National Longitudinal Study of Adolescent Health (n = 8,322; 55% female). Respondents were in grades 7–12 at Wave 1 and aged 24–32 at Wave 4. Latent growth curve modeling is used to compare the mental health and substance use trajectories of youth who consistently report heterosexual attraction versus those who consistently report lesbian, gay, or bisexual (LGB) attraction, those who report a transition to LGB attraction, and those who report a transition to heterosexual attraction. Among women and men, sexual orientation disparities in depressive symptoms and suicidal thoughts persist, but do not increase, during the transition from adolescence to adulthood. The same pattern is observed for disparities in smoking, heavy drinking, and marijuana use among women. Among men, disparities in substance use are only observed between those who report consistent heterosexual attraction and those who transition to heterosexual attraction. Disparities between these groups persist over time for heavy drinking and marijuana use but decrease over time for smoking. While this study finds evidence of numerous disparities in mental health and substance use outcomes during adolescence and young adulthood, particularly among young women, there is no indication that these disparities get larger over time.

Orenstein, A. (2001). Substance use among gay and lesbian adolescents. *Journal of Homosexuality*, 41(2), 1-15.

Examined rates of substance use among homosexual adolescents in a sample of 2,946 high school students. Multiple survey items, rather than a single item, were used to identify gay, lesbian, and bisexual teenagers. Ss with consistent homosexual preferences had greatly elevated rates of substance use. Those who displayed a homosexual preference but answered less consistently also had somewhat higher rates of substance use but were closer to heterosexual youths than to more consistent homosexual youths. The differences in substance use were least for alcohol use and greater for "hard" drugs. It is also noted that because this study used multiple items to measure sexual preference, more youths could be identified as potentially homosexual.

Poon, C. S., & Saewyc, E. M. (2009). Out yonder: Sexual-minority adolescents in rural communities in British Columbia. *American Journal of Public Health*, 99(1), 118-124.

Objectives: Sexual-minority adolescents living in rural communities were compared with their peers in urban areas in British Columbia, exploring differences in emotional health, victimization experiences, sexual behaviors, and substance use. Methods: A population-based sample of self-identified lesbian, gay, or bisexual respondents from the British Columbia Adolescent Health Survey of 2003 (weighted n = 6905) were analyzed. Rural/urban differences separately by gender with the χ^2 test and logistic regressions were tested. Results: Many similarities and several differences were found. Rural sexual minority adolescent boys were more likely than were their urban peers to report suicidal behaviors and pregnancy involvement. Rural sexual-minority adolescents, especially girls, were more likely to report various types of substance use. Rural status was associated with a lower risk of dating violence and higher risk of early sexual debut for sexual-minority girls and a higher risk of dating violence and lower risk of early sexual debut for sexual-minority boys. Conclusions: Location should be a demographic consideration in monitoring

the health of sexual-minority adolescents. Lesbian, gay, and bisexual adolescents in rural communities may need additional support and services as they navigate adolescence.

Rosario, M., Schrimshaw, E. W., & Hunter, J. (2004). Predictors of substance use over time among gay, lesbian, and bisexual youths: An examination of three hypotheses. *Addictive Behaviors, 29*(8), 1623-1631.

Gay, lesbian, and bisexual (GLB) youths report elevated levels of substance use relative to heterosexual youths, but reasons for this disparity have received scant attention. This report longitudinally examined three hypothesized explanations for cigarette, alcohol, and marijuana use among 156 GLB youths. Counter to two hypotheses, neither a history of childhood sexual abuse nor recent experiences of gay-related stressful life events were associated with increased substance use over time. However, the hypothesis concerning the coming-out process was supported by significant nonlinear associations of involvement in gay-related (recreational and social) activities with changes in alcohol use at 12 months and changes in marijuana use at 6 months and 12 months. Specifically, as involvement in gay-related activities increased, alcohol and marijuana use was found to initially increase, but then, substance use declined as involvement in gay-related activities continued to increase. These findings offer a potential explanation for high levels of substance use among GLB youths and suggest potential areas for intervention to prevent or decrease substance use among these youths.

Russell, S. T., Omoto, A. M., & Kurtzman, H. S. (2006). Substance Use and Abuse and Mental Health Among Sexual-Minority Youths: Evidence From Add Health *Sexual orientation and mental health: Examining identity and development in lesbian, gay, and bisexual people*. (pp. 13-35). Washington, DC US: American Psychological Association.

(from the chapter) This chapter considers the substance use and abuse and mental health of sexual-minority youths. Attention is first given to barriers in research that have limited the understanding of the lives of sexual-minority youths, including measurement and sampling challenges. Past research on adolescent sexual orientation, substance use and abuse, and mental health is then reviewed, with a focus on recent population-based studies that have included attention to these concerns. Finally, analyses from the National Longitudinal Study of Adolescent Health (the Add Health study) are presented. The Add Health study is the first nationally representative study of U.S. adolescents that incorporates questions relevant to adolescent sexual orientation. Results from analyses of adolescents' reports of same-sex romantic attractions and relationships and their associations with indicators of substance use and abuse and mental health are then presented.

Ryan, C., D. Huebner, et al. (2009). Family Rejection as a Predictor of Negative Health Outcomes in White and Latino Lesbian, Gay, and Bisexual Young Adults. *Pediatrics 123*(1), 346-352.

OBJECTIVE. Specific family rejecting reactions to sexual orientation and gender expression during adolescence as predictors of current health problems in a sample of lesbian, gay, and bisexual young adults were examined. METHODS. On the basis of previously collected in-depth interviews, quantitative scales to assess retrospectively in young adults the frequency of parental and caregiver reactions to a lesbian, gay, or bisexual sexual orientation during adolescence were developed. The survey instrument also included measures of 9 negative health indicators, including mental health, substance abuse, and sexual risk. The survey was administered to a sample of 224 white and Latino self-identified lesbian, gay, and bisexual young adults, aged 21 to

25, recruited through diverse venues and organizations. Participants completed self-report questionnaires by using either computer-assisted or pencil-and-paper surveys. RESULTS. Higher rates of family rejection were significantly associated with poorer health outcomes. On the basis of odds ratios, lesbian, gay, and bisexual young adults who reported higher levels of family rejection during adolescence were 8.4 times more likely to report having attempted suicide, 5.9 times more likely to report high levels of depression, 3.4 times more likely to use illegal drugs, and 3.4 times more likely to report having engaged in unprotected sexual intercourse compared with peers from families that reported no or low levels of family rejection. Latino men reported the highest number of negative family reactions to their sexual orientation in adolescence. CONCLUSIONS. This study establishes a clear link between specific parental and caregiver rejecting behaviors and negative health problems in young lesbian, gay, and bisexual adults. Providers who serve this population should assess and help educate families about the impact of rejecting behaviors. Counseling families, providing anticipatory guidance, and referring families for counseling and support can help make a critical difference in helping decrease risk and increasing well-being for lesbian, gay, and bisexual youth.

Schwinn, T. M., Thom, B., Schinke, S. P., & Hopkins, J. (2015). Preventing drug use among sexual-minority youths: Findings from a tailored, web-based intervention. *Journal of Adolescent Health, 56*(5), 571-573.

Purpose: Rates of drug use among sexual-minority youths are disproportionately high. Yet, expressly designed prevention programs targeting this population are absent. This study developed and tested a web-based drug abuse prevention program for sexual-minority youths. Methods: A sample (N = 236) of sexual-minority youths was recruited via Facebook. Online, all youths completed pretests; youths randomly assigned to the intervention received a 3-session prevention program; and all youths completed posttest and 3-month follow-up measurements. Results: At 3-month follow-up and compared to youths in the control arm, intervention-arm youths reported less stress, reduced peer drug use, lower rates of past 30-day other drug use, and higher coping, problem solving, and drug-use refusal skills. Conclusions: Outcome data suggest the potential of tailored intervention content to address sexual-minority youths' drug use rates and related risk factors. Moreover, study procedures lend support to the feasibility of using the Internet to recruit sexual-minority youths, collect data, and deliver intervention.

Tucker, J. S., Ellickson, P. L., & Klein, D. J. (2008). Understanding differences in substance use among bisexual and heterosexual young women. *Women's Health Issues, 18*(5), 387-398.

Background: Numerous studies have documented higher substance use rates among bisexual than heterosexual young women, although little is known about the developmental factors contributing to these differences. Based on self-reported sexual orientation collected at age 23, this study identified similarities and differences between bisexual and heterosexual women in their substance use at ages 14 and 18, compared these groups at ages 14 and 18 on key psychosocial factors known to predict young adult substance use, and determined whether these psychosocial factors at age 18 could account for sexual orientation differences in substance use at age 23. Methods: Longitudinal survey data from a West Coast cohort were used to compare heterosexual (n = 1,479) and bisexual (n = 141) women on their substance use and psychosocial characteristics. Results: During adolescence, bisexual women were more likely to have been current and solitary substance users; reported stronger pro-drug beliefs and lower resistance self-efficacy; perceived greater parental approval of their substance use; had more exposure to substance-using peers; and reported poorer mental health. By age 23, bisexual women had higher rates of current

substance use, greater quantity and frequency of use, and more problematic alcohol and drug use. Differences in problematic use at age 23 could be partially explained by risk factors assessed five years earlier at age 18, particularly pro-drug social influences and beliefs. Conclusions: Notwithstanding the lack of longitudinal data on sexual orientation, these results provide important insights regarding the drug prevention needs of bisexual women.

Wilson, H., Bryant, J., Ellard, J., Howard, J., & Treloar, C. (2015). Sexual identity and its relationship to injecting in a sample of disadvantaged young drug users. *Drug and Alcohol Review*.

Introduction and aims. People who are new to injecting are at the highest risk of acquiring blood-borne viruses, and certain other characteristics, such as sexual identity, have been known to further heighten this risk. We investigate whether disadvantaged drug-using young people who are gay, lesbian, bisexual or who identify as other sexual identity (GLBO) are more likely to have ever injected drugs compared with their heterosexual peers. Design and Methods. Convenience sampling was employed across 15 youth services in metropolitan Sydney. Respondents were required to be 16–24 years of age, to have used an illicit drug, to have been exposed to injecting through social networks and been socially disadvantaged in the past 12 months. Participants self-completed a survey using touch screen laptops. Results In a sample of 250 young people, GLBO participants more commonly reported ever injecting drugs [37.1%, confidence interval (CI) 21.5–55.1% vs. 12.3%, CI 8.1–17.4%] or injecting drugs in the past 12 months [31.4%, CI 16.9–49.3% vs. 5.7%, CI 2.9–9.6%] compared with participants who identified as heterosexual. Discussion and Conclusions. The higher rates of injecting among GLBO young people found in this sample advocates for the development of targeted prevention strategies for this group. Utilising existing networks in GLBO communities could be one strategy to limit the transition to injecting drug use and reduce the risk of drug-related harms among this group. [Wilson H, Bryant J, Ellard J, Howard J, Treloar C. Sexual identity and its relationship to injecting in a sample of disadvantaged young drug users. *Drug Alcohol Rev* 2015]

2.14.e. “High-risk” youth

Bousman, C. A., Blumberg, E. J., Shillington, A. M., Hovell, M. F., Ji, M., Lehman, S., & Clapp, J. (2005). Predictors of substance use among homeless youth in San Diego. *Addictive Behaviors*, 30(6), 1100-1110.

This study examined the frequency of substance use among 14- to 24-year-old homeless youth (N=113) recruited from two community drop-in centers and explored the relationship between substance use and hypothesized psychosocial predictors. Audio-computer-assisted self-interviewing (A-CASI) was used for assessment. Including alcohol and tobacco, the mean number of different drugs used was 3.55 for lifetime and 2.34 for the last 3 months. A three-block hierarchical multiple regression was conducted to determine potential predictors of overall drug use (the sum of all different drugs used) during the last 3 months. Block 1 included demographic variables, Block 2 included a parental monitoring variable, and Block 3 included peer and environmental variables derived from learning theories. Parental monitoring (-) and peer variables (+) predicted overall 3-month drug use. The final model explained 36% of the variance in overall drug use. Results suggest that homeless adolescent drug use exists at high levels and is related to parental monitoring and peer modeling of other risk behaviors. These results may inform future prevention strategies for homeless youth and other high-risk populations.

- ★ Conrod, P. J., Castellanos-Ryan, N., & Strang, J. (2010). Brief, personality-targeted coping skills interventions and survival as a non-drug user over a 2-year period during adolescence. *Archives of General Psychiatry*, 67(1), 85-93.

Context: Selective interventions targeting personality risk are showing promise in the prevention of problematic drinking behavior, but their effect on illicit drug use has yet to be evaluated. Objective: To investigate the efficacy of targeted coping skills interventions on illicit drug use in adolescents with personality risk factors for substance misuse. Design: Randomized controlled trial. Setting: Secondary schools in London, United Kingdom. Participants: A total of 5302 students were screened to identify 2028 students aged 13 to 16 years with elevated scores on self-report measures of hopelessness, anxiety sensitivity, impulsivity, and sensation seeking. Seven hundred thirty-two students provided parental consent to participate in this trial. Intervention: Participants were randomly assigned to a control no-intervention condition or a 2-session group coping skills intervention targeting 1 of 4 personality profiles. Main Outcome Measures: The trial was designed and powered to primarily evaluate the effect of the intervention on the onset, prevalence, and frequency of illicit drug use over a 2-year period. Results: Intent-to-treat repeated-measures analyses on continuous measures of drug use revealed time x intervention effects on the number of drugs used ($P < .01$) and drug use frequency ($P < .05$), whereby the control group showed significant growth in the number of drugs used as well as more frequent drug use over the 2-year period relative to the intervention group. Survival analysis using logistic regression revealed that the intervention was associated with reduced odds of taking up the use of marijuana ($\beta = -0.3$; robust SE=0.2; $P = .09$; odds ratio = 0.7; 95% confidence interval, 0.5-1.0), cocaine ($\hat{\beta} = -1.4$; robust SE = 0.4; $P < .001$; odds ratio = 0.2; 95% confidence interval, 0.1-0.5), and other drugs ($\beta = -0.7$; robust SE = 0.3; $P = .03$; odds ratio = 0.5; 95% confidence interval, 0.3-0.9) over the 24-month period. Conclusion: This study extends the evidence that brief, personality-targeted interventions can prevent the onset and escalation of substance misuse in high-risk adolescents.

Eacott, C., & Frydenberg, E. (2008). At-risk students in a rural context: Benefits and gains from a coping skills program. *Australian Journal of Guidance & Counselling*, 18(2), 160-181.

There are increasing demands in schools to provide social-emotional learning opportunities for students. This article reports on the utility of a universal coping skills program for young people at risk for depression in a rural context. The study deals specifically with the utility of the Best of Coping (BOC) program implemented to all students in Year 9 with a view to examining the benefits for students at-risk for depression. Two cohorts of Year 9 students (N = 159) participated in the program across 2006-07. Program effects were evaluated using the Adolescent Coping Scale and the Kessler Psychological Distress Scale and qualitative interviews. Successful intervention with the BOC was found to help students at-risk decrease dependence on Non-Productive coping strategies and reduce risk for negative mental health outcomes. Findings demonstrated that those in greatest need were able to benefit from a universal intervention program.

Holleran Steiker, L. K., Hopson, L. M., Goldbach, J. T., & Robinson, C. (2014). Evidence for site-specific, systematic adaptation of substance prevention curriculum with high-risk youths in community and alternative school settings. *Journal of Child & Adolescent Substance Abuse*, 23(5), 307-317.

The problem of substance use among older youths is often disregarded in prevention research. The prevailing perception has been that prevention programming is developmentally inappropriate for those who are actively experimenting with substances. This project examines the differential effectiveness of youth-driven adaptations of the evidence-based prevention program, keepin' it REAL (kiR). During Phase I, high-risk youths in a variety of community settings (social, therapeutic, and academic) tailored kiR workbooks/videos to increase the relevance for their peers, older adolescents who are likely to have already initiated drug use. Phase II, discussed here in detail, evaluates the effectiveness of the adapted versions of kiR compared with the original and comparison condition using a quasi-experimental pretest-posttest design with a 6-week follow-up and focus groups. Data suggest that participants receiving the adapted version of the curriculum experienced greater improvement in acceptance and use of substances than youths in the other two groups.

Program Profile: Best of Coping

The BOC is a cognitive-behavioural program that aims to reinforce adolescents' coping abilities in order to raise the use of Productive coping and lower the use of Non-Productive coping. Coping skills programs give adolescents the opportunity to experience a range of coping skills using both real and imagined stressors. Introducing programs into the school setting allows students to explore and develop an understanding of their own and alternative coping behaviours in a safe and supportive environment.

(Eacott & Frydenberg, 2008)

- ✓ Houck, J. M., Bryan, A. D., & Ewing, S. W. F. (2013). Functional connectivity and cannabis use in high-risk adolescents. *The American Journal of Drug and Alcohol Abuse*, 39(6), 414-423.

Background: Adolescence is a unique neurodevelopmental period when regions of the brain most able to assess risk and reward are still in development. Cannabis use during adolescence has been associated with persistent negative outcomes. Although measures of resting brain activity are useful in assessing functional connectivity, such measures have not been broadly applied in adolescent cannabis-users. Objectives: The goal of the present study was to analyze the associations between cannabis use and resting brain activity in a sample of high-risk

adolescents. Methods: Eighty-two high-risk youth between 14–18 years old were recruited from a juvenile justice day program. Youth completed a brief neurocognitive battery including assessments of cannabis use and a 5-minute resting functional magnetic resonance imaging (fMRI) scan. Intrinsic connectivity networks were extracted using the GIFT toolbox. Brain activity in a fronto-temporal network was compared in youth with high cannabis use vs. low cannabis use using an independent-samples t-test with alcohol use entered as a covariate. Results: Analysis revealed two elements within the fronto-temporal network related to cannabis use: one in middle frontal gyrus related to high cannabis use, and one in middle temporal gyrus related to low cannabis use. Only the frontal source survived application of a cluster size threshold and was significant at $p < 0.005$. Conclusions: These results are consistent with patterns of activity in adult cannabis-users. The observed effect may reflect either pre-existing risk factors or near-term consequences of cannabis use. Prevention and intervention strategies that address fronto-temporal functioning may be particularly helpful in this population.

Lisha, N. E., Sun, P., Rohrbach, L. A., Spruijt-Metz, D., Unger, J. B., & Sussman, S. (2012). An evaluation of immediate outcomes and fidelity of a drug abuse prevention program in continuation high schools: Project Towards No Drug Abuse (TND). *Journal of Drug Education, 42*(1), 33-57.

The present study provides an implementation fidelity, process, and immediate outcomes evaluation of Project Towards No Drug Abuse (TND), a drug prevention program targeting continuation high school youth ($n = 1426$) at risk for drug abuse. A total of 24 schools participated in three randomized conditions: TND Only, TND and motivational interviewing follow-up, and no treatment control. Fidelity was high: across program schools the curriculum was implemented as intended and was received favorably by students. Relative to controls, intervention conditions produced effects on hypothesized mediators, including greater gains in program related knowledge, greater reductions in drug use intentions, and positive changes in motivation. However, few generalizations to attitudes and intentions regarding risky sexual behavior were found. The pattern of results suggests that the experimental manipulations worked as intended.

Milburn, N. G., et al. (2012). A family intervention to reduce sexual risk behavior, substance use, and delinquency among newly homeless youth. *Journal of Adolescent Health, 50*(4), 358-364.

Purpose: We evaluate the efficacy of a short family intervention in reducing sexual risk behavior, drug use, and delinquent behaviors among homeless youth. Methods: A randomized controlled trial of 151 families with a homeless adolescent aged 12 to 17 years. Between March 2006 and June 2009, adolescents were recruited from diverse sites in Southern California and were assessed at recruitment (baseline), and at 3, 6, and 12 months later. Families were randomly assigned to an intervention condition with five weekly home-based intervention sessions or a control condition (standard care). Main outcome measures reflect self-reported sexual risk behavior, substance use, and delinquent behaviors over the past 90 days. Results: Sexual risk behavior (e.g., mean number of partners; $p < .001$), alcohol use ($p = .003$), hard drug use ($p < .001$), and delinquent behaviors ($p = .001$) decreased significantly more during 12 months in the intervention condition compared with the control condition. Marijuana use, however, significantly increased in the intervention condition compared with the control condition ($p < .001$). Conclusions: An intervention to reengage families of homeless youth has significant benefits in reducing risk over 12 months.

Peterson, P. L., Baer, J. S., Wells, E. A., Ginzler, J. A., & Garrett, S. B. (2006). Short-term effects of a brief motivational intervention to reduce alcohol and drug risk among homeless adolescents. *Psychology of Addictive Behaviors*, 20(3), 254-264.

The short-term results of a randomized trial testing a brief feedback and motivational intervention for substance use among homeless adolescents are presented. Homeless adolescents ages 14-19 (N = 285) recruited from drop-in centers at agencies and from street intercept were randomly assigned to either a brief motivational enhancement (ME) group or 1 of 2 control groups. The 1-session motivational intervention presented personal feedback about patterns of risks related to alcohol or substance use in a style consistent with motivational interviewing. Follow-up interviews were conducted at 1 and 3 months post-intervention. Youths who received the motivational intervention reported reduced illicit drug use other than marijuana at 1-month follow-up compared with youths in the control groups. Treatment effects were not found with respect to alcohol or marijuana. Post hoc analyses within the ME group suggested that those who were rated as more engaged and more likely to benefit showed greater drug use reduction than did those rated as less engaged. Limitations of the study are discussed as are implications for development of future substance use interventions for this high-risk group.

Rice, E., Milburn, N. G., & Monro, W. (2011). Social networking technology, social network composition, and reductions in substance use among homeless adolescents. *Prevention Science*, 12(1), 80-88.

Peer-based prevention programs for homeless youth are complicated by the potential for reinforcing high-risk behaviors among participants. The goal of this study is to understand how homeless youth could be linked to positive peers in prevention programming by understanding where in social and physical space positive peers for homeless youth are located, how these ties are associated with substance use, and the role of social networking technologies (e.g., internet and cell phones) in this process. Personal social network data were collected from 136 homeless adolescents in Los Angeles, CA. Respondents reported on composition of their social networks with respect to: home-based peers and parents (accessed via social networking technology; e.g., the internet, cell phone, texting), homeless peers and agency staff (accessed face-to-face) and whether or not network members were substance-using or non-substance-using. Associations between respondent's lifetime cocaine, heroin, and methamphetamine use and recent (previous 30 days) alcohol and marijuana use were assessed by the number of non-substance-using versus substance-using ties in multivariate linear regression models. 43% of adolescents reported a non-substance-using home-based tie. More of these ties were associated with less recent alcohol use. 62% of adolescents reported a substance-using homeless tie. More of these ties were associated with more recent marijuana use as well as more lifetime heroin and methamphetamine use. For homeless youth, who are physically disconnected from positive peers, social networking technologies can be used to facilitate the sorts of positive social ties that effective peer-based prevention programs require.

Roy, E., Haley, N., Leclerc, P., Boudreau, J., & Boivin, J. (2007). Risk factors for initiation into drug injection among adolescent street youth. *Drugs: Education, Prevention & Policy*, 14(5), 389-399.

Young injectors are a group with high-risk behaviours, particularly with respect to HIV infection and hepatitis C. A leading strategy to prevent these infections could be the prevention of injection, especially among the youngest individuals. Analyses on initiation into drug injection from a prospective cohort study of street youth conducted in Montreal, Canada were reported. Among 118 non-injector participants under 18 years of age followed for an average of 1.31 years, it was

estimated that the incidence rate of injection was 22.7 per 100 person-years. Independent predictors of initiation were: a lifetime history of use of ≥ 4 types of drugs, recent daily alcohol drinking, a recent episode of homelessness, a lifetime history of rape, and recent involvement in survival sex. The observed high rate of initiation into injection clearly indicates that interventions to prevent injection should target especially adolescent street youth. These interventions should address simultaneously individual and structural factors, such as substance abuse and living conditions.

Rye, B. J., Humpartzoomian, R., & Steep, B. (2001). Feedback from participants and leaders in an intervention program: The 1997-1998 Opening Doors process evaluation. *Journal of Drug Education, 31*(2), 185-206.

Examined the efficacy of the Opening Doors in-school drug prevention program. 253 high school students, 58 parents, and 38 program leaders reported program perceptions. Results show a very high program satisfaction level from all 3 groups, with parents reporting the highest levels. Findings suggest that areas for improvement include parent attendance, the invitation process, and support from schools. Feedback from program leaders included concerns about scheduling and time involvement.

★★ Springer, J. F., Sale, E., Hermann, J., Sambrano, S., Kasim, R., & Nistler, M. (2004). Characteristics of Effective Substance Abuse Prevention Programs for High-Risk Youth. *The Journal of Primary Prevention, 25*(2), 171-194.

The last two decades have witnessed a rapid development of substance abuse prevention programs. Most efforts to evaluate these programs have been limited to single program studies, and nearly all studies involving multiple drug prevention programs have involved school-based programs for general youth populations. In 1995, the Center for Substance Abuse Prevention (CSAP), with the Substance Abuse and Mental Health Administration (SAMHSA), funded the CSAP National Cross-site Evaluation of High Risk Youth Programs, a five-year, multi-site evaluation study involving 46 programs and over 10,500 youth at high risk for substance use (CSAP, 2002(a)). This article reports findings from this evaluation, focusing on program characteristics that help explain reductions in 30-day substance use among program participants. Programs found to be most effective in reducing substance use were those that offered strong behavioral life skills development content, emphasized team-building and interpersonal delivery methods, emphasized introspective learning approaches focusing on self-reflection, were based upon a clearly articulated and coherent program theory, and provided intense contact with youth. Programs utilizing these positive program components produced consistent and lasting reductions in substance use. These findings provide a solid basis for the adoption of positive program characteristics in the development of future prevention programming for high-risk youth.

Program Profile: Opening Doors

The Opening Doors Program was designed for students who find the transition from elementary school into high school particularly challenging. Some students are vulnerable to developing behavioral patterns that result in undesirable consequences (e.g., truancy, delinquency, and substance use) during this time. The Opening Doors Program is also designed to foster positive relationships with adults (e.g., teachers, parents, etc.) and peers, as well as to improve students' school experience and performance.

(Rye et al., 2001)

★ Springer, J. F., Sale, E., Kasim, R., Winter, W., Sambrano, S., & Chipungu, S. (2004). Effectiveness of Culturally Specific Approaches to Substance Abuse Prevention: Findings from CSAP's National Cross-

Site Evaluation of High Risk Youth Programs. *Journal of Ethnic & Cultural Diversity in Social Work: Innovation in Theory, Research & Practice*, 13(3), 1-23.

This study assesses the degree to which culturally specific interventions enhance substance abuse prevention effectiveness for targeted cultural groups. A large and diverse (African American, Hispanic, American Indian, and Asian) sample of 10,500 youth across 48 programs was obtained. Youth participating in culturally specific programming showed greater program satisfaction and felt programs were more personally meaningful than youth in non-culturally specific programs. Culturally specific programs for African American youth were also more effective in preventing substance use. This finding may be attributable to the fact that Africentric programs apply a comprehensive and structured approach to substance abuse prevention and that cultural messages are clearly linked to important protective factors.

- ★ Sussman, S., Dent, C. W., Craig, S., Ritt-Olsen, A., & McCuller, W. J. (2002). Development and immediate impact of a self-instructed curriculum for an adolescent indicated drug abuse prevention trial. *Journal of Drug Education*, 32(2), 121-137.

Describes the development and impact of a self-instruction indicated drug abuse prevention program, Project Towards No Drug Abuse, using a sample of 288 students. It is noted that self-instruction programming often is used to help youth that are at high risk for dropout and drug abuse to complete their high school education. This article describes the justification for the self-instruction program, keys to good programmed self-learning, and how a 12-session health educator delivered program was converted to a self-instruction format. In addition, the immediate impact of a 3-group experimental trial is presented. Health educator led, self-instruction, and standard care control conditions were compared on knowledge change, and the 2 program conditions were compared on process ratings. 572 students completed surveys. Students attended an average of two-thirds of the sessions in the health educator led condition, whereas students completed an average of 83% of the self-instruction sessions. It was found that the self-instruction condition was easier to implement, provided better implementation, and resulted in learning as great as the health educator condition. However, the health educator condition was better received and perceived as of relatively higher quality

Program Profile: Project Towards No Drug Abuse

This program was developed utilizing a motivation-skills-decision making model. Youth are motivated to not want to use drugs through cognitive misperception correction activities (e.g., not giving in to stereotyping of continuation high school youth as drug users). They learn social skills to help them bond with lower risk peers (e.g., listening skills), and they learn decision making to tie their motivation and skills into productive action. Originally designed as a Health Educator-led curriculum, it was converted to a self instructed curriculum with mixed success.

(Sussman et al., 2002)

Sussman, S., Skara, S., Rodriguez, Y., & Pokhrel, P. (2006). Non drug use- and drug use-specific spirituality as one-year predictors of drug use among high-risk youth. *Substance Use & Misuse*, 41(13), 1801-1816.

The present article explored two different dimensions of spirituality that might tap negative and positive relations with adolescent drug use over a 1-year period. Non-drug-use-specific spirituality measured how spiritual the person believes he or she is, participation in spiritual groups, and

engagement in spiritual practices such as prayer, whereas drug-use-specific spirituality measured using drugs as a spiritual practice. Self-report questionnaire data were collected during 1997-1999 from a sample of 501 adolescents in 18 continuation high schools across southern California. Participants ranged in age from 14 to 19 and were 57% male, with an ethnic distribution of 34% White, 49% Latino, 5% African American, 7% Asian, and 5% other. A series of general linear model analyses were conducted to identify whether or not two different spirituality variables predict drug use (cigarettes, alcohol, marijuana, hallucinogens, and stimulants) at 1-year follow-up. After controlling for baseline drug use, non-drug-use-specific spirituality was negatively predictive of alcohol, marijuana, and stimulant use, whereas drug-use-specific spirituality failed to be found predictive of these variables one year later. Conversely, drug-use-specific spirituality was positively predictive of cigarette smoking and hallucinogen use, whereas non-drug-use spirituality failed to be found predictive of these variables. The results provide new evidence that suggests that spirituality may have an effect on drug use among adolescents. The drug-use-specific measure of spirituality showed "risk effects" on drug use, whereas the other measure resulted in "protective effects," as found in previous research. Knowledge of the risk and protective patterns and mechanisms of spirituality may be translated into future drug use prevention intervention programs.

Tripodi, S. J., Springer, D. W., & Corcoran, K. (2007). Determinants of substance abuse among incarcerated adolescents: Implications for brief treatment and crisis intervention. *Brief Treatment and Crisis Intervention, 7*(1), 34-39.

This study assessed the determinants of substance abuse among incarcerated youth. Because substance abuse is a predictor of incarceration and conduct disorder is known to increase the chances of youth abusing substances, the purpose of this study was to determine what seminal symptoms of conduct disorder seem to be the risk factors for substance abusers among incarcerated youth. Data were collected on 83 youth in southern Oregon, 74 males and 9 females. Logistic regression found the overall model containing 6 symptoms of conduct disorder to be significantly related to substance abuse ($p < .001$). When looking at the 6 symptoms individually, however, only running away from home was significantly related to substance abuse ($p < .001$). Incarcerated youth who reported running away from home were more than 9 times likely to abuse substances than incarcerated youth who did not report running away from home. This indicates the importance of conducting brief therapy for the prevention and intervention of youth running away from home. The article concludes with a discussion on the importance of assessments, treatment plans, and conducting the harm-reduction approach.

2.14. f. Youth in care

Backovic, D., Marinkovic, J. A., Grujicic-Sipetic, S., & Maksimovic, M. (2006). Differences in substance use patterns among youths living in foster care institutions and in birth families. *Drugs: Education, Prevention & Policy*, 13(4), 341-355.

Aim: The aim of this study was to determine differences in psychosocial context of occurrence of cigarette smoking and alcohol and drugs use between adolescents living in foster homes and those living with parents. **Methods:** The study examined 58 adolescents (14-17 years) living in foster homes and 245 living with parents using an anonymous questionnaire. **Findings:** Consumption of tobacco and cannabis was more common in the group of children living in foster homes. They tried these substances earlier and used them more frequently. The most important predictor for current smoking was the number of peers who smoked. Another important predictor of current smoking was an expressed feeling of loneliness. The studied groups did not differ significantly in the occurrence of alcohol drinking. **Conclusions:** These results suggest that suitable prevention programmes with emphases on social groups living under adverse conditions are needed. Further research should be conducted to give more detailed insight into the reasons and psychosocial factors that precipitate the start and perpetuation of these habits in diverse environments.

Braciszewski, J. M., Moore, R. S., & Stout, R. L. (2014). Rationale for a new direction in foster youth substance use disorder prevention. *Journal of Substance Use*, 19(1-2), 108-111.

Background: Of the 463 000 children residing in United States foster care, 29 000 annually exit the system because they have “aged out,” are thus dropped from supportive services, and become responsible for their own housing, finances and health needs. Given histories of maltreatment, housing instability and parental substance use, youth preparing to exit care are at substantial risk of developing substance use disorders. Unfortunately, access to services is often limited, both before and after exit from care. **Methods:** With the goal of developing a relevant substance use intervention for these youth, focus groups were conducted with foster care staff, administrators and parents to assess the feasibility of potential approaches. **Results:** Participants identified several population-specific barriers to delivering adapted intervention models developed for normative populations. They expressed concerns about foster youth developing, then quickly ending, relationships with interventionists, as well as admitting to substance use, given foster care program sanctions for such behavior. Group members stressed the importance of tailoring interventions, using creative, motivational procedures. **Conclusions:** Foster youth seem to encounter unique barriers to receiving adequate care. In light of these results, a novel, engaging approach to overcoming these barriers is also presented.

Brook, J., Rifenbark, G. G., Boulton, A., Little, T. D., & McDonald, T. P. (2015). Risk and protective factors for drug use among youth living in foster care. *Child & Adolescent Social Work Journal*, 32(2), 155-165.

Despite recent advances in understanding the individual and contextual development of youth substance abuse, limitations remain regarding the interplay of risk and protective factors—especially for highly vulnerable foster care youth. Using data available from the Communities That Care Youth Survey, we analyzed risk and protective factors for a sample of 1,595 foster youth. Structural equation modeling was used, and a three-factor confirmatory factor analysis was estimated to validate the survey measurement structure. To differentiate between risk and

protective constructs, the researchers employed an orthogonalizing approach to deal with collinearity between risk and protection. Findings indicate a high correlation between the risk and protective constructs and suggest a single dimension for this sample and for the scales as they are currently constructed; however, the orthogonalizing approach used here also provided some support for considering these constructs separately. Findings generated from our study also suggest that risk factors play a greater role in predicting drug use than do protective factors among foster youth. If the differentiation of risks/protective factors is to serve fully in assessment and intervention, we need to disentangle constructs and learn more about their relative and interactive influence. These findings reveal an important distinction in the understanding of the role that risk and protection may play. Although either decreasing risk factors or increasing protective factors will mitigate drug use in foster care youth, our findings suggest that the development and implementation of targeted risk reduction strategies may result in a larger impact.

Faulkner, B., Goldstein, A. L., & Wekerle, C. (2014). Pathways from childhood maltreatment to emerging adulthood: Investigating trauma-mediated substance use and dating violence outcomes among child protective services-involved youth. *Child Maltreatment, 19*(3-4), 219-232.

Longitudinal survey data were used to examine the relationship between two types of childhood maltreatment, abuse/neglect and exposure to intimate partner violence (IPV), and two outcomes, substance use and dating violence, within the past year. Participants were youth (N = 158, aged 16–19 at Time 3) involved with child protective services (CPS). A parallel multiple mediator model was used to test the hypothesis that trauma symptoms would mediate the relationship between both types of maltreatment and dating violence, marijuana, and alcohol use outcomes. Although both types of maltreatment were not directly associated with dating violence and substance use outcomes, the indirect effects of anxiety, anger, and dissociation on the relationship between maltreatment and substance use/dating violence were significant. Direct effects of both types of maltreatment on past year use of dating violence + alcohol use and dating violence + marijuana use were not significant, but results demonstrated a significant indirect effect for anger on the relationship between exposure to IPV and past year dating violence + marijuana use. No other indirect effects were significant. Findings highlight the negative effects of exposure to IPV and have implications for the development of prevention programming for youth transitioning out of CPS.

Fettes, D. L., Aarons, G. A., & Green, A. E. (2013). Higher rates of adolescent substance use in child welfare versus community populations in the United States. *Journal of Studies on Alcohol and Drugs, 74*(6), 825-834.

Objective: Youth substance use exacts costly consequences for a variety of important health outcomes. We examined and compared prevalence rates and a common set of psychosocial factors of lifetime and current substance use among child welfare-involved youths and community youths from two nationally representative data sets. Method: Using the National Survey of Child and Adolescent Well-Being and the National Longitudinal Study of Adolescent Health, we compared prevalence rates and conducted logistic regression models for eight binary outcome measures of substance use: lifetime and current use of alcohol, inhalant, marijuana, and other illicit drugs to examine predictors of substance involvement in the two samples. Results: Substance use prevalence was higher among child welfare-involved youths than community youths for lifetime marijuana use, lifetime and current inhalant use, and lifetime and current other

illicit drug use. Among both child welfare–involved and community youths, delinquency was the factor most strongly associated with all lifetime substance use outcomes. Notably, family structure and parental closeness were important protective factors against current substance use among child welfare–involved youths. For community youths, poorer emotional health was the strongest indicator of current substance use. Conclusions: Substance use among all adolescents is a critical public health concern. Given the heightened vulnerability of child welfare–involved youths, it is particularly important to focus prevention and early intervention efforts on this population. Further research should explore additional factors associated with substance use among these youths so that child welfare and behavioral health systems may jointly target prevention and intervention efforts.

McDonald, T. P., Mariscal, E. S., Yan, Y., & Brook, J. (2014). Substance use and abuse for youths in foster care: Results from the communities that care normative database. *Journal of Child & Adolescent Substance Abuse*, 23(4), 262-268.

This study uses the Communities That Care Normative database to examine the prevalence of drug and alcohol use and abuse among foster care youths in comparison to youths not living in a foster home setting. The foster youths were more likely to have used all of the examined illicit substances, and these differences generally remained after controlling for a number of demographic differences between the two groups. These negative differences appear to be amplified for females in foster care. The overall high-risk profile of foster youths makes them an especially important population for targeted prevention.

Traube, D. E., James, S., Zhang, J., & Landsverk, J. (2012). A national study of risk and protective factors for substance use among youth in the child welfare system. *Addictive Behaviors*, 37(5), 641-650.

While child welfare services are intended, in part, to diminish maltreatment's negative impact on adolescents' development, there is evidence that receiving child welfare services affects adolescents' substance use adversely. The literature on the extent and correlates of this problem is still emerging. The present study aims to fill part of this gap by examining the association between baseline psychosocial risk and protective factors on engagement in substance use behavior over a period of 36 months for child welfare involved youth. It further compares substance use behavior between youth placed in out-of-home care and those who remained with their biological families. Data come from the National Survey of Child and Adolescent Well-Being (NSCAW), a national probability study of children and adolescents undergoing investigation for abuse or neglect. The sample for this analysis was restricted to 827 youth who were 11 years or older at baseline data collection. Key findings include a high rate of social substance use (47.7%) and illicit substance use (17.4%). There was a limited role of protective factors in mitigating risk behavior for social substance use (caregiver connectedness; OR=0.51, p<0.05). Avoiding foster care placement was a protective factor for illicit substance use (OR = 0.43, p < 0.05). Delinquency was a risk factor associated with both social substance use (OR = 1.06, p < 0.01) and hard substance use (OR = 1.10, p < 0.001). Given the high prevalence of substance use among child welfare involved youth, prevention efforts for this population require a better understanding of biological, psychological, and social protective factors. The child welfare system is an untapped resource that has the potential to be a gateway to and a platform for substance abuse prevention services that should be incorporated into child welfare safety and permanency interventions.

2.14. g. Older adolescents (ages 18+)

Bryant, J. (2014). A study of young people who inject drugs: An opportunity to decrease high risk injecting by improving knowledge about hepatitis C prevention. *Vulnerable Children and Youth Studies*, 9(2), 104-113.

The population of young people who inject drugs (PWID) displays a unique constellation of features that are not found in other groups who are at risk of acquiring hepatitis C: they exhibit a smaller pool of existing infection and a higher incidence of unsafe injecting. This means there is vast opportunity to prevent the spread of hepatitis C for young PWID. This article uses survey data collected from clients of a community pharmacy needle exchange scheme in New South Wales, Australia, to describe the extent of unsafe injecting among young PWID, their knowledge about hepatitis C prevention and use of services. It examines whether poor knowledge and service use are related to unsafe injecting. A sample of 215 respondents aged 18–25 years was compared to 1464 respondents aged 26 years or older. Young respondents engaged in riskier injecting practices than their older counterparts, with higher proportions saying they had shared needles and other injecting equipment. Moreover, those who had shared equipment did so in a more risky manner than older respondents by sharing with a larger number of people and with people who were possibly less well-known to them, such as casual sex partners. While knowledge about hepatitis C transmission was good among young respondents, it was significantly worse than that of older respondents. More importantly, however, this poorer knowledge was related to both increased needle sharing and increased ancillary equipment sharing. Many studies do not observe a relationship between knowledge and risk behaviour but the findings of this study suggest a pressing opportunity to improve knowledge of young PWID. While it is unlikely that better knowledge will alone prevent infection among young people, it is a necessary starting point and, in the current case, has the potential to decrease young people's risk of acquiring hepatitis C.

Clapp, J. D., & Stanger, L. (2003). Changing the College AOD Environment for Primary Prevention. *The Journal of Primary Prevention*, 23(4), 515-523.

Identifying environmental factors reflected to alcohol use is important for program planning and evaluation in college alcohol and drug prevention programs. Little has been written concerning uses of data in environmental prevention efforts. This paper presents four brief interrelated case studies of how environmental modifications were used by a college alcohol prevention project to 1) change the marketing practices and service policies of a student-oriented bar, 2) alter the sales practices of a campus bookstore concerning alcohol paraphernalia, 3) to develop a campaign with the goal of reducing risk factors related to heavy drinking at private student parties, and 4) stop an unsafe bus from transporting students to bars in Mexico. Creative use of such environmental prevention approaches has potential benefit to colleges and universities concerned with the primary prevention of alcohol-related problems experienced by students.

Duff, C. (2005). Party drugs and party people: Examining the 'normalization' of recreational drug use in Melbourne, Australia. *International Journal of Drug Policy*, 16(3), 161-170.

This paper reports the findings of survey research recently completed in Melbourne, Australia among a sample of 379 bar and nightclub patrons. Drawing from the work of English researchers Howard Parker and Fiona Measham, this study examines the 'normalization' of young people's

drug use and the links between this drug use and young people's 'time out'--their leisure time and 'cultural consumption' habits. The paper outlines the research participants' use of alcohol and other drugs including measures of both 'lifetime' and more recent use; the prevalence of illegal drug use within the peer group; the general accessibility and availability of illegal drugs, as well as participants' knowledge of various drug-related risks and harms. The use of alcohol and other drugs was found to be widespread, with 96% of survey respondents identifying as 'current drinkers', whilst 56% reported the 'lifetime use' of illegal drugs. Just over a third (35.2%) reported the recent (last month) use of an illegal drug, typically ecstasy, cannabis and/or amphetamines. I conclude that such findings provide further support for the claim that drug use is becoming increasingly normalized within youth populations in Australia. The paper closes with a brief discussion of the implications of these findings in terms of the design and implementation of drug prevention and harm minimisation strategies in Australia and elsewhere.

Halkitis, P. N., Manasse, A. N., & McCready, K. C. (2010). Illicit drug use in a community-based sample of heterosexually identified emerging adults. *Journal of Child & Adolescent Substance Abuse, 19*(4), 300-308.

In this study lifetime and recent drug use patterns among 261 heterosexually identified 18- to 25-year-olds were assessed through brief street intercept surveys conducted in New York City. Marijuana, hallucinogens, powder cocaine, and ecstasy were the most frequently reported drugs for both lifetime and recent use. Findings further suggest significant differences in lifetime use along the lines of gender, race/ethnicity, and school enrollment for various drugs. Males reported using significantly greater numbers of different drugs compared to females, as did those not enrolled in school compared to school enrollees. These data suggest that illicit drug use in emergent adulthood does not develop in a monolithic manner and synergies must be considered in relation to gender, school enrollment, and employment that first surface in the child and adolescent developmental stages. In addition, primary prevention efforts targeting child and adolescent drug use may mitigate the emerging adult and lifetime substance use.

★★ Karamitros, H., Minelli, M., & Schmidt, J. (2006). Selecting an Alcohol and Other Drug Prevention Program in Times of Declining Resources. *Journal of Alcohol and Drug Education, 50*(4), 25-34.

This article reviews the most effective alcohol and other drug prevention programs used in higher education. As all campuses are unique, selection of programming depends on the campus setting and overall environment. Individually focused programs are generally divided into three major categories: (a) Educational/awareness approaches, (b) cognitive-behavioral approaches, and (c) motivational enhancement techniques. After careful review of the current practices in alcohol and other drug prevention programs, the most effective programs appear to include a combination of techniques. These programs are specific enough to focus on the unique needs of students at individual campuses, but are general enough to be utilized on most campuses with small modifications. The individually focused programs showed varied degrees of success with cognitive-behavioral approaches ranked positively, while educational/awareness programs generally proved to be not as successful. For programs to be successful it takes a combination of individual and environmental strategies along with a consortium of students, campus and community leaders, business owners, and other stakeholders to work together toward this common goal.

Kelly, B. C., Vuolo, M., Pawson, M., Wells, B. E., & Parsons, J. T. (2015). Chasing the bean: Prescription drug smoking among socially active youth. *Journal of Adolescent Health, 56*(6), 632-638.

Purpose: Alternative consumption practices of prescription drug misuse have been less well monitored than general prevalence. We describe prescription drug smoking among socially active youth and highlight correlates of this practice. We also examine its association with drug problems, drug dependence, and mental health. Methods: We surveyed 404 young adults recruited from nightlife venues in New York via time-space sampling. We use linear and logistic regression models to examine the probability of smoking prescription drugs and its association with drug problems, dependence, and mental health. Qualitative findings supplement the survey data. Results: Males have higher odds than females (odds ratio [OR] = 3.4), and heterosexuals have higher odds than sexual minority youth (OR = 2.3) of smoking prescription drugs. Those involved in electronic dance music nightlife have higher odds (OR = 2.1) than those who do not participate in that scene, whereas those in college bar scenes have lower odds (OR = .4) of having smoked prescription drugs. Prescription drug smokers report more drug problems ($\beta = .322$) and greater symptoms of dependence net ($\beta = .298$) of the frequency of misuse and other characteristics. Prescription drug smokers do not report greater mental health problems. Qualitative interview data support these survey findings. Conclusions: Prescription drug smoking is a significant drug trend among socially active youth. It is associated with drug problems and symptoms of dependence net of frequency of misuse. Prevention and intervention efforts for youth who misuse prescription drugs should address the issue of prescription drug smoking, and this may be an area for clinicians to address with their adolescent patients.

Larimer, M. E., Kilmer, J. R., & Lee, C. M. (2005). College Student Drug Prevention: A Review of Individually-Oriented Prevention Strategies. *Journal of Drug Issues, 35*(2), 431-456.

The current paper highlights the college years as a risk period for development, continuation, and escalation of illicit substance use and substance use disorders and reviews the literature related to the prevention and treatment of these disorders in college populations. Despite widespread implementation of college drug prevention programs, a review of the literature reveals few controlled trials targeting this population. However, alcohol prevention has been extensively studied, and many efficacious interventions for college drinking share theoretical and methodological underpinnings with interventions shown to be efficacious in drug prevention and treatment with other populations (i.e., school-based prevention, adolescent and adult drug treatment). These interventions could be adapted to target drug prevention on college campuses. Barriers to implementation and evaluation of these interventions on campus are discussed, and suggestions are made for future research and programmatic directions.

McCabe, S. E., Boyd, C. J., & Teter, C. J. (2005). Illicit use of opioid analgesics by high school seniors. *Journal of Substance Abuse Treatment, 28*(3), 225-230.

The illicit use of opioid analgesics represents a growing problem among American adolescents. In order to examine the correlates associated with the illicit use of opioid analgesics, a nationally representative sample of 4,522 high school seniors from the 2002 Monitoring the Future database was examined. Multivariate logistic regression indicated that illicit users of prescription opioid analgesics were significantly more likely to be male, White, and have lower grade point averages. Illicit users of opioid analgesics also reported higher rates of cigarette smoking, alcohol use, marijuana use, other illicit drug use, and problem behaviors. The present study provides evidence

that the illicit use of opioid analgesics represents a problem among American high school seniors and effective prevention and intervention efforts are needed.

Miller, B. A., Holder, H. D., & Voas, R. B. (2009). Environmental strategies for prevention of drug use and risks in clubs. *Journal of Substance Use, 14*(1), 19-38.

Environmental prevention strategies in club settings where music and dance events are featured could provide an important new arena for the prevention of drug use and other risky behaviours (e.g. sexual risk taking, intoxication and drug use, aggression, and driving under the influence). Electronic music dance events (EMDEs) occur in clubs that attract young, emerging adults (18-25 years of age) and attract individuals who engage in various types of drug use. Borrowing from the environmental prevention studies that focus on reducing alcohol use and related problems, a model for drug prevention in the club setting is proposed. Initially, an overview of the relationships between EMDEs and drug use, and other risky behaviours are presented. Next, rationales for environmental strategies are provided. Finally, an environmental approach to prevention of drug use and risky behaviours in clubs is described. This comprehensive set of environmental strategies, is designed to be mutually supportive and interactive. Environmental strategies are believed to provide potential for developing an efficacious prevention strategy. The environmental prevention approach presented here is composed of three intervention domains: (1) mobilization, (2) strategies for the exterior environment, and (3) strategies for the interior environment.

Newbery, N., McCambridge, J., & Strang, J. (2007). 'Let's talk about drugs': Pilot study of a community-level drug prevention intervention based on motivational interviewing principles. *Health Education, 107*(3), 276-289.

Purpose: The feasibility of a community-level drug prevention intervention based upon the principles of motivational interviewing within a further education college was investigated in a pilot study. **Design/methodology/approach:** The implementation over the course of a single term of "Let's Talk about Drugs" was studied with both action research methods and a quasi-experimental design. **Findings:** Modest qualitative evidence of attitudinal and environmental benefit provides some optimism that intervention of greater duration may have the capacity to produce more substantial impact. **Research limitations/implications:** The sustainability of the achieved institutional changes following the delivery of this intervention, most notably centring upon a revised drug policy, is questionable. No quantitative data on reduced drug use behavior or associated problems directly attributable to intervention was obtained. **Originality/value:** Further education colleges offer relatively unexplored opportunities for drug prevention and harm reduction, at both individual and community levels. Three major lessons were learned: for the motivational interviewing approach to be applied with meaningful potential to effectively shaping behavior at the college level, greater input is required; quasi-experimental methods for evaluation are feasible and appropriate; and intervention must be coherent with, and shaped by, the specific college context.

Program Profile: Let's Talk about Drugs

"Let's Talk about Drugs" aimed to help create a climate in which students felt able to talk about issues surrounding substance use and to help staff to be comfortable and equipped to listen, discuss and as appropriate, to provide guidance. It was agreed that we should give equivalent attention to alcohol consumption, cigarette and cannabis smoking, with a lesser focus on all other substances and that a harm reduction orientation was most appropriate.

(Newbery et al., 2007)

To, S.-M., Ngai, S. S.-Y., Ngai, N.-P., & Cheung, C.-K. (2007). Young people's existential concerns and club drug abuse. *International Journal of Adolescence and Youth*, 13(4), 327-341.

Taken into consideration the limitations of conventional approaches in understanding the problem of young drug abuse, this paper shows how stresses emerging in adolescents' confrontation with the fundamental concerns of existence lead to drug taking behavior. Based on a qualitative study conducted in Hong Kong, this paper suggests that young people take illicit drugs in order to relieve anxiety arising from some existential issues at this life stage, namely struggling with identity confusion, striving for connectedness with the significant others, searching for the meaning of life, as well as striking a balance between freedom and responsibility. It provides a frame of reference for examining the subjective experiences of young people in facing their life struggles and making choices regarding drug taking. It also helps fill the gap of the existing literature on substance abuse and draws implications for intervention, prevention, and research.

Vincent, K. B., Caldeira, K. M., O'Grady, K. E., Wish, E. D., & Arria, A. M. (2010). The impact of positive and negative ecstasy-related information on ecstasy use among college students: Results of a longitudinal study. *Drugs: Education, Prevention & Policy*, 17(3), 232-247.

Aims: To: (1) estimate the proportion of students exposed to specific types of information regarding the positive and negative effects of ecstasy, (2) test models that quantified the relationship between exposure to these messages and subsequent ecstasy use, controlling for peer drug use and sensation-seeking. Methods: As part of the College Life Study, 447 students, aged 17-20 years, from a university in the mid-Atlantic region of the US completed an in person interview plus three follow-up assessments. Findings: Individuals who had heard a greater number of negative messages were significantly more likely to use ecstasy, even controlling for positive messages, prior ecstasy use, peer ecstasy use, perceived harm, sensation-seeking, sex and race. Some messages were significant at the bivariate level. Conclusions: Ecstasy use may have been influenced more by the content of the messages than by the quantity or diversity of messages. Interventions should be designed to address both positive and negative perceptions about a particular drug, rather than focusing exclusively on the negative information. Future evaluations should focus on the effectiveness of multi-pronged sustainable prevention programs in reducing adolescent drug use risk.

Ziemelis, A., Bucknam, R. B., & Elfessi, A. M. (2002). Prevention efforts underlying decreases in binge drinking at institutions of higher education. *Journal of American College Health*, 50(5), 238-252.

Examined factors underlying decreases in binge drinking by college students. 34 institutions where college students' binge drinking increased and 60 institutions where it decreased over the 2 yrs that a drug prevention program operated were compared using an inductively derived taxonomy of prevention program elements, student variables, student substance use variables, use-related variables, and institutional variables. Results show that only prevention program elements discriminated between groups. Factor analysis identified 8 prevention factors, including: (1) student participation and involvement in prevention activities; (2) changing campus social/cultural environment using informational and educational processes; (3) student participation and involvement in program development and operation; and (4) curriculum infusion. These factors decreased in binge drinking by 28.1%. Factor synthesis yielded a 3-construct binge-drinking prevention model based on student participation and involvement strategies, educational and informational processes, and campus regulatory and physical change efforts. This model improved base-rate prediction of decreased binge drinking by 33.2%.



Part III:

Risk and Protective Factors Influencing Youth Substance Use

Part III: Risk and Protective Factors Influencing Youth Substance Use

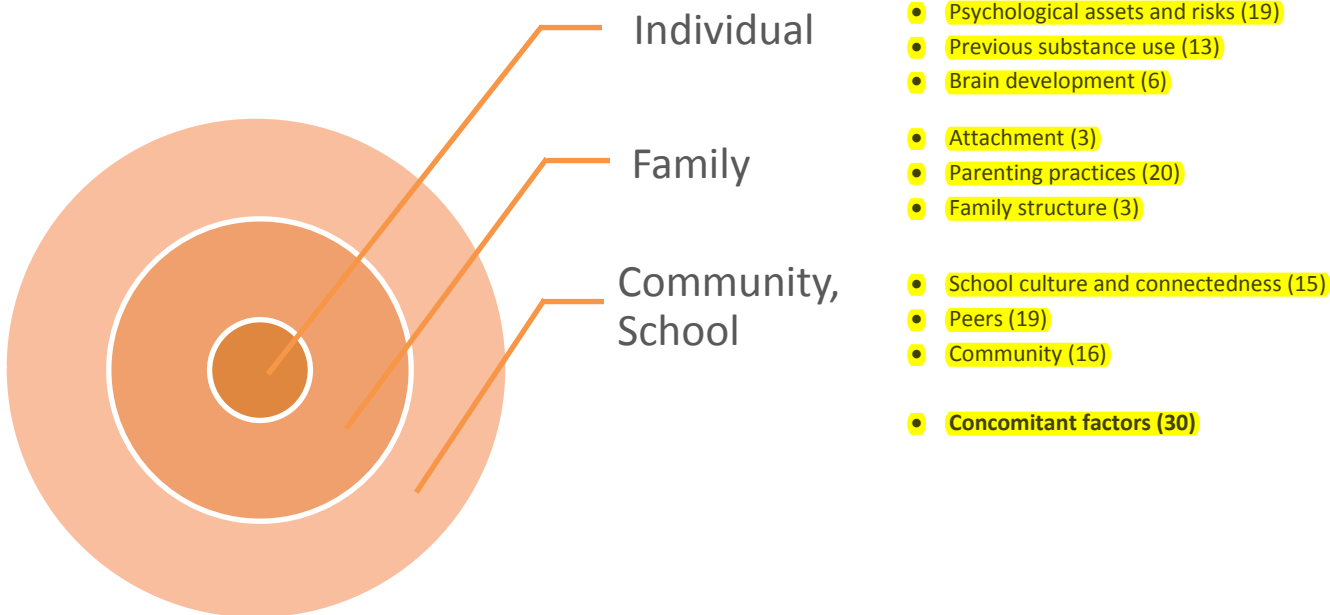


Figure 3: Factors influencing youth substance use.

3.1. Individual level factors

3.1.a. Gender, age, ethnicity (6)

Barnes, G. M., Welte, J. W., & Hoffman, J. H. (2002). Relationship of alcohol use to delinquency and illicit drug use in adolescents: Gender, age, and racial/ethnic differences. *Journal of Drug Issues*, 32(1), 153-178.

Alcohol use has been linked to other substance use and delinquency in adolescents. However, few studies have examined variations in these relationships in representative subsamples of gender, age and racial/ethnic groups. Respondents in this study were 19,321 New York State 7-12th grade students. After controlling for significant sociodemographic factors in a regression analysis, all of the alcohol measures remained strong predictors of both delinquency and illicit drug use. Significant interactions between alcohol measures and gender, age and racial/ethnic groups were also found. For example, the relationship between binge drinking and delinquency was stronger for males than females. The relationships between alcohol measures and both delinquency and illicit drug use were stronger for younger adolescents than older adolescents. American Indians showed an added risk over other groups of being delinquent and using illicit drugs if they began drinking at an early age. Prevention efforts to delay initiation into alcohol use are likely to have effects not only on alcohol misuse but also on the development of other substance use and delinquency.

Hayatbakhsh, M. R., Najman, J. M., McGee, T. R., Bor, W., & O'Callaghan, M. J. (2009). Early pubertal maturation in the prediction of early adult substance use: A prospective study. *Addiction, 104*(1), 59-66.

Aims: To examine whether self-reporting a later stage of pubertal development in early adolescence predicts young adults' use of illicit drugs. **Design:** Population-based prospective birth cohort study. **Setting:** Follow-up of a cohort of mothers and their children, recruited between 1981 and 1983. **Participants:** Cohort of 2710 young adults who completed a self-report questionnaire about their use of cannabis and amphetamines at the 21-year follow-up. **Measurements:** Young adults' use of cannabis and amphetamines were measured at the 21-year follow-up. Stage of pubertal development was assessed at the 14-year follow-up. **Potential confounding and mediating variables:** were assessed between birth and when the child was 14 years. **Findings:** Of 2710 young adults, 49.9% (47.3 females and 52.7% males) reported that they had used cannabis and 21.0% (18.9% females and 23.3% males) reported that they had used amphetamines and cannabis by 21 years. In multivariate analyses, adolescents with a later stage of puberty were more likely to use cannabis or amphetamines in young adulthood. This association was not confounded by mother's education or child's gender and age. Part of the relationship was explained by the higher frequency of child externalizing behaviour at 14 years. **Conclusions:** The findings warrant further attention to puberty as a sensitive period in an individual's development. With regard to prevention, there is a need to understand more about the pathways between pubertal development, child behaviour problems and substance use.

McCrystal, P., & Percy, A. (2010). Factors associated with teenage ecstasy use. *Drugs: Education, Prevention & Policy, 17*(5), 507-527.

Aims: The aim of this article was to investigate the factors associated with ecstasy use in school-aged teenagers. **Methods:** This was a longitudinal study of adolescent drug use, which was undertaken in three towns in Northern Ireland. A questionnaire was administered annually to participants. In this article ecstasy use patterns amongst a cohort of young people aged 14-16 years participating in the Belfast Youth Development Study (BYDS) was explored. **Findings:** The percentage of those who had used ecstasy at least once increased from 7% when aged 14 years to 9% at 15 and 13% at 16 years. Female gender, delinquency, problem behaviours at school and the number of evenings spent out with friends each week were found to be significant variables predicting "ever use" of ecstasy in all 3 years by logistic regression. **Conclusions:** The findings suggest that ecstasy use patterns may be changing from their historical perception as a "party" drug, as the demographic profile ecstasy of users in this study reflected the traditional profile of illicit drug use during adolescence, which raises challenges for addressing the problems associated with this drug.

Moon, D. G., Jackson, K. M., & Hecht, M. L. (2000). Family risk and resiliency factors, substance use, and the drug resistance process in adolescence. *Journal of Drug Education, 30*(4), 373-398.

Tested two models that have been developed to explain risk and resiliency in drug prevention, and attempted to compare the effects of these two factors across gender and ethnicity. One of the models posits that separate elements make up each set and the other posits that a single factor can be either a risk or a resiliency factor depending on the presence or absence of resiliency or risk. A survey regarding past drug use was administered to a multiethnic sample of 609 seventh-grade students. The authors expected to find that high risk and/or low resiliency adolescents should report a higher level of involvement with drugs than high resiliency and/or low risk adolescents, and that the effects of risk and resiliency are moderated by gender and ethnicity. Results support the model in which risk and resiliency factors are a discrete set of factors and

demonstrate that overall resiliency factors play a larger role than risk factors in substance use and drug resistance processes. Early interventions are important for both genders, but resiliency factors must be dealt with before initiation of substance use for males. Findings did not differ substantially across ethnicity.

Tu, A. W., Ratner, P. A., & Johnson, J. L. (2008). Gender differences in the correlates of adolescents' cannabis use. *Substance Use & Misuse*, 43(10), 1438-1463.

Adolescents' gender-specific cannabis use rates and their correlates were examined. Data were obtained via a cross-sectional survey conducted in 2004 in British Columbia, Canada, funded by the Canadian Institutes of Health Research. School districts were invited to participate, and schools within consenting districts were recruited. In total, 8,225 students (50% male) from Grades 7 to 12 participated. About 73% were "White," and 47% had used cannabis in their lifetime. Cannabis users were grouped according to their frequency of use: "never users," "frequent users," or "heavy users." Male heavy cannabis users (14.3% of boys) were more likely to be in Grade 9 or higher; be Aboriginal; report poorer economic status; never feel like an outsider; frequently use alcohol and tobacco; and have lower satisfaction with family, friends, and school compared with boys that never used. Female heavy users (8.7% of girls) were more likely to be in a higher grade; report poorer economic status, mental health, and academic performance; frequently use alcohol and tobacco; and have lower satisfaction with their school compared with female never users. Three important gender differences in the multivariate analysis of the correlates of cannabis use were noted: school grade (for boys only), Aboriginal status (for boys only), and mental health (for girls only). Despite the limitations of relying on self-reports, a subset of youth appears to be at risk for excessive cannabis use that may impair life opportunities and health. The gender differences may be important in the design and implementation of prevention or treatment programs for adolescents.

Yacoubian, G. S., Jr., & Peters, R. J. (2005). Identifying the Prevalence and Correlates of Ecstasy Use among High School Seniors Surveyed Through 2002 Monitoring the Future. *Journal of Alcohol and Drug Education*, 49(1), 55-72.

Media reports have suggested that the use of 3,4-methylenedioxymethamphetamine (MDMA, or "ecstasy") is a significant problem across the United States. To date, however, available evidence has shown that the use of ecstasy has been concentrated among "rave" attendees, with mainstream youth remaining relatively immune from its proliferation. The current study builds on the ecstasy literature by examining the drug-using behaviors of 2,258 high school seniors with data collected through the Monitoring the Future program in 2002. Prevalence estimates of ecstasy use are generated and associations between ecstasy use, demographic characteristics, and alcohol and other drug use are explored. Ten percent of the sample reported lifetime ecstasy use, 7% reported use within the past 12 months, and 3% reported use within the past 30 days. Compared to non-users, 12-month ecstasy users were significantly more likely than non-users to be white and to have used all other drugs of abuse during the 12 months preceding the interview. These results suggest that ecstasy-related prevention efforts should target the at-risk population of rave attendees rather than the mainstream population of high school students.

3.1.b. Attitudes, beliefs, and behaviours (18)

Anderson, K. G., Sitney, M., & White, H. R. (2015). Marijuana motivations across adolescence: Impacts on use and consequences. *Substance Use & Misuse, 50*(3), 292-301.

Background. Motivational models for marijuana use have focused on reasons to use marijuana, but rarely consider motives to abstain. Objectives: We examined how both adolescent marijuana abstinence motives and use motives contribute to marijuana use and problems at the end of emerging adulthood. Methods. 434 community recruited youth who had not initiated marijuana use at baseline were followed from adolescence (at ages 12, 15, and 18 years) into emerging adulthood (age 25 years). Motives to abstain and to use marijuana, marijuana consumption, and marijuana-related problems were assessed across time. **Results. Endorsing more motives to abstain from marijuana across adolescence predicted less marijuana use in emerging adulthood and fewer marijuana-related problems when controlling for past motives to abstain and marijuana-related behavior.** Positive reinforcement use motives related to increased marijuana consumption and problems, and negative reinforcement motives predicted problems when controlling for past marijuana use motives and behaviors. Expansion motives during adolescence related to lower marijuana use in emerging adulthood. When considered together, motives to abstain buffered the effect of negative reinforcement motives on outcomes at age 25 for youth endorsing a greater number of abstinence motives. Conclusions/ Implications. Given these findings, inclusion of both motives to use and abstain is warranted within comprehensive models of marijuana use decision making and may provide important markers for prevention and intervention specialists.

Case, S., & Haines, K. R. (2008). Factors shaping substance use by young people in Wales. *Journal of Substance Use, 13*(1), 1-15.

This paper examines the prevalence of, frequency of and factors underpinning, substance use by young people. The research augments previous exploration of the causes of youth drug use by integrating factor analysis into traditional statistical techniques to identify composite risk factors for different forms of drug use (any drugs, soft drugs, hard drugs, inhalants) by the youth population in Wales. The existing risk-focused research literature is further extrapolated through detailed investigation of the relative salience of risk factors by specific gender and age group in the Welsh sample. Reported drug use by the whole sample and specific sub-groups generally accorded with the findings of previous research with equivalent age groups in Wales, the UK and Europe. Those factors exerting the most influence upon youth drug use were: anti-social behaviour/attitudes, drug-related behaviour/attitudes, negative thinking, psychological problems and behavioural problems. This study affords a first tentative step on the road to a more comprehensive and sensitive exploration of the role of composite risk factors in drug taking behaviour by young people. Findings imply the need for comprehensive, multi-dimensional drug prevention programmes addressing multiple and composite risk factors, targeted appropriately upon specific sub-groups of the youth population.

Daly, B. P., Jameson, J. P., Patterson, F., McCurdy, M., Kirk, A., & Michael, K. D. (2015). Sleep duration, mental health, and substance use among rural adolescents: Developmental correlates. *Journal of Rural Mental Health, 39*(2), 108-122.

Numerous studies have demonstrated that most adolescents do not get adequate amounts of sleep. Furthermore, insufficient sleep is associated with increased risk for depression and suicide attempts as well as substance abuse in adolescence. However, extant studies have relied primarily on national samples or suburban adolescents, with a paucity of research examining the associations between sleep duration and mental health and substance abuse risk in rural adolescents. Additionally, these associations rarely have been examined within a developmental context. The present study attempted to address these gaps by using data from the Youth Risk Behavior Survey (YRBS) to examine the associations between sleep duration and risk factors in the lower and upper grade levels for high school students attending schools in rural areas. YRBS data were obtained from 2 rural school districts located in the Appalachian region of North Carolina (n = 987). For the full sample, approximately 40% of students reported receiving 6 or fewer hours of sleep on a typical school night. High school students in the lower grades (9th and 10th) who reported short sleep duration were more likely to have endorsed each of the mental health, suicidal behavior, and substance use items. Significant differences emerged between sleep groups on suicide attempts and alcohol, tobacco, and marijuana use for students in the upper grade levels. We conclude that short sleep duration is problematic in rural high school students, especially for those students recently transitioning from middle school to high school. These findings can inform identification, prevention, and intervention strategies to encourage and promote healthy sleep habits among rural adolescents.

Dunn, M. S. (2005). The Relationship between Religiosity, Employment, and Political Beliefs on Substance Use among High School Seniors. *Journal of Alcohol and Drug Education, 49*(1), 73-88.

The purpose of this study was to provide a descriptive profile of the alcohol, cigarette, marijuana and cocaine use practices among adolescents and to examine the relationship between employment, political beliefs, religious beliefs and substance use behaviors among high school seniors participating in the Monitoring the Future Study during the 2002 academic school year. Data from the Monitoring the Future (MTF) study (2002 12th grade core data) was used for this study. Logistic regression models were used to examine the relationship between substance use behaviors and employment, political beliefs, and religiosity. Analysis showed that males and females who believed religion was very important were less likely to have initiated alcohol use, to be a current user, and to have binge drank. A significant association was found for all alcohol use variables for those individuals who worked moderate amounts at an after school job. Political beliefs were found to be associated for initiation and current alcohol use but not for binge drinking. Political beliefs, religion, and employment were all significantly associated with cigarette use and cocaine use. Conceptualization of substance use behavior and its prevention and treatment should include consideration of such key cultural and social factors as religiosity, employment and political beliefs of adolescents.

Fallu, J. S., Janosz, M., Briere, F. N., Descheneaux, A., Vitaro, F., & Tremblay, R. E. (2010). Preventing disruptive boys from becoming heavy substance users during adolescence: A longitudinal study of familial and peer-related protective factors. *Addictive Behaviors, 35*(12), 1074-1082.

Childhood disruptiveness is one of the most important antecedents of heavy substance use in adolescence, especially among boys. The first aim of the present study is to verify whether parental

monitoring and friend conventionality protect disruptive boys from engaging in heavy substance-use in adolescence. The second purpose is to examine whether these protective effects are strengthened by attachment to parents or friends respectively. Finally, the third objective is to verify whether the expected protective effect of parental monitoring could be mediated through exposure to conventional friends. A sample of 1,037 boys from low socioeconomic neighbourhoods was followed from childhood (age 6) to adolescence (age 15). Parent, teacher, and self-reported measures were used to measure disruptiveness, parental monitoring, family attachment, friend conventionality, and attachment to friends. Results suggest that parental monitoring and friends' conventionality mitigated the relationship between childhood disruptiveness and adolescence heavy substance use. Exposure to conventional friends further mediated the protective effect of parent monitoring. The postulated enhancement of attachment quality on the protective effect of parents or peer behaviors was not confirmed, but low attachment was related to heavier substance use in highly monitored disruptive boys. Parental monitoring, family attachment, and peer conventionality are factors amenable to intervention, and thus represent promising targets for future prevention strategies aimed at-risk boys. These results underscore the importance of simultaneously addressing the behavioral and the affective dimensions in interventions with parents.

Guilamo-Ramos, V., Litardo, H. A., & Jaccard, J. (2005). Prevention programs for reducing adolescent problem behaviors: Implications of the co-occurrence of problem behaviors in adolescence. *Journal of Adolescent Health, 36*(1), 82-86.

Purpose: To examine the correlations between multiple risk behaviors in adolescent populations to document the extent to which problem behaviors are intercorrelated and to identify factors associated with variations in these correlations. **Methods:** Studies from 1977 through the end of 1999 that included two or more problem behaviors in adolescents were identified by literature searches using the PsychLit database, Social Sciences Citation Index, manual journal searches and "ancestry" approaches. The behaviors studied were alcohol use, marijuana use, illicit drug use, cigarette smoking, general deviant behavior, and sexual activity. Included studies reported correlation coefficients between variables. **Results:** Across all studies, the mean correlation between any two pairs of problem behaviors was 0.35, with a standard deviation of 0.28. This suggests that, on average, about two-thirds of the variation in problem behavior is the result of unique rather than common causes. The magnitude of the correlations varied as a function of the age of the adolescent, with lower correlations being evident for older adolescents. In addition, the magnitude of the correlation varied as a function of when the study was conducted, with studies of past generations showing stronger connections between risk behaviors than current generations. **Conclusions:** The data suggest that there is considerably more unique variation in classic adolescent problem behaviors than common variation.

Henry, K. (2010). Skipping school and using drugs: A brief report. *Drugs: Education, Prevention & Policy, 17*(5), 650-657.

Empirical evidence suggests that the setting of drug use is an important factor in an adolescent's decision to use drugs. In this study, one salient setting is examined: truancy from school. A total of 1000 eleventh grade students from one district in the Mid-Western United States were invited to participate in an in-school anonymous survey in 2006. Truancy was a common behaviour among the surveyed students and drug use while skipping school was a common behaviour among truants. The establishment of truancy as a setting for drug use may have important implications. Limitations, implications and future directions are discussed.

Hohman, Z. P., Crano, W. D., Siegel, J. T., & Alvaro, E. M. (2014). Attitude ambivalence, friend norms, and adolescent drug use. *Prevention Science, 15*(1), 65-74.

This study assessed the moderating effects of attitudinal ambivalence on adolescent marijuana use in the context of the theory of planned behavior (TPB). With data from the National Survey of Parents and Youth (N = 1,604), two hierarchical multiple regression models were developed to examine the association of ambivalent attitudes, intentions, and later marijuana use. The first model explored the moderating effect of ambivalence on intentions to use marijuana; the second tested the moderation of ambivalence on actual marijuana use 1 year later. Results across both analyses suggest that ambivalence moderated the association of friend norms and subsequent adolescent marijuana use: friend norms were better predictors of marijuana intentions ($\beta = 0.151$, $t = 2.29$, $p = 0.02$) and subsequent use when adolescents were attitudinally ambivalent about marijuana use ($\beta = 0.071$, $t = 2.76$, $p = 0.006$). These results suggest that preventive programs that affect the certainty with which adolescents hold pro- or antimarijuana attitudes may influence the likelihood of their resistance to, initiation, or continuance of marijuana use.

Lillehoj, C. J., Trudeau, L., & Spoth, R. (2005). Longitudinal Modeling of Adolescent Normative Beliefs and Substance Initiation. *Journal of Alcohol and Drug Education, 49*(2), 7-41.

The current study investigated the effects of baseline levels of academic achievement and longitudinal trends in normative beliefs on adolescent substance initiation across a 42-month time period. Participants were 272 rural adolescents who were an average of 12.3 years old at the baseline assessment. Academic achievement positively predicted the intercept and negatively predicted the growth-trajectory of normative beliefs regarding peer substance behavior. Further, baseline academic achievement negatively predicted initial levels, as well as the growth-trajectory, of substance initiation. The discussion addresses the influence of academic achievement and normative beliefs on substance initiation and the utility of latent growth curve modeling in studying longitudinal change. In addition, implications for prevention programming are discussed.

McBride, N. M., Barrett, B., Moore, K. A., & Schonfeld, L. (2014). The role of positive alcohol expectancies in underage binge drinking among college students. *Journal of American College Health, 62*(6), 370-379.

Objective: This study explored associations between positive alcohol expectancies, and demographics, as well as academic status and binge drinking among underage college students. **Participants:** A sample of 1,553 underage college students at 3 public universities and 1 college in the Southeast who completed the Core Alcohol and Drug Survey in the Spring 2013 semester. **Methods:** A series of bivariate analyses and logistic regression models were used to examine associations between demographic and academic status variables as well as positive alcohol expectancies with self-reported binge drinking. Positive alcohol expectancies were examined in multivariable models via 2 factors derived from principal component analyses. **Results:** Students who endorsed higher agreement of these 2 emergent factors (sociability, sexuality) were more likely to report an occurrence of binge drinking in the past 2 weeks. **Conclusions:** Study results document associations between positive alcohol expectancies and binge drinking among underage students; implications for prevention and treatment are discussed.

McIntosh, J., MacDonald, F., & McKeganey, N. (2005). The reasons why children in their pre and early teenage years do or do not use illegal drugs. *International Journal of Drug Policy*, 16(4), 254-261.

This paper examines the drug-related decisions of a previously under researched group of children; those in their pre-teen and early teenage years. Based on a prospective study of 92 'at risk' children, it explores the reasons which they gave for their use or non-use of illegal drugs. The accounts of those who used drugs on a regular or occasional basis are strongly supportive of the importance of personal choice, emphasising the role of enjoyment and boredom as the main motivating factors. The reasons given for not using drugs included a lack of interest in the activity, fear of the effects of the drug and a concern that drug taking would compromise other valued activities or pursuits. The anticipated reaction of parents, and the extent to which they had internalised parental values on drugs, also appeared to act as an important restraint for some of the children. While there is a vital role for drug education in seeking to influence children's drug-related decisions, the study's conclusions also emphasise the significance of parents in this regard. The fact that the overwhelming majority of the children reported using drugs because they enjoyed them or because they were bored also suggests that the provision of alternative activities should be central to any preventive strategy.

Osilla, K. C., Pedersen, E. R., Ewing, B. A., Miles, J. N. V., Ramchand, R., & D'Amico, E. J. (2014). The effects of purchasing alcohol and marijuana among adolescents at-risk for future substance use. *Substance Abuse Treatment, Prevention, and Policy*, 9.

Abstract. Background: Among high-risk youth, those who may be at increased risk for adverse alcohol and other drug (AOD) use outcomes may benefit from targeted prevention efforts; how youth acquire AOD may provide an objective means of identifying youth at elevated risk. Methods: We assessed how youth acquired alcohol and marijuana (purchasing vs. other means), demographics, AOD behaviors/consequences, and environment among adolescents referred to a diversion program called Teen Court (N = 180) at two time points (prior to the program and 180 days from baseline). Participants were predominantly White and Hispanic/Latino(a). Results: In cross-sectional analyses among alcohol and marijuana users, purchasing marijuana was associated with more frequent marijuana use and consequences, time spent around teens who use marijuana, higher likelihood of substance use disorders, and lower resistance self-efficacy compared to non-purchasers. Teens who purchased both alcohol and marijuana experienced similar outcomes to those who purchased only marijuana, and also reported more frequent and higher quantity of drinking, greater alcohol-related consequences, time spent around teens who use other drugs, and prescription drug misuse. Longitudinally, purchasing alcohol and marijuana at baseline was associated with more frequent and higher quantity of drinking compared to non-purchasers at follow-up. Marijuana only purchasers had a greater likelihood of substance use disorders at follow-up compared to non-purchasers. Conclusions: In an era where drinking is commonplace and attitudes towards marijuana use are becoming more tolerant, it is essential to evaluate how accessibility to AOD and subsequent purchasing behaviors affect youth consumption and intervene accordingly to prevent future consequences.

Peters, R. J., Jr., Meshack, A. F., Kelder, S. H., Webb, P., Smith, D., & Garner, K. (2007). Alprazolam (Xanax®) use among southern youth: Beliefs and social norms concerning dangerous rides on 'handlebars.'. *Journal of Drug Education*, 37(4), 417-428.

While the epidemiologic trends concerning alprazolam (Xanax®) are unknown, the use of benzodiazepines, in general, has increased in popularity among youth within recent years. To shed

light on the drug problem, the current pilot study used a qualitative approach to investigate relevant beliefs, norms, and perceived addiction associated with alprazolam initiation among 46 youth who were attending an inpatient drug treatment program during the spring of 2004. Overwhelmingly, most participants stated that addiction to alprazolam occurs as early as initial consumption. Most youth in the study stated that their friends felt it was normal to use alprazolam. In addition, their control beliefs revealed that if someone wanted to stop it would be difficult because of the widespread use in their communities and family social reinforcement involved with its use. In this study, a majority of students stated that medical professionals such as doctors and pharmacists were the greatest facilitator of alprazolam acquisition. Implications for these results are discussed.

Roy, A., Wibberley, C., & Lamb, J. (2005). The usual suspects: Alcohol, tobacco and other drug use in 15- to 16-year-old school pupils--prevalence, feelings and perceived health risks. *Drugs: Education, Prevention & Policy*, 12(4), 305-315.

This paper presents the findings of a five-year study of year-11 pupils (15-16 years old), based on a sample drawn from seven schools in the North West of England. It examines: use, feelings about close friend's use and perceptions of the health-related risks of specific drugs. The findings conform with those examining other similar populations, in identifying that 'The Usual Suspects', alcohol, tobacco and cannabis are the predominant drugs used by young people at 15-16. The reported use of alcohol and tobacco has remained consistent throughout the course of the study. However, beliefs about the health risks of these drugs have altered over the five-year period. The picture for cannabis has changed in terms of use and feelings about use; pointing to a continued process of normalization for this drug. The paper places the findings in the context of other recent studies; the specific value of the current study arises from the use of pupils from the same schools on a year on year basis (giving a total sample of 4059).

Sayeed, S., Fishbein, M., Hornik, R., Cappella, J., & Ahern, R. K. (2005). Adolescent Marijuana Use Intentions: Using Theory to Plan an Intervention. *Drugs: Education, Prevention & Policy*, 12(1), 19-34.

This paper uses an integrated model of behavior change to predict intentions to use marijuana occasionally and regularly in a US-based national sample of male and female 12 to 18 year olds (n = 600). The model combines key constructs from the theory of reasoned action and social cognitive theory. The survey was conducted on laptop computers, and half of the sample was female. The analysis serves as a basis for discussion about using theory in various stages of planning a campaign to decrease marijuana use among adolescents. The theory, model fit, and tests of the mediation and sufficiency assumptions can be used to demarcate planners' choices about behavioral goals and intervention messages.

Skenderian, J. J., Siegel, J. T., Crano, W. D., Alvaro, E. E., & Lac, A. (2008). Expectancy change and adolescents' intentions to use marijuana. *Psychology of Addictive Behaviors*, 22(4), 563-569.

Drug prevention campaigns commonly seek to change outcome expectancies associated with substance use, but the effects of violating such expectancies are rarely considered. This study details an application of the expectancy violation framework in a real world context by investigating whether changes in marijuana expectations are associated with subsequent future marijuana intentions. A cohort of adolescents (N = 1,344; age range = 12-18 years) from the National Survey of Parents and Youth was analyzed via secondary analysis. Nonusers at baseline were assessed 1 year later. Changes in expectancies were significantly associated with changes in intentions (p < .001). Moreover, in most cases, changes in expectancies and intentions had the strongest relationship among those who became users. The final model accounted for 31% of the variance (p

< .001). Consistent with laboratory studies, changes in marijuana expectancies were predictive of changes in marijuana intentions. These results counsel caution when describing negative outcomes of marijuana initiation. If adolescents conclude that the harms of marijuana use are not as grave as they had been led to expect, intentions to use might intensify.

Wibberley, C., & Price, J. F. (2000). Young people's drug use: Facts and feelings--implications for the normalization debate. *Drugs: Education, Prevention & Policy*, 7(2), 147-162.

Much is known about patterns of drug use by young people - especially in terms of measures of "ever" usage; but relatively little is known about young people's feelings about such usage. This paper presents findings of a quantitative study based on a previous qualitative study. Findings are reported on drug use; views on the use of cannabis, amphetamines and heroin; views on the health risks of various drugs; and the relationship between reported drug use and expressed views in 15-16 yr olds. The findings are discussed in relation to the extent to which illegal drug use can be considered to be "normalized" as part of young people's lives, toward the end of their compulsory schooling. While the findings provide some evidence for both sides of the "normalization debate," it is concluded that there is only weak evidence that normalization, even of cannabis use, is true for young people of this age group. However, if drug use is increasing and the age of onset of such use decreasing, then for these young people as they get older, and for future cohorts at the end of their compulsory schooling, normalization of certain forms of drug use may occur.

- ✓ Yap, M. B. H., Reavley, N. J., & Jorm, A. F. (2012). Young people's beliefs about the harmfulness of alcohol, cannabis and tobacco for mental disorders: Findings from two Australian national youth surveys. *Addiction*, 107(4), 838-847.

Aims: Using cross-sectional national survey data, we assessed young peoples' beliefs about the role of alcohol, tobacco and marijuana in the prevention and treatment of mental disorders as well as the predictors of these beliefs. We also compared these findings with those from a similar survey carried out in 2006. **Design, setting and participants:** Between January and May 2011, a national computer-assisted telephone survey was conducted on a representative sample of Australian youths aged 15–25 years. A total of 3021 young people were presented with a case vignette portraying depression, depression with suicidal thoughts, psychosis, social phobia, depression with alcohol misuse or post-traumatic stress disorder in a young person.

Measurements: Respondents were asked about their beliefs regarding the role of using alcohol, tobacco and marijuana in preventing or dealing with the mental disorders described in the vignettes. Level of psychological distress was assessed by the Kessler 6 scale (K6). **Findings:** More than 75% of respondents agreed that the three substances were harmful for the young people in the vignettes, and that not using marijuana or drinking alcohol in excess is preventive. Males, young adults and more distressed respondents were less likely to endorse these beliefs. No significant changes were observed between surveys. **Conclusions:** Most young people in Australia are aware of the negative impact of substance use on mental disorders, but a few high-risk groups remain: males, young adults and those with more psychological distress. Future public health campaigns need to target these groups and focus on translating young people's substance use beliefs into behavioural change.

3.1.c. Psychological assets and risk factors (19)

Archie, S., Boydell, K. M., Stasiulis, E., Volpe, T., & Gladstone, B. M. (2013). Reflections of young people who have had a first episode of psychosis: What attracted them to use alcohol and illicit drugs? *Early Intervention in Psychiatry*, 7(2), 193-199.

Aim: To identify factors that contribute to the initiation of alcohol and street drug use from the perspective of people who were enrolled in early intervention programmes for a first episode of psychosis. Method: Eight focus groups were conducted involving an average of four to six participants per group, with each group consisting of young people who met provincial inclusion criteria for early intervention programmes. Thematic analysis was used to systematically code transcripts from the focus groups for concepts, patterns and themes related to early use of illicit substances. Results: Participants included 45 young people diagnosed with affective psychosis or non-affective spectrum disorders. Seventy-three per cent were male, with a median age of 23 years. In general, substance use was an important topic that emerged across all focus groups. Participants talked about three main factors attracting them to initiate use of substances, most predominantly cannabis: (i) using within a social context; (ii) using as a self-medication strategy; and (iii) using to alter their perceptions. Conclusions: The need for social relationships, coping strategies and pleasurable experiences appear to be important reasons for initiating substance use. Additional research is needed to identify whether prodromal youth report the same factors that attract them to initiate use in order to develop more effective prevention strategies.

Arpawong, T. E., Sussman, S., Milam, J. E., Unger, J. B., Land, H., Sun, P., & Rohrbach, L. A. (2015). Post-traumatic growth, stressful life events, and relationships with substance use behaviors among alternative high school students: A prospective study. *Psychology & Health*, 30(4), 475-494.

A highly stressful life event (SLE) can elicit positive psychosocial growth, referred to as post-traumatic growth (PTG) among youth. We examined PTG and the number of SLEs for their influence on substance use behaviours among a sample of older, diverse alternative high school students participating in a drug prevention programme (n = 564; mean age = 16.8; 49% female; 65% Hispanic). Surveys assessed PTG, SLEs and substance use behaviours at the two-year follow-up. Multilevel regression models were run to examine the effect of PTG and the number of SLEs on frequency of substance use at the two-year follow-up, controlling for baseline substance use, sociodemographic variables, peer substance use, attrition propensity and treatment group. Greater PTG scores were associated with lower frequencies of alcohol use, getting drunk on alcohol, binge drinking, marijuana use and less substance abuse at the two-year follow-up, but not associated with cigarette or hard drug use. Also, PTG did not moderate the relationship between cumulative number of SLEs and substance use behaviours, rather PTG appears to be protective against negative effects of a single, life-altering SLE. Fostering PTG from a particularly poignant SLE may be useful for prevention programmes targeting alcohol, marijuana and substance abuse behaviours among high-risk youth.

Benjet, C., Borges, G., Medina-Mora, M. E., & Méndez, E. (2013). Chronic childhood adversity and stages of substance use involvement in adolescents. *Drug and Alcohol Dependence*, 131(1-2), 85-91.

Background: Studies have shown that those who experience chronic childhood adversity have a greater likelihood of substance abuse and dependence. However, substance use disorders are

first preceded by substance use, and substance use is preceded by substance use opportunities. This study aims to estimate the association of chronic adversity with different stages of substance involvement: opportunities, use given the opportunity and abuse or dependence given use. Methods: 3005 adolescents aged 12–17 were interviewed in a stratified multistage general population probability survey of Mexico City, Mexico. Substance involvement and chronic childhood adversities were assessed with the World Mental Health Composite International Diagnostic Interview Adolescent Version (WMH-CIDI-A). Discrete-time survival models were performed; their survival coefficients and standard errors were exponentiated, and reported as odds-ratios (ORs). Results: Childhood adversities were associated with alcohol opportunity, alcohol use and alcohol abuse/dependence with significant ORs for individual adversities ranging from 1.4 to 4.1. Childhood adversities were also associated with illicit drug opportunity, drug use and drug abuse/dependence with significant ORs for individual adversities ranging from 1.6 to 17.3. Having more adversities was associated with greater incremental odds of substance involvement, particularly drug use given the opportunity. Conclusions: While adversities are mostly related to transitioning into use and disorder, a few are related to substance opportunities, particularly those which were likely to make substances available through parents. Attending to the needs of youth living in adversity, particularly adversities related to parental dysfunction and child abuse should be integral to addiction prevention efforts.

Creemers, H. E., Van Lier, P. A. C., Volebergh, W. A. M., Ormel, J., Verhulst, F. C., & Huizink, A. C. (2009). Predicting onset of cannabis use in early adolescence: The interrelation between high-intensity pleasure and disruptive behavior: The TRAILS study. *Journal of Studies on Alcohol and Drugs*, 70(6), 850-858.

Objective: Increased knowledge about the mechanisms by which some individuals are at risk for early onset of cannabis use might contribute to the improvement of prevention efforts. We focus on the roles of early-adolescent high-intensity pleasure, disruptive behavior, and their interplay in the prediction of onset of cannabis use 2 years later. Method: Data from 81% (n = 1,804) of the participants (51.9% girls) of the Tracking Adolescents' Individual Lives Survey (TRAILS), a prospective general population study in the north of The Netherlands, were analyzed. Measures included parent-reported high-intensity pleasure, and parent- and self-reported general disruptive behavior, attention-deficit hyperactivity, oppositional problems, and conduct problems (Child Behavior Checklist/6-18 and Youth Self-Report) at ages 10-12. Onset of cannabis use was assessed at age 12-14 by means of self-reports. Analyses were carried out in Mplus. Results: Early adolescent high-intensity pleasure and disruptive behavior, mainly conduct problems and to some extent attention-deficit hyperactivity, predicted the onset of cannabis use in adolescence. Although we found some mediation by general disruptive behavior, conduct problems, and attention-deficit hyperactivity, the contribution of high-intensity pleasure in predicting the onset of cannabis use was found to be mainly independent from disruptive behavior. Conclusions: The unique contribution of both high-intensity pleasure and disruptive behavior points in the direction of different pathways toward onset of cannabis use.

Donnelly, J., Young, M., Pearson, R., Penhollow, T. M., & Hernandez, A. (2008). Area specific self-esteem, values, and adolescent substance use. *Journal of Drug Education*, 38(4), 389-403.

The use of illicit and licit drugs continues to be a major public health concern. Many prevention and drug education programs address this issue by attempting to enhance self-esteem. The idea is that increased levels of self-esteem will serve as a protective factor in decreasing the motivation and increasing the resistance to use drugs. This study explored the relationship between area specific

self-esteem and adolescent substance use. Participants (n = 700) completed a self-report questionnaire which included items measuring the use and expected use of selected substances. Results indicated significant differences in home and school self-esteem scores between users/expected users and non-users of a given substance for all 14 behavioral measures. Additionally, the peer, home, and school sub-scales as a set were found to distinguish between users and non-users for all 14 behavioral measures. Results should be of value to those designing prevention programming.

Dorard, G., Berthoz, S., Phan, O., Corcos, M., & Bungener, C. (2008). Affect dysregulation in cannabis abusers: A study in adolescents and young adults. *European Child & Adolescent Psychiatry, 17*(5), 274-282.

Psychiatric comorbidity and impaired emotional functioning have been previously reported in adult substance abusers but have been less well documented in adolescents. Thus, we investigated mental health problems and emotion regulation abilities in adolescents and young adults with cannabis dependence. Moreover, we explored the relationships between consumption modalities and affective style. Therefore, 32 cannabis abusers (CA) and 30 healthy controls completed a battery of self-reports measuring depression (BDI-13), anxiety (STAI-Y), alexithymia (TAS20; BVAQ-B), anhedonia (PAS; SAS), and sensation seeking (SSS). The MINI was administered to evaluate cannabis dependence and axis I DSM-IV comorbid diagnoses. A semi-structured clinical interview was given to determine psychoactive substance use. Statistical analyses revealed that more than half of the CA reported at least one other non-drug or alcohol comorbid diagnosis. The most common were mood and anxiety disorders. CA subjects scored significantly higher on all affective dimensions except alexithymia total scores; however, they had greater scores for the two subscales measuring the difficulties in identifying feelings. Logistic regressions demonstrated that CA subjects were more likely to experience high levels of trait anxiety, physical anhedonia and sensation seeking than the controls. Various correlations were observed between the affective scores and the substance considered. The amount of substance use and, particularly, the prevalence of polydrug use we observed are alarming. This study demonstrates that cannabis dependence in adolescents and young adults is related to a great psychological distress and specific emotional dimensions and puts emphasis on the importance of substance use prevention as early as middle school.

Galéra, C., Pingault, J.-B., Fombonne, E., Michel, G., Lagarde, E., Bouvard, M.-P., & Melchior, M. (2013). Attention problems in childhood and adult substance use. *The Journal of Pediatrics, 163*(6), 1677-1683.

Objective: To assess the link between childhood attention problems (AP) and substance use 18 years later. Study design: This cohort study was conducted in a community sample of 1103 French youths followed from 1991 to 2009. Exposures and covariates were childhood behavioral problems (based on parental report at baseline), early substance use, school difficulties, and family adversity. Outcome measures were regular tobacco smoking, alcohol problems, problematic cannabis use, and lifetime cocaine use (based on youth reports at follow-up). Results: Individuals with high levels of childhood AP had higher rates of substance use (regular tobacco smoking, alcohol problems, problematic cannabis use, and lifetime cocaine use). **However, when taking into account other childhood behavioral problems, early substance use, school difficulties, and family adversity, childhood AP were related only to regular tobacco smoking and lifetime cocaine use. Early cannabis exposure was the strongest risk factor for all substance use problems.** Conclusion: This longitudinal community-based study shows that, except for tobacco and cocaine, the association between childhood AP and substance use is

confounded by a range of early risk factors. **Early cannabis exposure plays a central role in later substance use.**

Garland, E. L., Pettus-Davis, C., & Howard, M. O. (2013). Self-medication among traumatized youth: Structural equation modeling of pathways between trauma history, substance misuse, and psychological distress. *Journal of Behavioral Medicine*, 36(2), 175-185.

In an effort to self-medicate psychological distress stemming from exposure to traumatic life events, at-risk youth may be likely to seek intoxication via substance use. Concomitantly, self-medication with psychoactive substances is theorized to confer risk of developing future psychiatric and substance use disorders. The present study employed structural equation modeling to examine self-medication among a sample of 723 youth in residential treatment for antisocial behavior via recursive and non-recursive relationships between trauma history, substance misuse, and psychological distress. Results supported study hypotheses that: (a) the effects of trauma history on psychological distress are partially mediated by substance misuse, and (b) exposure to traumatic life events drives a feedback loop between substance misuse and psychological distress. Findings from this large-scale survey of adolescents exhibiting behavioral dysfunction suggest that identification of self-medication processes among traumatized youth may be crucial for developing targeted prevention and treatment initiatives.

Gonzalez, V. M. (2012). Association of solitary binge drinking and suicidal behavior among emerging adult college students. *Psychology of Addictive Behaviors*, 26(3), 609-614.

[Correction Notice: An Erratum for this article was reported in Vol 26(3) of *Psychology of Addictive Behaviors* (see record [rid]2012-13892-001[rid]). In the article, there is an error in the introductory paragraph. The number of students who had seriously considered attempting suicide in the Barrios, Everett, Simon, & Brener (2000) study should have been reported as 11.4%, not 1.4%. Additionally, in the Participants section, data for the study were collected from March 2009 to September 2010, not March 2009 to January 2010 as reported.] Emerging adult college students who binge drink in solitary contexts (i.e., while alone) experience greater depression and suicidal ideation than do students who only binge drink in social contexts, suggesting that they may be at greater risk for suicidal behavior. This study examined the association of a previous suicide attempt, one of the best predictors of future suicide attempts and suicide, and severity of recent suicidal ideation with drinking in solitary and social contexts. Participants were binge drinking, emerging adult (18- to 25-year-old) college students (N = 182) drawn from two studies of college drinkers. A logistic regression analysis revealed that both suicide attempt history and severity of suicidal ideation were significantly associated with a greater likelihood of being a solitary binge drinker as opposed to only a social binge drinker. Students with a previous suicide attempt were nearly four times more likely to be solitary binge drinkers. Multiple regression analyses revealed that suicide attempt history was significantly associated with greater frequency and quantity of drinking in solitary, but not social contexts. Suicidal ideation was significantly associated with drinks per solitary drinking day, but not frequency of solitary drinking once suicide attempt history was accounted for. Given the associations found between solitary binge drinking and a history of suicide attempts, as well as greater severity of recent suicidal ideation, it appears that these students are in need of suicide prevention efforts, including treatment efforts aimed at reducing binge drinking.

Kazemi, D. M., Wagenfeld, M., Van Horn, K. R., Levine, M. J., & Dmochowski, J. (2011). Binge drinking among underage college students: Role of impulsivity and the transtheoretical model. *Journal of Addictions Nursing, 22*(4), 193-199.

A major public health problem facing American colleges is binge drinking by students with adverse effects on academic achievement and self-fulfillment. The short-term negative consequences of binge drinking include memory loss, hangovers, and blackouts. Binge drinking has been related to campus problems, suicides, violence, sexually transmitted diseases (STDs), heightened aggression, automobile accidents, property damage, and academic failure. This study investigated the relationship of impulsivity to readiness to change binge drinking behavior among college students attending a 4-year university. The theoretical formulation for the study was based on Prochaska and DiClemente's transtheoretical model. Participants were volunteer undergraduate college students from a state-supported Southeastern University. The students were recruited from undergraduate classrooms, fraternities, and sororities. The volunteer participants were 248 undergraduate college students enrolled in a 4-year university in the southeastern United States. This study consists of a subgroup, 131 of the 248 participants which were 93 binge drinkers and 38 nondrinkers. Three surveys were administered: the Student Alcohol Questionnaire (SAQ), Barratt's Impulsivity Scale (BIS-11), and the Brief Readiness to Change Questionnaire (BRCQ). Impulsivity was significantly correlated with binge drinking and the transtheoretical stages of change. Impulsivity can result in a lack of inhibitory control, which is a risk factor for binge drinking. The results of this study suggest that impulsivity may interfere with intentional behavioral change. This study may have valuable implications for the current and future design of alcohol prevention programs at institutions of higher education

Kirisci, L., Tarter, R., Ridenour, T., Zhai, Z. W., Fishbein, D., Reynolds, M., & Vanyukov, M. (2013). Age of alcohol and cannabis use onset mediates the association of transmissible risk in childhood and development of alcohol and cannabis disorders: Evidence for common liability. *Experimental and Clinical Psychopharmacology, 21*(1), 38-45.

Age at the time of first alcohol and cannabis use was investigated in relation to a measure of transmissible (intergenerational) risk for addiction in childhood and development of alcohol use disorder (AUD) and cannabis use disorder (CUD). It was hypothesized that age at the time of first experience with either substance mediates the association between transmissible risk and subsequent diagnosis of both disorders. The Transmissible Liability Index (TLI; (Vanyukov et al., 2009) was administered to 339 10- to 12-year-old boys (n = 254) and girls (n = 85). Age at the time of first alcohol and cannabis use, and diagnosis of AUD and CUD, were prospectively tracked to age 22. Each standard deviation unit increase in TLI severity corresponded to a reduction in age of alcohol and cannabis use onset by 3.2 months and 4.6 months, respectively. Age at the time of first alcohol use mediated the association of TLI with both AUD and CUD. Parallel results were obtained for cannabis. Whereas transmissible risk is congenious to both AUD and CUD, its magnitude was 7 times greater in youths who initiated substance use with cannabis. TLI predicts age of first use of alcohol and cannabis that is common to developing both AUD and CUD. The ramifications of these findings for prevention are discussed.

Kirisci, L., Tarter, R. E., Ridenour, T., Reynolds, M., & Vanyukov, M. (2013). Longitudinal modeling of transmissible risk in boys who subsequently develop cannabis use disorder. *The American Journal of Drug and Alcohol Abuse*, 39(3), 180-185.

Background: Risk for substance use disorder is frequently transmitted across generations due to significant heritability. Objective: This longitudinal study tests the hypothesis that initial exposure to cannabis in youths having high transmissible risk is a signal event promoting development of cannabis use disorder (CUD). Methods: At age 22, 412 men were classified into three groups: (1) lifetime CUD, (2) cannabis use without CUD, and (3) no lifetime cannabis use. Transmissible risk, quantified on a continuous scale using the previously validated transmissible liability index (TLI), along with cannabis use and CUD were documented at 10–12, 12–14, 16, 19, and 22 years of age. Results: The CUD group scored higher on the TLI before they began cannabis use compared to the other two groups. In addition, a progressive increase in TLI severity was evinced by the CUD group beginning at the time of initiation of cannabis use whereas cannabis users who did not subsequently develop CUD exhibited a decline in transmissible risk following first exposure. Conclusion: Initial use of cannabis potentiates development of CUD in youths who are at high transmissible risk but is inconsequential in youths having low risk. The practical ramifications of these results for prevention are discussed.

Lee, G. P., Storr, C. L., Ialongo, N. S., & Martins, S. S. (2012). Association between adverse life events and addictive behaviors among male and female adolescents. *The American Journal on Addictions*, 21(6), 516-523.

Background: Adverse life events have been associated with gambling and substance use as they can serve as forms of escapism. Involvement in gambling and substance use can also place individuals in adversely stressful situations. Objectives: To explore potential male–female differences in the association between addictive behavior and adverse life events among an urban cohort of adolescents. Method: The study sample comprised of 515 adolescent participants in a randomized prevention trial. With self-reported data, four addictive behavior groups were created: nonsubstance users and nongamblers, substance users only, gamblers only, and substance users and gamblers. Multinomial logistic regression analyses with interaction terms of sex and adverse life events were conducted. Results: Adverse life events and engaging in at least one addictive behavior were common for both sexes. Substance users and gamblers had more than twice the likelihood of nonsubstance users and nongamblers to experience any event as well as events of various domains (ie, relationship, violence, and instability). Neither relationship nor instability events' associations with the co-occurrence of substance use and gambling significantly differed between sexes. Conversely, females exposed to violence events were significantly more likely than similarly exposed males to report the co-occurrence of substance use and gambling. Conclusion: Findings from the current study prompt future studies to devote more attention to the development of effective programs that teach adaptive coping strategies to adolescents, particularly to females upon exposure to violence.

Maslowsky, J., Schulenberg, J. E., & Zucker, R. A. (2014). Influence of conduct problems and depressive symptomatology on adolescent substance use: Developmentally proximal versus distal effects. *Developmental Psychology*, 50(4), 1179-1189.

The identification of developmentally specific windows at which key predictors of adolescent substance use are most influential is a crucial task for informing the design of appropriately

targeted substance use prevention and intervention programs. The current study examined effects of conduct problems and depressive symptomatology on changes in alcohol, cigarette, and marijuana from 8th through 12th grade. We examined the effects of relatively developmentally distal versus proximal mental health problems on adolescent substance use and tested for gender differences. With a national, longitudinal sample from the Monitoring the Future study (N = 3,014), structural equation modeling was used to test the effects of 8th and 10th grade conduct problems and depressive symptomatology on subsequent changes in alcohol, cigarette, and marijuana use from 8th through 12th grade. Results indicated that relatively distal (8th grade) mental health problems were stronger predictors of increases in alcohol, cigarette, and marijuana use than were relatively more proximal (10th grade) mental health problems. Eighth grade conduct problems had the strongest effects on alcohol and marijuana use, and 8th grade depressive symptomatology had the strongest effects on cigarette use. Few gender differences were observed. These results suggest that intervening in earlier appearing conduct problems and depressive symptomatology may lead to a reduction in adolescent substance use in 10th and 12th grades and beyond.

Mason, M. J. (2004). Preadolescent psychiatric and substance use disorders and the ecology of risk and protection. *Journal of Child & Adolescent Substance Abuse, 13*(4), 61-81.

This paper examines the literature regarding preadolescent (ages 9-12) psychiatric disorders, mental health problems, substance abuse disorders and the ecology of risk and protection. The paper is divided into three primary sections. The first section addresses the challenges in defining and applying disorders for preadolescents. The next section reviews the prevalence of psychiatric disturbances and substance abuse among preadolescents. This section also examines the state of knowledge regarding the emotional problems that do not meet DSM-IV criteria as disorders but that may be prodromal for future disorders. The final section reviews risks and preventive factors as well as an ecological theoretical framework that organizes the influences of psychiatric disturbances and substance use. The primary conclusion drawn from this review of the literature is that preadolescence is a critical developmental crossroads for the expression of mental health problems and the initiation of substance abuse and that researchers and clinicians should pay particular attention to this vulnerable age range.

Mayock, P., Cronly, J., & Clatts, M. C. (2015). The risk environment of heroin use initiation: Young women, intimate partners, and 'drug relationships'. *Substance Use & Misuse, 50*(6), 771-782.

This paper examines young women's initiation to heroin use in the context of an intimate relationship based on data from a small-scale ethno-epidemiology of heroin use in Ireland, 2007–2009. The epidemiological sample included 120 young people, and life history interviews were conducted with a sub-sample of 40 youth aged 16–25 years. A detailed analysis of the “risk environment” of young women's heroin initiation highlights a complex interplay between women's agency and intimate partner influence. It is argued that dichotomous representations of women as victims or emancipated consumers do not adequately capture the complexity of women's initiation journeys. The study's limitations are noted and implications for drug use prevention and harm reduction strategies are discussed.

Storr, C. L., Wagner, F. A., Chen, C.-Y., & Anthony, J. C. (2011). Childhood predictors of first chance to use and use of cannabis by young adulthood. *Drug and Alcohol Dependence*, 117(1), 7-15.

Aims: To prospectively examine the linkage between childhood antecedents and progression to early cannabis involvement as manifest in first chance to try it and then first onset of cannabis use. **Methods:** Two consecutive cohorts of children entering first grade of a public school system of a large mid-Atlantic city in the mid 1980s (n=2311) were assessed (mean age 6.5 years) and then followed into young adulthood (15 years later, mean age 21) when first chance to try and first use were assessed for 75% (n=1698) of the original sample. Assessments obtained at school included standardized readiness scores (reading; math) and teacher ratings of behavioral problems. Regression and time to event models included covariates for sex, race, and family disadvantage. **Results:** Early classroom misconduct, better reading readiness, and better math readiness predicted either occurrence or timing of first chance to try cannabis, first use, or both. Higher levels of childhood concentration problems and lower social connectedness were not predictive. **Conclusions:** Childhood school readiness and behavioral problems may influence the risk for cannabis smoking indirectly via an increased likelihood of first chance to use. Prevention efforts that seek to shield youths from having a chance to try cannabis might benefit from attention to early predictive behavioral and school readiness characteristics. When a youth's chance to try cannabis is discovered, there are new windows of opportunity for prevention and intervention.

Swendsen, J., et al. (2010). Mental disorders as risk factors for substance use, abuse and dependence: Results from the 10-year follow-up of the National Comorbidity Survey. *Addiction*, 105(6), 1117-1128.

Aims: The comorbidity of mental disorders and substance dependence is well documented, but prospective investigations in community samples are rare. This investigation examines the role of primary mental disorders as risk factors for the later onset of nicotine, alcohol and illicit drug use, abuse and dependence with abuse. **Design:** The National Comorbidity Survey (NCS) was a nationally representative survey of mental and substance disorders in the United States carried out in 1990-92. The NCS-2 re-interviewed a probability subsample of NCS respondents in 2001-03, a decade after the baseline survey. **Participant:s** A total of 5001 NCS respondents were re-interviewed in the NCS-2 (87.6% of baseline sample). **Results:** Aggregate analyses demonstrated significant prospective risks posed by baseline mental disorders for the onset of nicotine, alcohol and illicit drug dependence with abuse over the follow-up period. Particularly strong and consistent associations were observed for behavioral disorders and previous substance use conditions, as well as for certain mood and anxiety disorders. Conditional analyses demonstrated that many observed associations were limited to specific categories of use, abuse or dependence, including several mental disorders that were non-significant predictors in the aggregate analyses. **Conclusions:** Many mental disorders are associated with an increased risk of later substance use conditions, but important differences in these associations are observed across the categories of use, abuse and dependence with abuse. These prospective findings have implications for the precision of prevention and treatment strategies targeting substance use disorders.

Wu, P., et al. (2008). The relationship between depressive symptom levels and subsequent increases in substance use among youth with severe emotional disturbance. *Journal of Studies on Alcohol and Drugs*, 69(4), 520-527.

Objective: This study examined the relationship between levels of depressive symptoms and subsequent increases in substance use among 784 youth with severe emotional disturbance enrolled in Medicaid-funded behavioral health care plans. **Method:** Youth at five sites nationwide were interviewed about their emotional and behavior problems, as well as their use of cigarettes, alcohol, and drugs—at both baseline and follow-up. **Results:** (1) Levels of depressive symptoms were significantly associated with concurrent substance use at baseline. (2) Baseline levels of depressive symptoms predicted subsequent changes in substance use, especially use of illicit drugs and multiple drugs. (3) These findings remained significant, even after controlling for sociodemographic, family, and individual characteristics. **Conclusions:** These results indicate that depressive symptoms early in life may signal a risk for increasing involvement in substance use among severe emotional disturbed youth. This finding has important clinical implications for the prevention of substance misuse in this population.

See also:

- Chen et al., 2015 (Section 3.4)

3.1.d. Previous substance use (13)

Barkin, S. L., Smith, K.S., & DuRant, R.H (2002). Social skills and attitudes associated with substance use behaviors among young adolescents. *Journal of Adolescent Health 30(6)*, 448-454.

Purpose: To examine how adolescents' attitudes and social skills affect current substance use and intentions to use substances in the future. **Methods:** An anonymous questionnaire was administered to 2646 seventh graders in their classrooms. The questionnaire was developed to measure the frequency of tobacco, alcohol, and other substance use, anticipated use, positive attitudes toward drug use, self-efficacy to say "no," decision-making skills, advertising-viewing skills, anxiety-reducing skills, communication skills, drug-resistance skills, perception of peer substance use, and weapon-carrying behavior. Ethnicity classified respondents as "white" or "students of color" and family structure indicated one vs. two-parent families. Data were analyzed with Spearman's r , analysis of variance, and multiple linear regression. **Results:** Forty-one percent of students were minority, 50.6% female, over 90% were either 12- or 13-year-olds, and 69.9% lived in two-parent families. A multiple linear regression model demonstrated that self-efficacy to say "no, positive attitudes toward drug use, perception of peer substance use, male gender, weapon-carrying, and fighting accounted for 51% of the variation in the current use multiple substance scale. Anticipated substance use during the subsequent year was significantly associated with current substance use, positive attitudes toward drug use, self-efficacy to say "no, drug-resistance skills, weapon-carrying, and fighting behavior. This model accounted for 73.9% of the variance in anticipated substance use. **Conclusions:** In today's world, where drug use is common, building adolescents' drug-resistance skills and self-efficacy, while enhancing decision-making capacity, may reduce their use of illegal substances.

Degenhardt, L., Chiu, W. T., Conway, K., Dierker, L., Glantz, M., Kalaydjian, A., et al. (2009). Does the 'gateway' matter? Associations between the order of drug use initiation and the development of drug dependence in the National Comorbidity Study Replication. *Psychological Medicine: A Journal of Research in Psychiatry and the Allied Sciences*, 39(1), 157-167.

Background. The 'gateway' pattern of drug initiation describes a normative sequence, beginning with alcohol and tobacco use, followed by cannabis, then other illicit drugs. Previous work has suggested that 'violations' of this sequence may be predictors of later problems but other determinants were not considered. The role of pre-existing mental disorders and sociodemographics were examined in order to explain the predictive effects of violations using data from the US National Comorbidity Survey Replication (NCS-R). **Method.** The NCS-R is a nationally representative face-to-face household survey of 9282 English-speaking respondents aged 18 years and older that used the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI) to assess DSM-TV mental and substance disorders. Drug initiation was estimated using retrospective age-of-onset reports and 'violations' defined as inconsistent with the normative initiation order. Predictors of violations were examined using multivariable logistic regressions. Discrete-time survival analysis was used to see whether violations predicted progression to dependence. **Results.** Gateway violations were largely unrelated to later dependence risk, with the exception of small increases in risk of alcohol and other illicit drug dependence for those who initiated use of other illicit drugs before cannabis. Early-onset internalizing disorders were predictors of gateway violations, and both internalizing and externalizing disorders increased the risks of dependence among users of all drugs. **Conclusions.** Drug use initiation follows a strong normative pattern, deviations from which are not strongly predictive of later problems. By contrast,

adolescents who have already developed mental health problems are at risk for deviations from the normative sequence of drug initiation and for the development of dependence.

Golub, A., & Johnson, B. D. (2001). Variation in youthful risks of progression from alcohol and tobacco to marijuana and to hard drugs across generations. *American Journal of Public Health, 91*(2), 225-232.

Notes that much research has documented that youthful substance use typically follows a sequence starting with use of alcohol or tobacco or both and potentially proceeding to marijuana and then hard drug use. This study examined the probabilities of progression through each stage of their covariates. A secondary analysis of data from the National Household Survey on Drug Abuse (1979-1997) was conducted with particular sensitivity to the nature of substance use progression, sampling procedures, and reliability of self-report data. The results show that progression to marijuana and hard drug use was uncommon among persons born before World War II. The stages phenomenon essentially emerged with the baby boom and rose to a peak among persons born around 1960. Subsequently, progression risks at each stage declined. Progression risks were also higher among younger initiators of alcohol, tobacco, or marijuana use. The authors conclude that the recent increase in youthful marijuana use has been offset by lower rates of progression to hard drug use among youths born in the 1970s. Dire predictions of future hard drug abuse by youths who came of age in the 1990s may be greatly overstated.

Harty, S. C., Galanopoulos, S., Newcorn, J. H., & Halperin, J. M. (2013). Delinquency, aggression, and attention-related problem behaviors differentially predict adolescent substance use in individuals diagnosed with ADHD. *The American Journal on Addictions, 22*(6), 543-550.

Objective: To measure the degree to which childhood and adolescent ratings of aggression, attention, and delinquency are related to adolescent substance use outcomes in youth diagnosed with attention-deficit/hyperactivity disorder (ADHD). Background: Childhood externalizing disorders have been shown to predict adolescent maladaptive substance use, but few studies have examined the differential predictive utility of two distinct dimensions of externalizing behavior: aggression and delinquency. Methods: Ninety-seven clinically referred children with ADHD initially took part in this research protocol when they were on average 9.05 years of age, and were seen again on average 9.30 years later. Participants' parents were administered the Child Behavior Checklist (CBCL) at baseline and follow-up, and youth completed the Youth Self Report (YSR) in adolescence. At follow-up, substance use severity and diagnosis were assessed using semi-structured psychiatric interviews administered separately to parents and adolescents. Linear and binary logistic regressions were used to determine the association of CBCL- and YSR-rated attention problems, aggression, and delinquency to adolescent substance use. Results: Childhood and adolescent delinquency, but not aggression, as rated by parents and youths, predicted adolescent substance use disorders and substance use severity (all $p < .05$). After accounting for the associations of delinquency and aggression with adolescent substance use, ratings of attention problems in childhood and adolescence were negatively associated with substance use outcome. Conclusions: Children with ADHD who exhibit high rates of delinquency are at risk for later substance use and may require targeted prevention, intervention, and follow-up services.

Ives, R., & Ghelani, P. (2006). Polydrug use (the use of drugs in combination): A brief review. *Drugs: Education, Prevention & Policy*, 13(3), 225-232.

This brief review provides an overview of this topic; it is not a critical review. Polydrug use is a poorly defined concept; it is taken here to mean the simultaneous use of more than one drug. Data on polydrug use is seldom systematically collected, and the use of alcohol and tobacco in combination with illegal drugs is frequently overlooked. If alcohol and tobacco are included, most users are polydrug users, since these drugs are used by most users of illegal drugs, and many people with alcohol problems also use illegal drugs. Polydrug use has increased; drug availability, cultural context and the 'normalization' of drug use are important factors. Gender and racial differences are observed in the prevalence of polydrug use. Implications for drug prevention include the importance of targeting multiple substance use rather than single substances. Aiming prevention campaigns at younger people and focusing on 'gateway' drugs might be more effective. But polydrug users are diverse, and a variety of strategies (aimed at different types of polydrug users) are necessary. Implications for treatment include the evidence of the greater difficulty that polydrug users have in quitting; they may therefore require additional help. A fuller, systematic, review is required; it is expected that this would recommend the commissioning of additional research on this poorly understood phenomenon.

Leatherdale, S. T., & Ahmed, R. (2010). Alcohol, marijuana, and tobacco use among Canadian youth: Do we need more multi-substance prevention programming? *The Journal of Primary Prevention*, 31(3), 99-108.

Data from the Canadian Youth Smoking Survey (n = 27,030 in 2006; n = 16,705 in 2004; n = 11,757 in 2002) were used to examine changes in the prevalence and comorbid use of alcohol, tobacco, and marijuana over time and examine if demographic factors and binge drinking are associated with comorbid substance use among youth. Alcohol was the most prevalent substance used, and it was rare to find youth who had used tobacco or marijuana without also having tried alcohol. Youth who reported binge drinking were substantially more likely to also have tried tobacco and/or marijuana. These data suggest that multi-substance prevention programs are required for youth populations.

Little, M. A., Spruijt-Metz, D., Pokhrel, P., Sun, P., Rohrbach, L. A., & Sussman, S. (2013). Predicting self-initiated marijuana use cessation among youth at continuation high schools. *Frontiers in Psychiatry*, 4.

The current article reports a large scale study of the prediction of marijuana use cessation among individuals attending alternative high schools who were regular users at baseline. Based on the Triadic Influence Theory, predictors of marijuana use cessation at 1-year follow-up were organized by type of influence (e.g., interpersonal, cultural and attitudinal, and intrapersonal) and level of influence (e.g., distal and ultimate). Among the 522 students who were past 30-day marijuana users at baseline, quitting was defined as having not used marijuana in the last 30 days at 1-year follow-up (43% of baseline users). To account for the level of influence we employed a theory-based analytic strategy, hierarchical regression. In the final multivariate model, lower level of baseline marijuana use and less of a likelihood to endorse pro-drug-use myths remained predictors of marijuana use cessation 1-year later. Implications of these findings include the need to develop cessation programs that reduce psychological dependence on marijuana use, and correct cognitive misperceptions about drug use in order to help adolescents make decisions that lead to health-promoting behaviors.

Manning, V., Best, D., Rawaf, S., Rowley, J., Floyd, K., & Strang, J. (2001). Drug use in adolescence: The relationship between opportunity, initial use and continuation of use of four illicit drugs in a cohort of 14-16-yr-olds in South London. *Drugs: Education, Prevention & Policy*, 8(4), 397-405.

Investigated the prevalence of illicit drug use beyond that of mere experimentation, examining the "capture-rates" of cannabis, amphetamines, ecstasy and cocaine used in a cohort of 1,653 14-16-yr-old adolescents in South London. The transition rate from opportunity to use to actual use was most pronounced for cannabis (with a capture rate of 1 in 5), followed by amphetamines, then ecstasy and finally cocaine. However, regular use as a result of having ever used was lowest for amphetamines and cocaine. Age appeared to be a protective factor since the mean age of those who had never been offered either of the drugs was consistently under 15 yrs of age. In contrast, early onset of drinking and smoking appeared to be a risk factor in those who are offered cannabis and go on to become regular users. While the study contributes to the understanding of pathways and patterns of adolescent substance activities, it is contended that there are also implications for the targeting of early interventions and educational initiatives for those with early onset and rapid escalation in drinking and tobacco use.

McCrystal, P., Percy, A., & Higgins, K. (2006). Drug use patterns and behaviours of young people at an increased risk of drug use during adolescence. *International Journal of Drug Policy*, 17(5), 393-401.

The drug use patterns and behaviours of 90 young people who reported cannabis use from the age of 11/12 years when they entered post primary schooling and continued to report its use during three further annual data waves of the Belfast Youth Development Study (a longitudinal study of the onset and development of adolescent drug use) until the age of 15 are examined in this paper. The data collected from these young people revealed high levels of both licit and illicit drug use compared with young people who have not used cannabis by the age of 15. The findings suggest the existence of a 'hidden' high risk group of young people who continue to attend school regularly. This raises the question about the extent to which their needs are being met by existing school based drugs education and prevention initiatives which are often delivered through a standardised strategy for all school aged young people.

Park, S., Weaver, T. E., & Romer, D. (2010). Predictors of the transition from experimental to daily smoking in late adolescence and young adulthood. *Journal of Drug Education*, 40(2), 125-141.

Although smoking initiation is rare in young adulthood, the progression to a higher level of smoking still occurs at this developmental stage. Thus, this study was aimed at exploring predictors of the transition from experimental to daily smoking in late teens and young adults using the 2nd and 3rd waves from the National Longitudinal Study of Adolescent Health. Predictors were chosen based on Problem Behavior Theory and others that have been found to be influential in the literature. Of the variables studied, age, racial-ethnic identity (Black and Hispanic as compared to White youth), risk-taking tendency, and marijuana use predicted daily smoking 5 years later. Only one predictor, GPA, was protective for reducing the likelihood for the transition to daily smoking. The results are discussed in regard to implications for prevention of the progression to persistent daily smoking.

Ramo, D. E., Liu, H., & Prochaska, J. J. (2012). Tobacco and marijuana use among adolescents and young adults: A systematic review of their co-use. *Clinical Psychology Review*, 32(2), 105-121.

Tobacco (TOB) and marijuana (MJ) are the most widely used drugs among adolescents and young adults. The literature on their co-use, however, has not been systematically reviewed. We identified 163 English language articles published from 1999 to 2009 examining TOB and MJ co-

use, correlates or consequences of co-use, or interventions for prevention or cessation of co-use with participants aging 13–25 years. Most studies (n = 114, 70%) examined TOB and MJ co-use, and 85% of relationships studied indicated a significant association. Fifty-nine studies (36%) examined correlates or consequences of co-use. Factors consistently associated with increased likelihood of co-use, defined as significant associations in at least four studies, were African–American ethnicity, mental and physical health characteristics (e.g., high-intensity pleasure temperament), and school characteristics (e.g., good grades). The only consistent consequence of co-use was exacerbation of mental health symptoms. Few studies examined prevention (n = 3) or cessation (n = 2) interventions for TOB and MJ co-use, and the findings were stronger for prevention efforts. A sufficient literature base has documented that TOB and MJ use are strongly related in young people, yet few consistent correlates and consequences of co-use have been identified to inform intervention targets.

Scholes-Balog, K. E., Hemphill, S. A., Evans-Whipp, T. J., Toumbourou, J. W., & Patton, G. C. (2016). **Developmental trajectories of adolescent cannabis use and their relationship to young adult social and behavioural adjustment**: A longitudinal study of Australian youth. *Addictive Behaviors*, 53, 11-18.

This study aimed to identify distinct developmental trajectories (sub-groups of individuals who showed similar longitudinal patterns) of cannabis use among Australian adolescents, and to examine associations between trajectory group membership and measures of social and behavioural adjustment in young adulthood. Participants (n = 852, 53% female) were part of the International Youth Development Study. Latent class growth analysis was used to identify distinct trajectories of cannabis use frequency from average ages 12 to 19, across 6 waves of data. Logistic regression analyses and analyses of covariance were used to examine relationships between trajectory group membership and young adult (average age: 21) adjustment, controlling for a range of covariates. Three trajectories were identified: abstainers (62%), early onset users (11%), and late onset occasional users (27%). **The early onset users showed a higher frequency of antisocial behaviour, violence, cannabis use, cannabis-related harms, cigarette use, and alcohol harms, compared to the abstinent group in young adulthood.** The late onset occasional users reported a higher frequency of cannabis use, cannabis-related harms, illicit drug use, and alcohol harms, compared to the abstinent group in young adulthood. There were no differences between the trajectory groups on measures of employment, school completion, post-secondary education, income, depression/anxiety, or alcohol use problems. In conclusion, early onset of cannabis use, **even at relatively low frequency during adolescence**, is associated with poorer adjustment in young adulthood. Prevention and intervention efforts to delay or prevent uptake of cannabis use should be particularly focussed on **early adolescence prior to age 12.**

Tullis, L. M., DuPont, R., Frost-Pineda, K., & Gold, M. S. (2003). Marijuana and Tobacco: A Major Connection? *Journal of Addictive Diseases*, 22(3), 51-62.

Smoking among teens and college students is a significant public health challenge. Tobacco, marijuana, and alcohol continue to be the most commonly abused drugs by teens and young adults. Educational efforts have resulted in increased awareness of the mortality and morbidity attributed to smoking, second-hand smoke, and prenatal exposure to tobacco. Short- and long-term consequences of marijuana use are well documented in the literature, but they have received less wide spread attention. Even less well known is the relationship between these substances. Does use of one lead to use of the other? Are there synergistic and/or antagonistic effects when these substances are used together? Answers are needed to these questions to understand the prevalence of use and the impact of these drugs on the nation's youth and young adults. The

gateway theory of drug use is often used to describe the progression from using alcohol or tobacco, to marijuana, and later use of other drugs like MDMA, cocaine, and heroin. While tobacco use does commonly precede marijuana use, it is proposed that marijuana may be a "gateway drug" to tobacco smoking. Research with university students is suggesting that cigarette-smoking initiation often follows or coincides with marijuana use.

See also: Chen et al., 2015 (Section 3.4)

3.1.e. Brain development (6)

Bava, S., & Tapert, S. F. (2010). Adolescent brain development and the risk for alcohol and other drug problems. *Neuropsychology Review, 20*(4), 398-413.

Dynamic changes in neurochemistry, fiber architecture, and tissue composition occur in the adolescent brain. The course of these maturational processes is being charted with greater specificity, owing to advances in neuroimaging and indicate grey matter volume reductions and protracted development of white matter in regions known to support complex cognition and behavior. Though fronto-subcortical circuitry development is notable during adolescence, asynchronous maturation of prefrontal and limbic systems may render youth more vulnerable to risky behaviors such as substance use. Indeed, binge-pattern alcohol consumption and comorbid marijuana use are common among adolescents, and are associated with neural consequences. This review summarizes the unique characteristics of adolescent brain development, particularly aspects that predispose individuals to reward seeking and risky choices during this phase of life, and discusses the influence of substance use on neuromaturation. Together, findings in this arena underscore the importance of refined research and programming efforts in adolescent health and interventional needs.

Chambers, R. A., Taylor, J. R., & Potenza, M. N. (2003). Developmental Neurocircuitry of Motivation in Adolescence: A Critical Period of Addiction Vulnerability. *The American Journal of Psychiatry, 160*(6), 1041-1052.

Epidemiological studies indicate that experimentation with addictive drugs and onset of addictive disorders is primarily concentrated in adolescence and young adulthood. The authors describe basic and clinical data supporting adolescent neurodevelopment as a biologically critical period of greater vulnerability for experimentation with substances and acquisition of substance use disorders. The authors reviewed recent literature regarding neurocircuitry underlying motivation, impulsivity, and addiction, with a focus on studies investigating adolescent neurodevelopment. Adolescent neurodevelopment occurs in brain regions associated with motivation, impulsivity, and addiction. Adolescent impulsivity and/or novelty seeking as a transitional trait behavior can be explained in part by maturational changes in frontal cortical and subcortical monoaminergic systems. These developmental processes may advantageously promote learning drives for adaptation to adult roles but may also confer greater vulnerability to the addictive actions of drugs. An exploration of developmental changes in neurocircuitry involved in impulse control has significant implications for understanding adolescent behavior, addiction vulnerability, and the prevention of addiction in adolescence and adulthood.

Clark, D. B., Chung, T., Pajtek, S., Zhai, Z., Long, E., & Hasler, B. (2013). Neuroimaging methods for adolescent substance use disorder prevention science. *Prevention Science, 14*(3), 300-309.

Magnetic resonance imaging (MRI) methods safely provide in vivo indicators of cerebral macrostructure, microstructure, and activation that can be examined in relation to substance use disorder (SUD) risks and effects. This article will provide an overview of MRI approaches, including volumetric measures, diffusion tensor imaging, and functional MRI, that have been applied to studies of adolescent neuromaturation in relationship to risk phenotypes and adolescent SUD. To illustrate these applications, examples of research findings will be presented. MRI indicators have demonstrated that neurobiological maturation continues throughout

adolescence. MRI research has suggested that variations in neurobiological maturation may contribute to SUD risk, and that substance use adversely influences adolescent brain development. Directly measured neurobiological variables may be viable preventive intervention targets and outcome indicators. Further research is needed to provide definitive findings on neurodevelopmental immaturity as an SUD risk and to determine the directions such observations suggest for advancing prevention science.

Feinstein, E. C., Richter, L., & Foster, S. E. (2012). Addressing the critical health problem of adolescent substance use through health care, research, and public policy. *Journal of Adolescent Health, 50*(5), 431-436.

The use of addictive substances—tobacco, alcohol, and other drugs—during adolescence interferes with brain development and increases the risk of serious health and mental health conditions, including addiction. Yet, adolescents live in a culture in which family, social, community, and media influences regularly bombard them with pro-substance use messages, creating an environment in which substance use is considered an expected behavior, rather than a considerable health risk. To prevent the significant harm that falls to teens and young adults because of substance use, The National Center on Addiction and Substance Abuse at Columbia University (CASA Columbia) undertook a study to explore how adolescent brain development relates to the risk of substance use and addiction; the cultural influences that create an environment in which substance use is considered normative behavior; individual factors that make some teens more disposed to substance use and addiction; and evidence-based prevention and treatment strategies for addressing this problem. The recently published report *Adolescent Substance Use: America's #1 Public Health Problem* concludes that risky substance use is a major public health problem that can be ameliorated through evidence-based public health measures, including education about the disease and its risk factors, screenings, and clinical interventions, and that addiction can be treated and managed effectively within routine health care practice and specialty care.

Pokhrel, P., Herzog, T. A., Black, D. S., Zaman, A., Riggs, N. R., & Sussman, S. (2013). Adolescent neurocognitive development, self-regulation, and school-based drug use prevention. *Prev Sci, 14*(3), 218-228.

Adolescence is marked by several key development-related changes, including neurocognitive changes. Cognitive abilities associated with self-regulation are not fully developed until late adolescence or early adulthood whereas tendencies to take risks and seek thrilling and novel experience seem to increase significantly throughout this phase, resulting in a discrepancy between increased susceptibility to poor regulation and lower ability to exercise self-control. Increased vulnerability to drug use initiation, maintenance, and dependence during adolescence may be explained based on this imbalance in the self-regulation system. In this paper, we highlight the relevance of schools as a setting for delivering adolescent drug use prevention programs that are based on recent findings from neuroscience concerning adolescent brain development. We discuss evidence from school-based as well as laboratory research that suggests that suitable training may improve adolescents' executive brain functions that underlie self-regulation abilities and, as a result, help prevent drug use and abuse. We note that considerable further research is needed in order (1) to determine that self-regulation training has effects at the neurocognitive level and (2) to effectively incorporate self-regulation training based on neuropsychological models into school-based programming.

Weissman, D. G., et al.. (2015). Earlier adolescent substance use onset predicts stronger connectivity between reward and cognitive control brain networks. *Developmental Cognitive Neuroscience*, 16, 121-129.

Background: Early adolescent onset of substance use is a robust predictor of future substance use disorders. We examined the relation between age of substance use initiation and resting state functional connectivity (RSFC) of the core reward processing (nucleus accumbens; NAcc) to cognitive control (prefrontal cortex; PFC) brain networks. **Method:** Adolescents in a longitudinal study of Mexican-origin youth reported their substance use annually from ages 10 to 16 years. At age 16, 69 adolescents participated in a resting state functional magnetic resonance imaging scan. Seed-based correlational analyses were conducted using regions of interest in bilateral NAcc. **Results:** The earlier that adolescents initiated substance use, the stronger the connectivity between bilateral NAcc and right dorsolateral PFC, right dorsomedial PFC, right pre-supplementary motor area, right inferior parietal lobule, and left medial temporal gyrus. **Discussion:** The regions that demonstrated significant positive linear relationships between the number of adolescent years using substances and connectivity with NAcc are nodes in the right frontoparietal network, which is central to cognitive control. The coupling of reward and cognitive control networks may be a mechanism through which earlier onset of substance use is related to brain function over time, a trajectory that may be implicated in subsequent substance use disorders.

3.2. Family level factors



3.2.a. Attachment (3)

Iglesias, E. B., del Río, E. F., Calafat, A., & Fernández-Hermida, J. R. (2014). Attachment and substance use in adolescence: A review of conceptual and methodological aspects. *Adicciones*, 26(1), 76-86.

Attachment is currently considered one of the major risk and/ or protective factors for substance use in adolescence. This paper reviews the most important studies published in the last 30 years in this field, focusing on the conceptual and methodological issues that may be making it more difficult to draw conclusions about the impact of attachment—especially attachment to parents—on substance use among youths. In general, the results indicate that secure attachment or stronger attachment between parents and children acts as a protective factor against drug use, even though there is a great variability in relation to the concept of addiction and its assessment. Secondly, most of the research reviewed also covers other factors that may be conditioning the influence of attachment to parents on children's drug use and which would explain, at least in part, the disparity of the results from different studies. Notable among such factors would be individual characteristics (such as sex, age or self-esteem) and the influence of other sources of attachment, including peers and their circumstances (such as their drug use). Finally, we discuss the importance of taking into account the mentioned conceptual and methodological considerations aspects in research on attachment as a risk and/or protective factor for drug use in adolescence.

Peterson, C. H., Buser, T. J., & Westburg, N. G. (2010). Effects of familial attachment, social support, involvement, and self-esteem on youth substance use and sexual risk taking. *The Family Journal*, 18(4), 369-376.

A study of protective factors against substance use and sexual risk taking was conducted among 610 high-poverty urban youth. Higher levels of family attachment, social support, involvement, and self-esteem were associated with lower levels of risk behaviors.

Schindler, A., Thomasius, R., Sack, P.M., Gemeinhardt, B., & Kustner, U. (2007). Insecure family bases and adolescent drug abuse: A new approach to family patterns of attachment. *Attachment & Human Development*, 9(2), 111-126.

A new approach to assessing family attachment patterns is presented, using a composite measure of individual attachment representations based on the Bartholomew Attachment Interview. A cluster analysis yielded three different patterns in a sample of N = 37 families with a drug dependent adolescent (age 14-25) and both biological parents. A "triangulated" pattern (mothers: preoccupied; fathers: dismissing; adolescents: fearful) was found in 65% of the sample. A total of 19% showed an "insecure" pattern (mothers, fathers, and adolescents: fearful) and 16% a "near-secure" pattern (mothers and adolescents: secure; fathers preoccupied). Preliminary comparisons between these groups indicate differences in comorbid psychiatric disorders, in individual and family functioning, but not in addiction severity. There is a trend towards differences in outcome of family therapy. Implications for treatment and further research are discussed.

3.2.b. Parenting practices (20)

Bahr, S. J., Hoffmann, J. P., & Yang, X. (2005). Parental and Peer Influences on the Risk of Adolescent Drug Use. *The Journal of Primary Prevention*, 26(6), 529-551.

Using a probability sample of 4,230 adolescents from grades 7-12, negative binomial regression was used to estimate the effects of peer and six family variables on the risk of adolescent drug use. Peer drug use had relatively strong effects of adolescent drug use. Parental drug attitudes, sibling drug use, and adult drug use had significant direct effects net of peer influences. In addition, they had significant indirect effects that were mediated by peer drug use. The influences of parental monitoring, attachment to mother, and attachment to father were statistically significant but relatively small. The findings applied to alcohol, binge drinking, cigarettes, marijuana, and other illicit drugs. Editors' Strategic Implications: The authors interpret their findings as being more consistent with social learning than social control theory. This research, although cross-sectional and limited to adolescents' self-reports, contributes to a growing literature on the direct and indirect influences of parents on their teens' substance use rates. It speaks to the need for school- and community-based prevention efforts to focus on families as well as peers.

Becoña, E., Martínez, Ú., Calafat, A., Juan, M., Fernández-Hermida, J. R., & Secades-Villa, R. (2012). Parental styles and drug use: A review. *Drugs: Education, Prevention & Policy*, 19(1), 1-10.

The family plays a fundamental role in the prevention and treatment of substance use. Parental styles are among the family variables most widely studied. This review covers the studies published in the last 30 years on the relationship between parental styles and their offspring's drug use. Research indicates that the authoritative style is the most protective against substance use, whilst the neglectful style would increase the risk of drug use; research on the authoritarian and permissive styles is as yet inconclusive. We discuss the need to take into account other family variables in addition to parental style, such as parents' drug use, emotional support and warmth, family structure and the influence of culture.

Calafat, A., García, F., Juan, M., Becoña, E., & Fernández-Hermida, J. R. (2014). Which parenting style is more protective against adolescent substance use? Evidence within the European context. *Drug and Alcohol Dependence*, 138, 185-192.

Background: This study examines whether authoritative parenting style (characterized by warmth and strictness) is more protective against adolescent substances use than authoritarian (strictness but not warmth), indulgent (warmth but not strictness) and neglectful (neither warmth nor strictness) parenting styles. Emergent research in diverse cultural contexts (mainly Southern European and Latin American countries) questions the fact that authoritative would always be the optimum parenting style. Design: Multi-factorial MANOVAs. Participants: A sample of 7718 adolescents, 3774 males (48.9%), 11–19 year-olds (M = 14.63 year-olds, SD = 1.9 years) from Sweden, United Kingdom, Spain, Portugal, Slovenia, and the Czech Republic. Measurements: Parenting style dimensions (warmth and strictness) and adolescent substance use (alcohol, tobacco, and illegal drugs); additionally another three adolescent outcomes were also measured (self-esteem, school performance and personal disturbances) all of them related in the literature with substance use. Findings: Both indulgent and authoritative parenting styles were associated with better outcomes than authoritarian and neglectful parenting in all the countries studied. Overall, our results support the idea that in Europe the indulgent parenting style performs as well as the authoritative one since adolescents' scores in the youth outcomes were equal (on

substance use and personal disturbances) or even better (on self esteem and school performance) than for authoritative parenting style. Conclusions: Parenting styles relate to substance use and other outcomes in the same way in different countries explored. The so-called indulgent parenting style appears to be as good as the authoritative in protecting against substance abuse.

Clark, H. K., Shamblen, S. R., Ringwalt, C. L., & Hanley, S. (2012). Predicting high risk adolescents' substance use over time: The role of parental monitoring. *The Journal of Primary Prevention, 33*(2-3), 67-77.

We examined whether parental monitoring at baseline predicted subsequent substance use in a high-risk youth population. Students in 14 alternative high schools in Washington State completed self-report surveys at three time points over the course of 2 years. Primary analyses included 1,423 students aged 14–20 who lived with at least one parent or step-parent at baseline. Using hierarchical linear modeling, we found that high parental monitoring at baseline predicted significantly less use of alcohol, marijuana, downers, cocaine, PCP, LSD, and prescription drugs and drinking to intoxication at the first posttest. Approximately 1 year later, high parental monitoring at baseline predicted significantly less use of alcohol, cocaine, prescription drugs, uppers, and ecstasy and drinking to intoxication. Study results suggest that parental monitoring serves as a protective factor, even for high-risk alternative high school students. Including a parental monitoring component may increase the effectiveness of traditional drug prevention programs.

✓ Donaldson, C. D., Nakawaki, B., & Crano, W. D. (2015). Variations in parental monitoring and predictions of adolescent prescription opioid and stimulant misuse. *Addictive Behaviors, 45*, 14-21.

Objective: This study examined relations between adolescents' family structures, social ties, and drug-related attitudes, and their misuse of prescription opioids and stimulants. Different relationships were anticipated for the substances based on prior research highlighting varying motivations for their use. Method: Based on an earlier model of adolescent substance misuse, two path analytic models were tested using data from 12 to 17-year olds in the 2012 U.S. National Survey on Drug Use and Health (NSDUH: N = 17,399). Results: Female respondents reported higher levels of parental warmth, as did youth from wealthier families. Greater parental monitoring was reported by adolescents from wealthier and intact families. Parental monitoring and warmth predicted adolescents' social ties and individual differences associated with drug use, and both variables predicted prescription opioid and stimulant misuse. Contrary to previous research, for adolescents aged 12 to 14, high levels of parental monitoring, while positively associated with attitudes and social ties, also predicted higher rates of prescription stimulant misuse when combined with low levels of parental warmth. Results were cross-validated with data from the 2011 NSDUH. Conclusions: Analyses highlighted the importance of understanding and differentiating the underlying factors associated with adolescent prescription stimulant and opioid misuse, and the role of parental behaviors in prevention.

Hersh, M. A., & Hussong, A. M. (2009). The association between observed parental emotion socialization and adolescent self-medication. *Journal of Abnormal Child Psychology*, 37(4), 493-506.

The current study examined the moderating influence of observed parental emotion socialization (PES) on self-medication in adolescents. Strengths of the study include the use of a newly developed observational coding system further extending the study of PES to adolescence, the use of an experience sampling method to assess the daily covariation between negative affect and substance use, and a focus on PES styles defined by the interaction of emotion-dismissing and emotion-coaching behaviors. Using multi-leveling modeling, we tested PES as a moderator of daily negative mood-substance use relation in a sample of 65 elevated-risk adolescents (48% male, 58% Caucasian, with a median age of 14). Results showed a three-way interaction between emotion-coaching PES, emotion-dismissing PES and daily negative mood in predicting daily substance use. Results are discussed in terms of the importance of PES styles and their effects on self-medication through compromised emotion regulation and interpersonal processes.

- ✓ Hoffmann, J. P., & Warnick, E. (2013). Do **family dinners** reduce the risk for early adolescent substance use? A propensity score analysis. *Journal of Health and Social Behavior*, 54(3), 335-352.

The risks of early adolescent substance use on health and well-being are well documented. In recent years, several experts have claimed that a simple preventive measure for these behaviors is for families to share evening meals. In this study, we use data from the 1997 National Longitudinal Study of Youth (n = 5,419) to estimate propensity score models designed to match on a set of covariates and predict early adolescent substance use frequency and initiation. The results indicate that family dinners are not generally associated with alcohol or cigarette use or with drug use initiation. However, a continuous measure of family dinners is modestly associated with marijuana frequency, thus suggesting a potential causal impact. These results show that family dinners may help prevent one form of substance use in the short term but do not generally affect substance use initiation or alcohol and cigarette use.

Kam, J. A., & Cleveland, M. J. (2011). Perceived discrimination as a risk factor for Latina/o youth's substance use: Do parent- and peer-based communication and relationship resources act as protective factors? *Health Communication*, 26(2), 111-124.

Based on general strain theory, it was hypothesized that as Latina/o youth experience perceived discrimination, they are more likely to develop acculturation stress and, in turn, more likely to use substances. Two additional hypotheses were set forth to examine how parent- and peer-based communication, relationship, and norm resources may function as buffers, thereby decreasing the likelihood that strained youth will use substances. Latina/o youth (N=728) from 23 schools in Phoenix, AZ, completed surveys at three waves over 2 years. Structural equation modeling (SEM) results supported the first hypothesis. Yet, contrary to the second hypothesis, neither parent nor peer resources were significant moderators. Implications are discussed for theory and parent- and peer-based prevention research directed at perceived discrimination, acculturation stress, and substance use.

- ✓ Lamb, C. S., & Crano, W. D. (2014). **Parents' beliefs** and children's marijuana use: Evidence for a self-fulfilling prophecy effect. *Addictive Behaviors*, 39(1), 127-132.

Parents' beliefs about their children's involvement in aberrant behaviors are variable and sometimes inaccurate, but they may be influential. This study is concerned with inconsistencies between parents' estimates and their children's reports of marijuana use, and children's subsequent usage one year later. The self-fulfilling prophecy hypothesis suggests that discrepancies between parents' beliefs and children's behaviors could have detrimental or beneficial outcomes, depending on the inconsistency. This possibility was investigated with data from a panel survey of a nationally representative sample of parents and their adolescent children (N = 3131). Marijuana-abstinent adolescents in the first year (T1) of the survey were significantly more likely to initiate use over the next year if they were characterized by parents as users at T1; conversely, adolescent marijuana users at T1 were significantly less likely to continue usage in the second year if they were labeled by parents as abstinent at T1 (both $p < .001$). Odds that abstinent children whose parents believed they used marijuana would initiate use a year later (T2) were 4.4 times greater than those of abstinent respondents whose parents judged them abstinent. Odds of self-reported users quitting by T2 were 2.7 greater if parents believed they had not used at T1.

Macaulay, A. P., Griffin, K. W., Gronewold, E., Williams, C., & Botvin, G. J. (2005). Parenting Practices and Adolescent Drug-Related Knowledge, Attitudes, Norms and Behavior. *Journal of Alcohol and Drug Education*, 49(2), 67-83.

The current study explored the relationships between parenting practices and adolescent drug use. Suburban middle school students (N = 2129) completed surveys that included measures of perceived parental monitoring, discipline and setting an anti-drug message as well as measures of drug-related knowledge, attitudes and peer norms. Results indicated that effective parenting practices had a direct protective effect in terms of adolescent drug use and that the protective effect of parenting practices remained significant after including the effects of parenting on adolescent drug-related knowledge, attitudes and perceived norms in a structural equation model. These findings suggest that effective parenting practices have a robust protective effect on youth drug use via multiple pathways that extend beyond parenting effects on the most proximal predictors of adolescent drug use.

Merianos, A. L., King, K. A., Vidourek, R. A., & Nabors, L. A. (2015). Recent alcohol use and binge drinking based on authoritative parenting among Hispanic youth nationwide. *Journal of Child and Family Studies*, 24(7), 1966-1976.

Parenting styles influence youth's overall well-being and behaviors. Few studies have examined the effects of parenting styles on alcohol use among Hispanic youth. Although the field of alcohol prevention has made progress in recent years, most prevention initiatives lack the capability to directly address the special needs of this high-risk population. The primary aim of our study was to examine the relationship of recent alcohol use, binge drinking (past 30 days) and authoritative parenting among Hispanic youth. We conducted a secondary data analysis of the 2012 National Survey on Drug Use and Health data in the present study. All Hispanic participants from 12 to 17 years of age (N = 3,457) completed the valid and reliable survey in the privacy of their own homes. The university-based Institutional Review Board granted approval to conduct this study. A total of 13.8 % of Hispanic youth reported recent alcohol use, and 8.0 % of these participants

reported binge drinking. Hispanic youth who reported having low authoritative parenting was at significantly increased odds for reporting both recent alcohol use and binge drinking. Specifically, Hispanic youth with low authoritative parenting that were at increased risk for reporting alcohol use included males, females, the age group 14–15 years, and the age group 16–17 years compared to their counterparts with high authoritative parenting. Results from our study can be used to assist prevention specialists in more thoroughly understanding the protective influence authoritative parenting has on Hispanic youth involvement in alcohol use.

Mihić, J., Musić, T., & Bašić, J. (2013). Family risk and protective factors among young substance non-consumers and consumers. *Kriminologija & Socijalna Integracija*, 21(1), 65-79.

The aim of this study is to contribute to a better understanding of the influence of a family environment on the consumption of addictive substances and promote the importance of including the family environment in addiction prevention strategies. The study, whose results are presented in this paper, was carried out within the project “Development of the system of crime prevention and a support for the establishment of a coordination unit for the prevention of crime”. The project was designed in collaboration with the University of Zagreb, Faculty of Education and Rehabilitation Sciences, Office of the United Nations Development Program in Croatia and the Ministry of Internal Affairs of Republic of Croatia. In this study, CTC Survey for children and youth (Mihić, Novak and Bašić, 2010) was conducted in a period from September to October 2010 in three primary and secondary schools in Split. Results presented in this paper are obtained on a sample of children from second and fourth grades of secondary school (N = 623). Findings showed that frequent substance consumers on a significantly larger scale perceive presence of risk factors in their families (in adequate family rules, family conflicts, parents who support the anti-social behavior and consumption of addictive substances) in comparison to non-consumers. Equally, some substance non-consumers unlike frequent consumers more frequently perceive the presence of protective factors in their families (family attachment, family opportunities for prosocial engagement and family rewards for prosocial engagement). Based on the results of this study, directions for planning the substance abuse prevention within the family context were given.

Oshri, A., Rogosch, F. A., Burnette, M. L., & Cicchetti, D. (2011). Developmental pathways to adolescent cannabis abuse and dependence: Child maltreatment, emerging personality, and internalizing versus externalizing psychopathology. *Psychology of Addictive Behaviors*, 25(4), 634-644.

Child maltreatment is strongly associated with adolescent psychopathology and substance abuse and dependence. However, developmental processes unfolding from childhood into adolescence that delineate this trajectory are not well understood. The current study used path analysis in a structural equation modeling framework to examine multiple mediator models, including ego control, ego resiliency, and internalizing and externalizing symptoms to investigate this developmental process. Participants were 415 children, assessed across 3 waves of data, (i.e., at ages 7 to 9, 10 to 12, and 13 to 15). The sample included maltreated (n = 259) and nonmaltreated (n = 156) children; groups were comparable in sociodemographic characteristics. Findings support a transactional–ecological model by revealing a developmental sequence in which severity of early childhood maltreatment potentiates less adaptive childhood personality functioning, followed by externalizing problems in preadolescence, and ultimately adolescent cannabis abuse and dependence symptoms. A developmental pathway from child maltreatment to adolescent cannabis abuse and dependence symptoms via personality and preadolescent

internalizing problems was not supported. Understanding developmental pathways by which maltreatment experiences increase risk for substance abuse and dependence symptoms in youth has far-reaching implications for the treatment and prevention of substance use disorders.

Ralston, E. S., Trudeau, L. S., & Spoth, R. (2012). Effects of parent-child affective quality during high school years on subsequent substance use. *The International Journal of Emotional Education, 4*(1), 25-42.

The literature indicates that the quality of affective relationships between youth and parents is associated with lower levels of a range of problem behaviors during childhood, early and late adolescence. While the protective effect of parental monitoring on substance use in the high school and post high school years has been demonstrated, there is a knowledge gap concerning effects of parent-child affective quality (PCAQ) during the same periods. We tested a conceptual theoretical model to examine the effects of PCAQ on substance use following high school. The sample was from a RCT that assessed adolescents in rural Iowa from the seventh grade through two years after high school (N = 456). We specified direct effects of PCAQ in 12th grade on drunkenness, smoking and illicit drug use during the two years immediately following high school graduation. We also specified the effects of early substance use initiation (alcohol, tobacco and marijuana use reported at baseline) on later use. The direct effect of PCAQ in 12th grade on substance use was significant for all substances during at least one of the two years past graduation (yppg). Results were: drunkenness 1 yppg, $\beta = -.126$, $p < .05$; smoking 1 yppg, $\beta = -.119$, $p < .05$; 2 yppg, $\beta = -.146$, $p < .05$; illicit drug use 2 yppg, $\beta = -.165$, $p < .05$. Some significant indirect effects of PCAQ at baseline, via PCAQ at 12th grade, were found. Results also indicated significant direct effects of early initiation on two of the three substances, albeit with a different pattern of effects over time for each substance by years post high school. Importantly, while early initiation remains the strongest predictor of long-term tobacco and illicit drug use, results show how PCAQ might reduce its harmful effects.

Shillington, A. M., Lehman, S., Clapp, J., Hovell, M. F., Sipan, C., & Blumberg, E. J. (2005). Parental monitoring: Can it continue to be protective among high-risk adolescents? *Journal of Child & Adolescent Substance Abuse, 15*(1), 1-15.

Adolescence is a developmental period during which many youth experiment with risk practices. This paper examined the association of parental monitoring with a range of alcohol and other drug (AOD) use behaviors among high-risk youth, while controlling for other demographic and environmental variables previously found to be associated with AOD use. Participants were recruited as part of a longitudinal evaluation study of four youth drop-in centers located in Southern California. These centers served at-risk youth, including Hispanic, Lesbian/Gay/Bisexual/Questioning (LGBQ), and homeless and runaway youth. Participants were aged 14 to 24 and were new attendees at the drop-in centers. Results from logistic regression analyses revealed that while controlling for demographic and environmental variables, adolescents who reported less parental monitoring were more likely to report lifetime use of cigarettes, marijuana, and methamphetamine, and in the past three months, use of alcohol and binge drinking. The findings thus indicate that, even among high-risk youth, those who reported low parental monitoring were significantly more likely to use a variety of substances. Implications of these findings are discussed as they pertain to AOD prevention and interventions for children and their families.

Skeer, M. R., & Ballard, E. L. (2013). Are family meals as good for youth as we think they are? A review of the literature on family meals as they pertain to adolescent risk prevention. *Journal of Youth and Adolescence*, 42(7), 943-963.

Regular family meals have been shown to reduce adolescents' engagement in various risk behaviors. In this article, we comprehensively examine the literature to review the association between family meals and eight adolescent risk outcomes: alcohol, tobacco, marijuana and other drugs; aggressive and/or violent behaviors; poor school performance; sexual behavior; mental health problems; and disordered eating patterns. The majority of the studies reviewed found associations in the relationship between family meals and adolescents' risk profiles. More specifically, studies reporting significant associations found that adolescents who frequently ate meals with their family and/or parents were less likely to engage in risk behaviors when compared to peers who never or rarely ate meals with their families. Additionally, the influence of family meal frequency on youth risk outcomes appears to be dependent on gender, with family meals being a protective factor for females and males differently, depending on the outcome examined. However, the studies available about family meals and adolescent risk only examined the effect of family meal frequency, and not other components of family meals that contribute to the protective effect, and, thus, hinder the understanding of the mechanisms unique to family meals' protective characteristics. Regardless of these limitations, the studies examined indicate that family meals may be protective and, therefore, have practical implications for parents, clinicians, and organizations looking to reduce adolescent risk behaviors. However, further examination is needed to better understand the **mechanisms that contribute to the protective effect** afforded by family meal frequency on adolescents.

Stephenson, M. T., & Helme, D. W. (2006). Authoritative Parenting and Sensation Seeking as Predictors of Adolescent Cigarette and Marijuana Use. *Journal of Drug Education*, 36(3), 247-270.

Adolescents with high sensation-seeking tendencies often seek out thrill seeking experiences to satisfy their need for stimulation and sensation. In many cases, sensation-seeking adolescents fulfill their need for stimulation and sensation by using illicit substances. However, not all high sensation seekers use drugs, although the factors that prevent or buffer sensation seeking remain unexplored. This study fills this gap in extant research by examining the role of authoritative parenting as a protective factor that prevents or buffers cigarette and marijuana use by adolescents with high sensation-seeking tendencies. Data from 1,461 adolescents attending 6th through 8th grades in central Colorado were gathered during a semester-long classroom-based intervention to prevent the onset or further use of cigarettes. Results indicate that authoritative parenting moderated the effect of sensation seeking on adolescent marijuana attitudes, intentions, and peer influence but not behaviors. Further, authoritative parenting was a stronger influence than sensation seeking on cigarette-related outcomes with just the opposite effect observed for marijuana-related outcomes.

Teichman, M., & Kefir, E. (2000). The effects of perceived parental behaviors, attitudes, and substance-use on adolescent attitudes toward and intent to use psychoactive substances. *Journal of Drug Education*, 30(2), 193-204.

The effects of parental behaviors, attitudes, and drug-use as perceived by adolescents on the latter's attitudes toward and intent to use psychoactive substances were studied. Ss were 195 9th, 10th, and 11th graders. Perceived parental rejection, acceptance, and attitudes significantly differentiated between adolescents who reported favorable attitudes toward and high intent to use

substances and those who expressed less favorable attitudes. On most parameters, the father's influence was significant, whereas the effect of the mother did not reach significance. Positive and significant relationships were also found between perceived parental rejection, acceptance, and attitudes and adolescent attitudes and intent to use psychoactive substances. No relationships were found between controlling parental behavior and adolescent attitudes and intent to use psychoactive substances. The role of the parents, as well as implications of the findings for prevention are discussed.

Tobler, A. L., & Komro, K. A. (2009). Trajectories of parental monitoring and communication and effects on drug use among urban young adolescents. *Journal of Adolescent Health, 46*(6), 560-568.

Purpose: Identify the number and characteristics of heterogeneous trajectories of parental monitoring and communication among a sample of urban, racial/ethnic minority youth and examine the effects of these patterns on alcohol, cigarette and marijuana use. Methods: The study sample (n=2,621) was predominantly African American or Hispanic (38% and 32%, respectively) and low-income (67% received free, or reduced price, lunch). They completed classroom-based surveys when in 6th-8th grades. Multilevel general growth mixture modeling was used to identify the heterogeneous trajectories of parental monitoring and communication and estimate the effects of these distinct patterns on drug use in 8th grade. Results: Four trajectories of parental monitoring and communication were identified: (1) High (76.4%), (2) Medium (9.1%), (3) Decreasing (6.0%) and (4) Inconsistent (8.5%). Relative to those with high monitoring/communication, youth in the decreasing and inconsistent trajectories were at significantly greater risk for past year and past month alcohol and marijuana use and having ever smoked a cigarette. After controlling for family composition, only youth in the decreasing trajectory were significantly more likely to report substance use in 8th grade. Conclusions: Findings support the role of parents in preventing drug use during early adolescence and suggest that efforts to improve the level and consistency of parental monitoring and communication may be a fruitful target for prevention. Many youth initiate use of alcohol, tobacco or marijuana in this critical developmental period and considered with the health and social consequences of use, engaging parents in preventing drug use should remain a priority for prevention.

Velleman, R. D. B., Templeton, L. J., & Copello, A. G. (2005). The role of the family in preventing and intervening with substance use and misuse: A comprehensive review of family interventions, with a focus on young people. *Drug and Alcohol Review, 24*(2), 93-109.

The family plays a key part in both preventing and intervening with substance use and misuse, both through inducing risk, and/or encouraging and promoting protection and resilience. This review examines a number of family processes and structures that have been associated with young people commencing substance use and later misuse, and concludes that there is significant evidence for family involvement in young people's taking up, and later misusing, substances. Given this family involvement, the review explores and appraises interventions aimed at using the family to prevent substance use and misuse amongst young people. The review concludes that there is a dearth of methodologically highly sound research in this area, but the research that has been conducted does suggest strongly that the family can have a central role in preventing substance use and later misuse amongst young people.

3.2.c. Family structure (3)

Feinberg, M. E., Solmeyer, A. R., & McHale, S. M. (2012). The third rail of family systems: Sibling relationships, mental and behavioral health, and preventive intervention in childhood and adolescence. *Clinical Child and Family Psychology Review*, 15(1), 43-57.

Sibling relationships are an important context for development, but are often ignored in research and preventive interventions with youth and families. In childhood and adolescence, siblings spend considerable time together, and siblings' characteristics and sibling dynamics substantially influence developmental trajectories and outcomes. This paper reviews research on sibling relationships in childhood and adolescence, focusing on sibling dynamics as part of the family system and sibling influences on adjustment problems, including internalizing and externalizing behaviors and substance use. We present a theoretical model that describes three key pathways of sibling influence: one that extends through siblings' experiences with peers and school, and two that operate largely through family relationships. We then describe the few existing preventive interventions that target sibling relationships and discuss the potential utility of integrating siblings into child and family programs.

Hemovich, V., & Crano, W. D. (2009). Family structure and adolescent drug use: An exploration of single-parent families. *Substance Use & Misuse*, 44(14), 2099-2113.

Data from the 2004 Monitoring the Future survey examined a nationally representative cross-sectional sample of 8th to 12th grade adolescents in rural and urban schools from across the United States (N = 37,507). Results found that drug use among daughters living with single fathers significantly exceeded that of daughters living with single mothers, while gender of parent was not associated with sons' usage. This distinction in adolescent drug use between mother-only versus father-only households is largely overlooked in contemporary studies. Factors responsible for variations in sons' and daughters' usage in single-parent families have important implications for future drug prevention efforts.

Vakalahi, H. F. (2001). Adolescent substance use and family-based risk and protective factors: A literature review. *Journal of Drug Education*, 31(1), 29-46.

Adolescent substance use has become a serious concern nationwide. Although there are many ways of viewing adolescent substance use, family influence has been established as one of the strongest sources of risk and protection. A review of the literature indicated relevant theories for understanding adolescent substance use and specific family-based variables influencing adolescent substance use. In general, there seems to be a relationship between adolescent substance use and family-based risk and protective factors. Relevant theories identified in the literature review include family systems theory, social cognitive theory, social control theory, and strain theory. Specific family-based risk and protective factors include family relationships such as with siblings and parents and family characteristics such as ethnicity and religious backgrounds.

See also:

- Fallu et al., 2010 (Section 3.1.c.)
- Velleman et al., 2005 (Section 3.2.b.)

3.3. Community and School Factors

3.3.a. School culture and connectedness (15)⁵

Bond, L., H. Butler, et al. (2007). Social and School Connectedness in Early Secondary School as Predictors of Late Teenage Substance Use, Mental Health, and Academic Outcomes. *Journal of Adolescent Health* 40(4), 357.e9-357.e18.

Purpose To examine associations between social relationships and school engagement in early secondary school and mental health, substance use, and educational achievement 2-4 years later. **Methods** School-based longitudinal study of secondary school students, surveyed at school in Year 8 (13-14-years-old) and Year 10 (16-years-old), and 1-year post-secondary school. A total of 2678 Year 8 students (74%) participated in the first wave of data collection. For the school-based surveys, attrition was <10%. Seventy-one percent of the participating Year 8 students completed the post-secondary school survey. **Results** Having both good school and social connectedness in Year 8 was associated with the best outcomes in later years. In contrast, participants with low school connectedness but good social connectedness were at elevated risk of anxiety/depressive symptoms (odds ratio [OR]: 1.3; 95% confidence interval [CI]: 1.0, 1.76), regular smoking (OR: 2.0; 95% CI: 1.4, 2.9), drinking (OR: 1.7; 95% CI: 1.3, 2.2), and using marijuana (OR: 2.0; 95% CI: 1.6, 2.5) in later years. The likelihood of completing school was reduced for those with either poor social connectedness, low school connectedness, or both. **Conclusions** Overall, young people's experiences of early secondary school and their relationships with others may continue to affect their moods, their substance use in later years, and their likelihood of completing secondary school. Having both good school connectedness and good social connectedness is associated with the best outcomes. The challenge is how to promote both school and social connectedness to best achieve these health and learning outcomes.

Bisset, S., Markham, W. A., & Aveyard, P. (2007). School culture as an influencing factor on youth substance use. *Journal of Epidemiology and Community Health*, 61(6), 485-490.

Objective: To determine whether value-added education is associated with lower risk of substance use among adolescents: early initiation of alcohol use (regular monthly alcohol consumption in grade 7), heavy alcohol use (>10 units per week) and regular illicit drug use. **Design:** Cross-sectional self-reported survey of alcohol and drug use. **Analysis** used two-level logistic modelling to relate schools providing value-added education with pupils' substance use. The value-added education measure was derived from educational and parenting theories proposing that schools providing appropriate support and control enhance pupil functioning. It was operationalised by comparing observed and expected examination success and truancy rates among schools. Expected examination success and truancy rates were based on schools' sociodemographic profiles. **Participants:** Data were collected across 15 West Midlands English school districts and included 25 789 pupils in grades 7, 9 and 11 from 166 UK secondary schools. **Results:** Value-added education was associated with reduced risk of early alcohol initiation (OR (95% CI) 0.87 (0.78 to 0.95)) heavy alcohol consumption (OR 0.91 (0.85 to 0.96)) and illicit drug use (OR 0.90 (0.82 to 0.98)) after adjusting for gender, grade, ethnicity, housing tenure, eligibility for free school

⁵ This section includes literature related to bullying.

meal, drinking with parents and neighbourhood deprivation. Conclusions: The prevalence of substance use in school is influenced by the school culture. Understanding the mechanism through which the school can add value to the educational experience of pupils may lead to effective prevention programmes.

Dickens, D. D., Dieterich, S. E., Henry, K. L., & Beauvais, F. (2012). School bonding as a moderator of the effect of peer influences on alcohol among American Indian adolescents. *Journal of Studies on Alcohol and Drugs*, 73(4), 507-603.

Objective: Previous research suggests that substance use among American Indian youth is associated with disproportionate rates of morbidity and substance misuse. Additional work to understand risk and protective factors for alcohol use is needed. The current study examined the role of school bonding in buffering the effect of peer alcohol use on a student's own alcohol use among American Indian adolescents. **Method:** The present study is part of a larger examination of alcohol use among American Indian youth. Survey data were collected from middle and high school students during the 2009–2010 and 2010–2011 school years from 37 school districts in the United States. The sample consisted of 2,582 students ages 11–19 years: 1,606 were younger than 16, and 976 were age 16 or older. All students self-identified as American Indian or Alaskan Native. The sample was approximately equally divided by gender (49% male). **Results:** For all students, peer alcohol use was a risk factor for (a) lifetime alcohol use and (b) level of alcohol use among users. School bonding was associated with a lower likelihood of lifetime alcohol use for adolescents younger than age 16 and a lower level of use among users for all adolescents. School bonding emerged as a protective factor that buffers against peer alcohol use among adolescent alcohol users younger than 16. **Conclusions:** Results of the study demonstrate the influence of exposure to alcohol-using peers and the protective role of school bonding on alcohol use among American Indian adolescents. Implications for prevention are discussed.

Fletcher, A., Bonell, C., & Hargreaves, J. (2008). School effects on young people's drug use: A systematic review of intervention and observational studies. *Journal of Adolescent Health*, 42(3), 209-220.

Purpose: This systematic review examined the hypothesis that school institutional factors influence young people's use of drugs. The aims were to (1) identify the effect of school-level changes on drug use and (2) explore the possible mechanisms by which school-level influences on individual drug use might occur. **Methods:** Systematic review. Experimental/quasi-experimental studies of "whole-school" drug prevention interventions and longitudinal observational studies on the association between school-level and individual-level school-related exposures and drug use were included. Experimental studies were included because they are the most reliable available source of evidence about causation. Observational studies of school-level and individual-level school-related exposures were included with the aim of providing evidence about a wider range of possible school-level effects and how school-level influences might be mediated by individual-level factors. **Results:** Experimental studies suggested that changes to the school social environment that increase student participation, improve relationships and promote a positive school ethos may be associated with reduced drug use. School-level and individual-level observational studies consistently reported that disengagement and poor teacher-student relationships were associated with drug use and other risky health behaviors. **Conclusions:** There is evidence of school effects on young people's drug use. **Interventions that promote a positive school ethos and reduce student disaffection may be an effective complement to drug prevention interventions addressing individual knowledge, skills, and peer norms. Such approaches should now be piloted in a wider range of**

settings. Further research is also needed to explore mechanisms by which schools may influence young people's drug use.

Fletcher, A., Bonell, C., Sorhaindo, A., & Rhodes, T. (2009). Cannabis use and 'safe' identities in an inner-city school risk environment. *International Journal of Drug Policy*, 20(3), 244-250.

Background: Despite evidence of school effects on drug use, little is known about the social and institutional processes through which these may occur. This study explores how school experiences may shape young people's drug-related attitudes and actions and adds to existing evidence highlighting the importance of drug use in young people's identity construction and group bonding. Methods: Case study qualitative data were collected through semi-structured interviews supplemented with observations. Fourteen students aged 14-15 were interviewed in autumn 2006 and again in summer 2007. Five teachers were interviewed. Results: Inner-city secondary schools may constitute risky and insecure environments, and thereby act as structural forces in shaping how students form peer groups and respond to feelings of insecurity. Cannabis use and identities constructed in relation to this appeared to play a key role in how students manage insecurity. Black and dual-heritage students formed large, "safe", ethno-centric school social networks and smoking "weed" appeared to be an important source of bonding and identity. For some students, a vicious circle may exist whereby the process of "fitting in" exacerbates difficult and conflicting relationships with teachers and parents, entrenches disengagement from education and leads to further cannabis use. There also appeared to be a diffusion of this "safe" identity construction beyond these disengaged students. Cannabis and other drug use may also be an important safety strategy and source of bonding for proeducation students who need to be seen "getting high" as well as "aiming high". While some students constructed "safe" and "sweet" identities others were constrained by their position and resources at school. Conclusion: Inner-city schools may both reflect and reproduce existing patterns of drug use. The concept of risk hierarchies may be important when designing and evaluating school-based drug-prevention strategies.

Gonzales, N. A., Wong, J. J., Toomey, R. B., Millsap, R., Dumka, L. E., & Mauricio, A. M. (2014). School engagement mediates long-term prevention effects for Mexican American adolescents. *Prevention Science*, 15(6), 929-939.

This 5-year follow-up of a randomized clinical trial evaluated the efficacy of a family-focused intervention delivered in middle school to increase school engagement following transition to high school (2 years post-test), and also evaluated mediated effects through school engagement on multiple problem outcomes in late adolescence (5 years post-test). The study sample included 516 Mexican American adolescents who participated in a randomized trial of the Bridges to High School Program (Bridges/Puentes). Path models representing the direct and indirect effects of the program on four outcome variables were evaluated using school engagement measured in the 9th grade as a mediator. The program significantly increased school engagement, with school engagement mediating intervention effects on internalizing symptoms, adolescent substance use, and school dropout in late adolescence when most adolescents were in the 12th grade. Effects on substance use were stronger for youth at higher risk based on pretest report of substance use initiation. There were no direct or indirect intervention effects on externalizing symptoms. Findings support that school engagement is an important prevention target for Mexican American adolescents.

Hemphill, S. A., Kotevski, A., Herrenkohl, T. I., Bond, L., Kim, M. J., Toumbourou, J. W., & Catalano, R. F. (2011). Longitudinal consequences of adolescent bullying perpetration and victimisation: A study of students in Victoria, Australia. *Criminal Behaviour and Mental Health*, 21(2), 107-116.

Aims: To examine the associations between self reported bullying perpetration and victimisation in Years 7 and 10 and a range of psychosocial outcomes in Year 11. **Method:** This analysis draws on data from the International Youth Development Study, a longitudinal study of 5769 students from Victoria, Australia and Washington State, United States who were recruited through schools in Years 5, 7 and 9 in 2002. Data for the current results are taken from participants in the youngest (Year 5) Victorian cohort of the study. **Results:** Rates of bullying victimisation exceeded 30% and up to one in five students had engaged in bullying. Adjusted logistic regression analyses revealed that bullying perpetration, and bullying victimisation in Year 7 did not significantly predict psychosocial outcomes in Year 11. Bullying perpetration in Year 10 was associated with an increased likelihood of theft, violent behaviour and binge drinking. Year 10 bullying victimisation was associated with an increased likelihood of Year 11 depressive symptoms. **Conclusions:** Prevention approaches that target bullying perpetration and victimisation are necessary. Programmes that lessen bullying may also have an impact on other proximally related behaviours, including binge drinking and depression.

Henry, K. L., Knight, K. E., & Thornberry, T. P. (2012). School disengagement as a predictor of dropout, delinquency, and problem substance use during adolescence and early adulthood. *Journal of Youth and Adolescence*, 41(2), 156-166.

Over the past 5 years, a great deal of attention has been paid to the development of early warning systems for dropout prevention. These warning systems use a set of indicators based on official school records to identify youth at risk for dropout and then appropriately target intervention. The current study builds on this work by assessing the extent to which a school disengagement warning index predicts not only dropout but also other problem behaviors during middle adolescence, late adolescence, and early adulthood. Data from the Rochester Youth Development Study (N = 911, 73% male, 68% African American, and 17% Latino) were used to examine the effects of a school disengagement warning index based on official 8th and 9th grade school records on subsequent dropout, as well as serious delinquency, official offending, and problem substance use during middle adolescence, late adolescence, and early adulthood. Results indicate that the school disengagement warning index is robustly related to dropout as well as serious problem behaviors across the three developmental stages, even after controlling for important potential confounders. High school dropout mediates the effect of the warning index on serious problem behaviors in early adulthood.

Kuntsche, E. (2010). When cannabis is available and visible at school: A multilevel analysis of students' cannabis use. *Drugs: Education, Prevention & Policy*, 17(6), 681-688.

Aims: To investigate the links between the visibility of cannabis use in school (measured by teachers' reports of students being under the influence of cannabis on school premises), the proportion of cannabis users in the class, perceived availability of cannabis, as well as adolescent cannabis use. **Methods:** A multilevel regression model was estimated based on a Swiss national representative sample of 5,935 students in the 8th and 9th grades (mean age = 14.8, SD = 0.9) and their 343 teachers. **Findings:** The visibility of cannabis use in school was related to the students' own cannabis use, even when the proportion of cannabis users in the class was taken

into account. In addition, the strength of the association between perceived availability and students' cannabis use increased as the visibility of cannabis use in school became higher. Conclusion: Visible cannabis use at school appears to trigger cannabis use among students, e.g. by raising the degree to which they perceive its ready availability. Teachers, school authorities, and policy-makers must assume responsibility for creating a more protective school environment, by establishing and enforcing school regulations for example.

Li, Y., Zhang, W., Liu, J., Arbeit, M. R., Schwartz, S. J., Bowers, E. P., & Lerner, R. M. (2011). The role of school engagement in preventing adolescent delinquency and substance use: A survival analysis. *Journal of Adolescence*, 34(6), 1181-1192.

The present study was designed to examine the effects of school engagement on risky behavior in adolescence. Using data from the 4-H Study of Positive Youth Development (PYD), a longitudinal study of U.S. adolescents, discrete-time survival analyses were conducted to assess the effect of behavioral and emotional school engagement on the initiation of drug use and delinquency. The current analyses used seven years of longitudinal data collected from youth and their parents. Results of discrete-time survival analysis indicated that, controlling for demographic variables, higher degrees of behavioral and emotional school engagement predicted a significantly lower risk of substance use and involvement in delinquency. Substance use prevention programs and other health-risk reduction programs should include components (i.e., adolescents' participation in and emotional attachment to school) to capitalize on the protective role of the school context against youth risk behavior.

Radliff, K. M., Wheaton, J. E., Robinson, K., & Morris, J. (2012). Illuminating the relationship between bullying and substance use among middle and high school youth. *Addictive Behaviors*, 37(4), 569-572.

The increased prevalence and negative impact of bullying and substance use among youth has been established independently in the literature; however, few researchers have examined the association between involvement in bullying and substance use across middle and high school youth. Thus, the aim of this study was to examine the self-reported prevalence of bullying and substance use (alcohol, cigarettes, and marijuana) among youth in middle and high school. Middle and high school students from 16 school districts across a large metropolitan area (N = 78,333) completed a school-based survey. Scales were created to examine involvement in bullying, victimization, and substance use. A link between involvement in bullying and substance use was evident. Youth involved in bullying were more likely than students not involved in bullying to use substances, with bully-victims reporting the greatest levels of substance use. Differences at the school level and across status (i.e., bullies, victims, and bully-victims) are discussed. Implications for practice and prevention and intervention programs are offered. Findings support the need for continued research into risky behaviors, such as substance use, that are correlated with bullying behavior and may contribute to an increase in negative outcomes.

Trenz, R. C., Dunne, E. M., Zur, J., & Latimer, W. W. (2015). An investigation of school-related variables as risk and protective factors associated with problematic substance use among vulnerable urban adolescents. *Vulnerable Children and Youth Studies*, 10(2), 131-140.

Research has shown that early initiation of substance abuse has negative impacts on school performance and is predictive of substance abuse in adulthood. The aim of the present study was to evaluate the association between school-related variables and problematic substance use among adolescents in an urban setting. Adolescent participants (M age = 16.26, SD = 2.10;

65.3% male; 70.2% African-American) completed face-to-face interviews consisting of the Personal Experience Inventory (PEI) and a school-related questionnaire. Participants reported using alcohol to get drunk (44.9%), using marijuana (63.9 %) and other drugs to get high (19.8%). School-related risk and protective factors included: failed a class (61.8%), held back a grade (42.7%), sent to the principal (46.0%), family called for a conference (44.7%), suspended (39.0%), expelled (18.7%), and feeling good about school (61.3%) and teachers (66.1%). Having failed a class (AOR = 2.83), having been held back a grade (AOR = 4.68), and having been sent to the principal (AOR = 2.98) predicted problematic substance use. Feeling good about school (AOR = 0.39) and teachers (AOR = 0.27) was protective against problematic substance use. Findings demonstrate the importance of developing school-based targeted interventions for vulnerable youth.

Ttofi, M. M., Farrington, D. P., Lösel, F., Crago, R. V., & Theodorakis, N. (2015). School Bullying and Drug Use Later in Life: A Meta-Analytic Investigation. *School Psychology Quarterly*.

The main aim of this article is to investigate whether there is a significant long-term association between bullying at school and drug use later in life. A meta-analysis is presented based on results from major prospective longitudinal studies with available unadjusted and adjusted effect sizes. Results are based on thorough systematic searches of the literature across 19 databases and 63 journals. The unadjusted summary effect size suggests that youth who bully are at least twice as likely compared with noninvolved students to use drugs later in life (OR = 2.22, 95% CI: 1.60–3.07). The adjusted summary effect size is markedly reduced to an OR of 1.41 (95% CI: 1.20–1.66) suggesting that a lot of variation in the final model is explained by other contributing factors, while bullying has a significant yet small effect over and above the contribution of these factors. Contributing factors include childhood risks falling within the individual, family, and school domains that are significantly associated with both the predictor and the outcome. **It is concluded that school bullying, drug use, and other problem behaviors are intercorrelated; thus, highlighting the need to create a meaningful holistic framework for the prevention of drug problems and other associated mental, emotional, and behavioral maladies. Implications for policy and practice arising from these findings are discussed.**

Valdebenito, S. (2015). Prevalence rates of drug use among school bullies and victims: A systematic review and meta-analysis of cross-sectional studies. *Aggression and violent behavior*, 23, 137-146.

Bullying is a common aggressive behaviour in school, with a number of cross-sectional studies showing that it exhibits a high comorbidity with other problem behaviours. The present study aims to estimate the comorbidity of school bullying (perpetration and victimisation) with drug use by incorporating and meta-analysing all available evidence on the cross-sectional association between the two variables. Meta-analytic results are based on a comprehensive systematic review across 20 databases and 46 journals. A total of 61 relevant manuscripts were included in the systematic review. Following explicit methodological criteria for the inclusion/exclusion of reports, 13 of them were eligible for the meta-analysis. The association of school bullying perpetration with drug use (adjusted odds ratio OR = 2.82; 95% CI 1.97–4.02; $z = 5.71$; $p < .001$) suggests a very strong relationship. For example, if a quarter of children were bullies and a quarter were drug users, this value of the OR would correspond to 40.88% of bullies being also drug users, compared with 19.71% of non-bullies. The association of school bullying victimisation with drug use (adjusted odds ratio OR = 1.79; 95% CI 1.38–2.32; $z = 4.41$; $p < .001$) suggests a moderate relationship. For example, if a quarter of children were victims and a quarter were drug

users, this value of the OR would correspond to 33.69% of bullied youth also being drug users, compared with 22.1% of non-bullied youth. Adjusted effect sizes are based on study findings that used statistical controls for confounding variables, thus providing the unique association of school bullying with drug use over and above other important risk factors that may explain this association. Implications for policy and intervention research arising from this review are highlighted.

Wiens, B. A., Haden, S. C., Dean, K. L., & Sivinski, J. (2010). The impact of peer aggression and victimization on substance use in rural adolescents. *Journal of School Violence*, 9(3), 271-288.

Prior research has shown relations between peer victimization, aggression, and adolescent substance use. However, there is a need for further research in this area, especially among rural populations, as rural youth have high rates of substance use but less access to mental health resources in their communities. The present study examined relations between peer victimization, aggression, and substance use in a rural sample of 6th–12th graders. Older, nonminority students who endorsed aggression were more likely to have used alcohol only and alcohol plus marijuana, and also had the highest rates of alcohol use. Results highlight the need for multifaceted intervention and prevention programs and further research into the causal relations between peer aggression and substance use.

3.3.b. Peers (19)⁶

Buckley, L., Sheehan, M., & Chapman, R. (2009). Adolescent protective behavior to reduce drug and alcohol use, alcohol-related harm and interpersonal violence. *Journal of Drug Education, 39*(3), 289-301.

Typically adolescents' friends are considered a risk factor for adolescent engagement in risk-taking. This study took a more novel approach, by examining adolescent friendship as a protective factor. In particular it investigated friends' potential to intervene to reduce risk-taking. Five-hundred-forty adolescents (mean age 13.47 years) were asked about their intention to intervene to reduce friends' alcohol, drug and alcohol-related harms and about psychosocial factors potentially associated with intervening. More than half indicated that they would intervene in friends' alcohol, drug use, alcohol-related harms and interpersonal violence. Intervening was associated with being female, having friends engage in overall less risk-taking and having greater school connectedness. The findings provide an important understanding of increasing adolescent protective behavior as a potential strategy to reduce alcohol and drug related harms.

Clark, T. T., Belgrave, F. Z., & Abell, M. (2012). The mediating and moderating effects of parent and peer influences upon drug use among African American adolescents. *Journal of Black Psychology, 38*(1), 52-80.

This study recruited 567 African American youth (mean age = 15.27 years; 65.1% girls) to examine the role of parent and peer contexts on drug use among African American adolescents. Data were collected on demographics, drug refusal efficacy, drug use, and various psychosocial factors including family and peer factors. When controlling for age and gender, parental monitoring and peer risky behavior completely mediated the relationship between parental attitudes toward drug use and drug refusal efficacy and partially mediated the relationship between parental attitudes toward drug use and current alcohol use. Only peer risky behavior mediated the relationships between parental attitudes toward drug use and current tobacco and marijuana use. Results also revealed several salient moderating relationships. Implications for prevention programs are provided and include strengthening current parenting skills and focusing efforts on fostering the mother-adolescent relationship.

Creemers, H. E., Dijkstra, J. K., Vollebergh, W. A. M., Ormel, J., Verhulst, F. C., & Huizink, A. C. (2010). Predicting life-time and regular cannabis use during adolescence; the roles of temperament and peer substance use: The TRAILS study. *Addiction, 105*(4), 699-708.

Aims: The aim of the present study was to determine the mediating role of affiliation with cannabis-using peers in the pathways from various dimensions of temperament to life-time cannabis use, and to determine if these associations also contributed to the development of regular cannabis use. **Methods:** Objectives were studied using data from 1300 participants of the Tracking Adolescents' Individual Lives Survey (TRAILS), a large, general population study of Dutch adolescents. We used parent-reports on the Early Adolescent Temperament Questionnaire to assess the dimensions of high-intensity pleasure, shyness, fearfulness, frustration and effortful control at age 10-12 years. By means of self-reports, life-time and regular cannabis use were determined at age 15-18 years, and proportion of substance-using peers was determined at ages 12-15 and 15-18 years. Models were adjusted for age, sex, intelligence and parental cannabis use. **Results:** High-intensity pleasure [odds ratio (OR) = 1.09, 95% confidence interval (CI) = 1.05-1.13] and effortful control (OR = 0.92, 95% CI = 0.89-0.96) affected the risk for life-time

⁶ This section also includes emerging research about team sports and problematic substance use.

cannabis use through their influence on affiliation with cannabis-using peers. Shyness affected this risk independently from peer cannabis use. Only the pathway from effortful control was associated additionally with the development of regular cannabis use (OR = 0.93, 95% CI = 0.89-0.98). **Conclusions:** Peer cannabis use and, to a lesser extent, certain temperamental characteristics affect an adolescent's risk of cannabis use, and should be considered in prevention programmes. We recommend future research to focus upon factors that potentially modify the association between temperament, affiliation with cannabis-using peers and cannabis use.

Eisenberg, M. E., Toumbourou, J. W., Catalano, R. F., & Hemphill, S. A. (2014). **Social norms** in the development of adolescent substance use: A longitudinal analysis of the International Youth Development Study. *Journal of Youth and Adolescence*, 43(9), 1486-1497.

Identifying specific aspects of peer social norms that influence adolescent substance use may assist international prevention efforts. This study examines two aggregated measures of social norms in the school setting and their predictive association with substance (alcohol, tobacco and marijuana) use 2 years later in a large cross-national population-based cohort of adolescents. The primary hypothesis is that in Grade 7 both "injunctive" school norms (where students associate substance use with "coolness") and "**descriptive**" norms (where student substance use is common) will predict Grade 9 substance use. Data come from the International Youth Development Study, including 2,248 students (51.2 % female) in the US and Australia attending 121 schools in Grade 7. Independent variables included injunctive norms (aggregating measures of school-wide coolness ratings of each substance use) and descriptive norms (aggregating the prevalence of school substance use) in Grade 7. Dependent variables included binge drinking and current use of alcohol, tobacco and marijuana in Grade 9. Associations between each type of school-wide social norm and substance use behaviors in Grade 9 were tested using multilevel logistic regression, adjusting for covariates. In unadjusted models, both injunctive and descriptive norms each significantly predicted subsequent substance use. In fully adjusted models, injunctive norms were no longer significantly associated with Grade 9 use, but descriptive norms remained significantly associated with tobacco and marijuana use in the expected direction. The findings identify descriptive social norms in the school context as a particularly important area to address in adolescent substance use prevention efforts.

Ferguson, C. J., & Meehan, D. C. (2011). With friends like these: Peer delinquency influences across age cohorts on smoking, alcohol and illegal substance use. *European Psychiatry*, 26(1), 6-12.

Background: Discussions and debate about youth smoking, alcohol use, and illegal substance use (collectively referred to as youth substance use) continue to receive wide attention among researchers, policymakers, and the general public. Previous research has suggested that peer delinquency is a particularly strong correlate of youth substance use. The current study focuses on the influence of delinquent peers on substance use, and how peer delinquency influences change across age cohorts of youth. Method: The current study examines multiple correlates for youth substance use in a sample of 8,256 youth (mean age 14), with the goal of identifying the influence of delinquent peers across age cohorts while controlling for other correlates. Data was collected from the Ohio version of the Youth Risk Behavior Surveillance System (YRBSS) developed by the Centers for Disease Control. Results: Results from multiple regression analyses identified peer delinquency as the strongest correlate of youth substance use even when other relevant factors related to family, neighborhood, and media use were controlled. Correlations between peer

delinquency and substance use behavior increased across age cohorts and for individuals who first used in middle teen years (13-16) irrespective of current age. Interpretation: Age appears to be a moderating factor regarding the correlation between peer delinquency and youth substance abuse. Primary and secondary prevention and intervention strategies that focus on peers are potentially more likely to reduce youth substance use and improve peer relationships than those focused on other areas such as schools or media.

Jones, J. A. (2015). Risk factors for alcohol abuse among college athletes. *Journal of Clinical Sport Psychology, 9*(1), 76-96.

Self-concept theory was used as a theoretical basis to investigate the utility of social norms alcohol prevention programs for college athletes. The predictive relationship among alcohol use and athletic identity, competitiveness, drinking game participation, and level of sport participation was investigated. Drinking game participation was found to be a significant predictor of total weekly alcohol use above and beyond the other predictors. In addition, organized recreational sport participation was a significant predictor of total binge-drinking episodes. It was demonstrated that individuals not currently participating in sports with an athletic identity in the same range as current athletes consumed alcohol at similar rates to current athletes, thus supporting athletic identity as an alternative way of classifying athlete status when studying alcohol consumption patterns. These results highlight the importance of drinking game participation in the alcohol use of college athletes and the validity of applying self-concept theory to alcohol prevention programs.

Kristjansson, A. L., Sigfusdottir, I. D., & Allegrante, J. P. (2013). Adolescent substance use and peer use: A multilevel analysis of cross-sectional population data. *Substance Abuse Treatment, Prevention, and Policy, 8*.

Background: Limited evidence exists concerning the importance of social contexts in adolescent substance use prevention. In addition to the important role schools play in educating young people, they are important ecological platforms for adolescent health, development and behaviors. In this light, school community contexts represent an important, but largely neglected, area of research in adolescent substance use and prevention, particularly with regard to peer influences. This study sought to add to a growing body of literature into peer contexts by testing a model of peer substance use simultaneously on individual and school community levels while taking account of several well established individual level factors. Method: We analyzed population-based data from the 2009 Youth in Iceland school survey, with 7,084 participants (response rate of 83.5%) nested within 140 schools across Iceland. Multilevel logistic regression models were used to analyze the data. Results: School-level peer smoking and drunkenness were positively related to adolescent daily smoking and lifetime drunkenness after taking account of individual level peer smoking and drunkenness. These relationships held true for all respondents, irrespective of socio-economic status and other background variables, time spent with parents, academic performance, self-assessed peer respect for smoking and alcohol use, or if they have substance-using friends or not. On the other hand, the same relationships were not found with regard to individual and peer cannabis use. Conclusions: The school-level findings in this study represent context effects that are over and above individual-level associations. This holds although we accounted for a large number of individual level variables that studies generally have not included. For the purpose of prevention, school communities should be targeted as a whole in substance use prevention programs in addition to reaching to individuals of particular concern.

Kwan, M., Bobko, S., Faulkner, G., Donnelly, P., & Cairney, J. (2014). **Sport participation** and alcohol and illicit drug use in adolescents and young adults: A systematic review of longitudinal studies. *Addictive Behaviors*, 39(3), 497-506.

Sport participation can play an important and positive role in the health and development of children and youth. One area that has recently been receiving greater attention is the role that sport participation might play in preventing drug and alcohol use among youth. The current study is a systematic review of 17 longitudinal studies examining the relationship between sport participation and alcohol and drug use among adolescents. Results indicated that sport participation is associated with alcohol use, with 82% of the included studies (14/17) showing a significant positive relationship. Sport participation, however, appears to be related to reduced illicit drug use, especially use of non-cannabis related drugs. Eighty percent of the studies found sport participation associated with decreased illicit drug use, while 50% of the studies found negative association between sport participation and marijuana use. **Further investigation revealed that participation in sports reduced the risk of overall illicit drug use, but particularly during high school; suggesting that this may be a critical period to reduce or prevent the use of drugs through sport.** Future research must better understand what conditions are necessary for sport participation to have beneficial outcomes in terms of preventing alcohol and/or illicit drug use. This has been absent in the extent literature and will be central to intervention efforts in this area.

Mason, M. J., Mennis, J., Linker, J., Bares, C., & Zaharakis, N. (2014). Peer attitudes effects on adolescent substance use: The moderating role of race and gender. *Prevention Science*, 15(1), 56-64.

We examined the relationship between adolescents' perceptions of their close friends' attitudes about substance use, and their own use of cigarettes, alcohol, and marijuana. Using data from the 2010 National Survey on Drug Use and Health, a multistage area probability sample sponsored by the Substance Abuse and Mental Health Services Administration (n = 17,865), we tested the direct and moderating effects of subgroups of race and gender on perceptions of adolescents' close friends on past month substance use. Significant effects were found on peer attitudes influencing substance use for all race and gender subgroups. Close friends' attitudes of indifference were associated with increased substance use and disapproval associated with reduced use, controlling for age, income, family structure, and adolescents' own attitudes of risk of substance use. Significant moderating effects of peer attitudes on cigarette and marijuana use were found for both gender and race moderators. Conditional effects of the moderation by race were also examined for gender subgroups. The moderating effect of race on close friends' attitudes impacting cigarette and marijuana use was stronger in magnitude and significance for females compared to males. Female marijuana and cigarette use was more influenced by close friends' attitudes than males, and whites were more influenced by their close friends than Hispanics and blacks. White females are more susceptible to close friends' attitudes on cigarette use as compared to white males and youth of other races. Implications for socially oriented preventive interventions are discussed.

Musher-Eizenman, D. R., Holub, S. C., & Arnett, M. (2003). Attitude and peer influences on adolescent substance use: The moderating effect of age, sex, and substance. *Journal of Drug Education, 33*(1), 1-23.

Many studies have suggested the importance of peer influence and personal attitudes (e.g., expectancies, resistance self-efficacy, and perceived harm) in predicting adolescent use of illegal substances. The present study examined these variables in relation to self-reported use of alcohol, cigarettes, and marijuana for 213 younger adolescents (12-15 years old) and 219 older adolescents (18-22 years old). A series of logistic regressions was performed to assess variables relating to use of each substance by age group and gender. Friends' use was significantly related to substance use for both age groups, both sexes, and all substances examined in this study. Perceived harm was not significantly related to use for any group. Finally, outcome expectancies and resistance self-efficacy were differentially related to use depending on age, gender, and substance. The implications of these findings for prevention programming and future research are also discussed.

Pearson, M., Sweeting, H., West, P., Young, R., Gordon, J., & Turner, K. (2006). Adolescent substance use in different social and peer contexts: A social network analysis. *Drugs: Education, Prevention & Policy, 13*(6), 519-536.

This exploratory study investigates whether associations between social network measures and substance use differ according to type of substance and social context. The analyses use data obtained from 13 and 15 year olds (N = 3146) in a school-based survey and focus on three social network measures: sociometric position (e.g. group, dyad, isolate); popularity (friendship nominations received); and expansiveness (nominations made). The study aims to investigate: (i) the patterning of these social network measures by age, gender and school socioeconomic status (SES); and (ii) their relationships with substance use (current smoking, experience of drugs, alcohol in the previous week). Females and those from higher SES schools were more likely to be in groups, more popular and more expansive. Analyses including all three network measures, together with age, gender and school SES found main effects of sociometric position on smoking (lower than average rates among group members, higher than average for pupils in dyads and among isolates), of popularity on drugs and alcohol (highest levels among the most popular pupils) and of expansiveness on alcohol (highest rates among the most expansive). Interactions between the network measures, age, gender, school SES and substance use were also examined. Results are discussed concerning the use of different substances in relation to the mechanisms of selection and influence (as suggested by sociometric position, popularity and expansiveness) in differing social contexts represented by gender and school SES.

Saint-Jean, G., Martinez, C. A., & Crandall, L. A. (2008). Psychosocial mediators of the impact of acculturation on adolescent substance abuse. *Journal of Immigrant and Minority Health, 10*(2), 187-195.

To identify and evaluate socio-psychological factors that are associated with differences in substance abuse prevalence between non-acculturated and acculturated Florida youth, t-test and logistic regression were utilized to analyze self-reported data from 63,000 middle and high school student participants in the 2004 Florida Youth Substance Abuse Survey. Questionnaire items covered socio-demographics, tobacco, alcohol, and illicit substance use; and perceptions and attitudes toward drug use. The outcome variables were past 30 day use of "any illicit drug." The key independent variable was language used at home (English/Another language). The covariates were 32 socio-psychological factors that are considered risk and protective factors for adolescent drug abuse. Findings support the growing body of evidence suggesting that acculturation status is

a strong predictor of substance use among adolescents. This effect may be mediated principally through the family and peer/individual psychosocial domains. The findings may have important implications for the design and implementation of drug prevention programs targeting teenagers.

Salvy, S.-J., Pedersen, E. R., Miles, J. N. V., Tucker, J. S., & D'Amico, E. J. (2014). Proximal and distal social influence on alcohol consumption and marijuana use among middle school adolescents. *Drug and Alcohol Dependence, 144*, 93-101.

Objectives: This study assesses the independent and combined effects of (1) perceived peer norms, (2) best friend use, and (3) being in the presence of others who use on middle school adolescents' consumption of marijuana and alcohol, and how the effects of these sources of social influence evolve over time as youth progress through middle school. Methods: The analytic sample consisted of 11,667 adolescents (50% female; > 65% Hispanic) in 6th, 7th or 8th grade from 16 middle schools across three school districts in Southern California. Participants were assessed at 5 time points from 2008 to 2011. Results: All sources of social influence were predictive of alcohol and marijuana consumption. As youth grew older, spending time with other adolescents who drink increased adolescents' likelihood of drinking alcohol, whereas perceived norms became less influential. Furthermore, as adolescents spent more time around other youths who drink, the predictive value of perceived norms on alcohol consumption decreased. Similarly, as youth grew older, the influence of best friend's use and spending time with other adolescents who use marijuana remain stable, whereas perceived norms became less influential. Conclusion: Findings suggest that perceived peer norms may be more influential in early adolescence; whereas proximal social determinants (e.g., being in the presence of other peers who consume) become more influential as youth enter middle adolescence. Prevention programs should continue to address misperception of norms with younger adolescents to decrease the chances of initiation, but also utilize strategies such as refusal skills and alternate coping mechanisms for older adolescents.

Snyder, S. M., Gwaltney, A. Y., & Landeck, E. (2015). What social bonds have the greatest influence on patterns of substance use among child-welfare-involved youth? *Journal of Psychoactive Drugs, 47*(4), 308-316.

Child-welfare-involved youth may lack protective social bonds that could reduce their risk of substance use. We investigated whether caregiver, school, or peer bonds predict distinct patterns of substance use among child-welfare-involved youth. The sample included 720 participants in the National Survey of Child and Adolescent Well-Being II. Latent class analysis (LCA) and the three-step approach to incorporate indicator variables onto the latent classes were used. We found the following classes: (1) severe polysubstance use; (2) moderate polysubstance use; and (3) low use. Youth bonded to primary caregivers were less likely to be severe polysubstance drug users, but caregiver bonds did not protect against moderate polysubstance use. School bonds protected against severe polysubstance and moderate polysubstance. Youth bonded to deviant peers were more likely to be in the severe polysubstance use and moderate polysubstance use classes. Interventions targeting child-welfare-involved youth need to account for social bonds' effect on substance use.

Terry-McElrath, Y. M., O'Malley, P. M., & Johnston, L. D. (2011). Exercise and substance use among American youth, 1991–2009. *American Journal of Preventive Medicine, 40*(5), 530-540.

Background: The National Institute on Drug Abuse has called for increased research into the use of physical activity in substance abuse prevention, specifically research into physical activity type

and context. Purpose: This paper examines the relationships between (1) secondary school student substance use and (2) exercise in general and school athletic team participation, and examines such relationships over time. Methods: Nationally representative cross-sectional samples of 8th-, 10th-, and 12th-grade students were surveyed each year from 1991 to 2009. Substance use measures included past 2-week binge drinking and past 30-day alcohol, cigarette, smokeless tobacco, marijuana, and steroid use. Analyses were conducted during 2009–2010. Results: Across grades, higher levels of exercise were associated with lower levels of alcohol, cigarette, and marijuana use. Higher levels of athletic team participation were associated with higher levels of smokeless tobacco use and lower levels of cigarette and marijuana use across grades and to higher levels of high school alcohol and steroid use. Exercise helped suppress the undesired relationship between team participation and alcohol use; exercise and athletic team participation worked synergistically in lowering cigarette and marijuana use. Observed relationships were generally stable across time. Conclusions: There appear to be substantive differences between exercise and team sport participation in relation to adolescent substance use. These findings from cross-sectional data suggest that interventions to improve levels of general physical activity should be evaluated to determine if they help delay or reduce substance use among youth in general as well as among student athletes.

Trudgeon, H., & Evans, D. (2010). Injecting practices and knowledge of the associated risk among 16-19-year-old injecting drug users in Plymouth, UK. *Drugs: Education, Prevention & Policy*, 17(6), 808-820.

There has been significant research into the harms associated with injecting drugs and about the use of needle exchange programmes (NEPs) by adult injecting drug users (IDUs) in the United Kingdom. However, very limited research has been conducted investigating the knowledge, experiences and beliefs of IDUs under 18 years old, who due to their age are denied access to anonymous NEPs. This article reports on a small, exploratory study which examines the injecting practices of 16-19-year-old IDUs from Plymouth, UK. It investigates a range of injecting experiences, such as initiation into drug use, knowledge of harms and harm reduction strategies and the interviewees' perception of such practices. Results are presented from five in-depth semi-structured interviews. Analysis of the data indicated that peers play a significant part in injecting, particularly in terms of initiation and acquired knowledge. Also, it appears that knowledge does not necessarily lead to behaviour change, with some young people choosing to adopt high-risk practices despite knowing the potential consequences. This supports previous study findings in relation to young people's knowledge and associated behaviour, but also highlights the value placed on peers and their influence, particularly during the initial stages of an injecting "career".

Van Ryzin, M. J., & Dishion, T. J. (2014). Adolescent deviant peer clustering as an amplifying mechanism underlying the progression from early substance use to late adolescent dependence. *Journal of Child Psychology and Psychiatry*, 55(10), 1153-1161.

Background: Early substance use co-occurs with youths' self-organization into deviant peer groups in which substance use is central to social interaction. We hypothesized that the social dynamics of deviant peer groups amplify the risk of progressing from early use to later dependence, and that this influence occurs over and above escalations in use that typically accompany early substance use and membership in deviant groups. Methods: Our study used a longitudinal, multimethod dataset consisting of 998 adolescents and their families. Participants were recruited from middle schools in a large metropolitan area in the Pacific Northwest. The sample was 47.3% female and ethnically diverse (42.3% European American, 29.1% African American, and 28.6% other, including biracial). We examined deviant peer clustering as a mediator

between early substance use and later dependence, controlling for proximal levels of use, SES, early antisocial behavior, and parental monitoring. Tobacco, alcohol, and marijuana use were assessed at ages 12, 13, and 16–17. Past-year nicotine, alcohol, and marijuana dependence (DSM-IV) was assessed at age 19. Youth and parent reports and observational data were used to assess deviant peer clustering at age 16–17, and youth reported on antisocial behavior and parental monitoring at ages 12 and 13. Results: Early substance use predicted increased likelihood of dependence on tobacco, alcohol, and marijuana by late adolescence. Deviant peer affiliation mediated these links, even when accounting for proximal levels of substance use. Conclusions: Early substance use not only promotes escalations in use across adolescence but also provides entry into a deviant social context that contributes to increased risk of dependence. Our results emphasize the importance of identifying and intervening in early substance use before it becomes an organizing factor in friendship selection and interaction. Deviant peer clusters are clearly an important avenue for intervention when seeking to interrupt the progression to substance dependence

Veliz, P., McCabe, S. E., & Boyd, C. J. (2015). Extreme binge drinking among adolescent athletes: A cause for concern? *The American Journal on Addictions*.

Background and Objectives Examine the association between adolescent sport participation and extreme binge drinking (10 + drinks) among boys and girls. **Methods** Secondary analysis of the nationally representative 2013 Youth Risk Behavior Survey (n = 13,583). **Results** Boys who participated on sport teams had the greatest odds of engaging in extreme binge drinking. **Discussion and Conclusions** Despite the modest associations found among athletes, boys who participated on multiple sport teams had the greatest odds of engaging in extreme binge drinking. **Scientific Significance** Greater prevention efforts should target multi-sport athletes because they are at greater risk for negative consequences of heavy drinking.

Wambeam, R. A., Canen, E. L., Linkenbach, J., & Otto, J. (2014). Youth misperceptions of peer substance use norms: A hidden risk factor in state and community prevention. *Prevention Science*, 15(1), 75-84.

Effective community prevention of substance abuse involves the integration of policies and programs to address many different risk and protective factors across the social ecology. This study sought to examine whether youth perceptions of peer substance use norms were operating as a risk factor at the same level as other known risk factors in a statewide community prevention effort. Several different analytical techniques were employed to examine the self-reported data from a sample of over 8,000 students in grades 6, 8, 10, and 12 from across Wyoming using a survey based on a risk and protective factor model. The findings of this study revealed that youth misperception of peer substance use norms operate at a level of significance similar to other known risk factors, and these misperceptions are a risk factor that should be measured in order to estimate its relationship with substance use. The measurement of this risk factor has important strategic implications for community prevention.

See also:

- Bahr et al., 2005 (Section 3.2.b.)
- Burdzovic & Pape, 2015 (Section 3.4)
- Kam & Cleaveland, 2011 (Section 3.2.b.)

3.3.c. Community factors and socioeconomic status (16)

Chilenski, S. M., & Greenberg, M. T. (2009). The importance of the community context in the epidemiology of early adolescent substance use and delinquency in a rural sample. *American Journal of Community Psychology, 44*(3-4), 287-301.

Considerable research has demonstrated that substance use and delinquency during early adolescence can have long-term negative health consequences. As the correlates of these behaviors cross levels and contexts, it is likely that a social ecological approach will provide insight to inform community prevention. This approach informs the present study, which focuses on developing a multiple-method measurement strategy to examine associations among community risks, resources, and rates of early adolescent substance use and delinquency in 28 rural and small town communities. Measures include five domains of community risk, four domains of community resources, and population rates of early adolescent substance use and delinquency. Results demonstrated that several measures of context were significantly associated with community rates of adolescent substance use and delinquency, and different risks and resources appear important for different outcomes. Multiple associations were curvilinear, and interactions may also be important. Findings suggest that it may be worthwhile to create and test new intervention strategies that target community factors in the pursuit of prevention.

Cubbin, C., Vesely, S. K., Braveman, P. A., & Oman, R. F. (2011). Socioeconomic factors and health risk behaviors among adolescents. *American Journal of Health Behavior, 35*(1), 28-39.

Objectives: To examine relationships between a wide range of socioeconomic factors, race/ethnicity, and adolescent risk behaviors. Methods: The Youth Asset Study (N = 1111) was used to examine multivariate relationships between sexual initiation, alcohol use, tobacco use, and drug use and 8 socioeconomic factors. Results: Socioeconomic factors beyond income and parental education (eg, wealth) were associated with some health behaviors depending upon gender. However, we did not find that a wider range of factors helped us better understand racial/ethnic disparities. Conclusions: Even the more comprehensive set of socioeconomic factors considered may not accurately capture the underlying construct of adolescent SES.

Curran, E. M. (2007). The relationship between social capital and substance use by high school students. *Journal of Alcohol and Drug Education, 51*(2), 59-73.

Social capital theory suggests that assets inherent in social relations may be used to enhance outcomes for individuals and that youth with increased access to social capital may be less likely to exhibit social and behavioral difficulties. The purpose of this secondary data analysis was to examine the relationship between social capital and substance use by high school students. Results suggest that social capital is a significant contributor to adolescent substance use where increased social capital is associated with decreased alcohol use. Opportunities for schools and communities to invest in strategies that foster the development of social capital and reduce adolescent substance use are discussed.

Furr-Holden, C. D. M., et al. (2015). Neighborhood environment and marijuana use in urban young adults. *Prevention Science*, 16(2), 268-278.

Risk factors for marijuana use in older adolescents and young adults have focused primarily on family environment and peer affiliation. A growing body of work has examined the relationship between environmental context and young adult substance use. This study builds on previous research linking neighborhood environment to young adult marijuana use by exploring two distinct features of neighborhoods, namely the physical (e.g., broken windows) and social environment (e.g., adults watching youth). Data were obtained from a longitudinal sample of 398 predominately African American young adults living in an urban environment. The data also included observational measures of physical and social order and disorder collected on the young adult's residential block. Exploratory structural equation modeling (ESEM) was utilized to test hypothesized relationships between these two features of the neighborhood environment and past year young adult marijuana use. A two-factor model of neighborhood environment with good fit indices was selected (CFI = 0.97, RMSEA = 0.037). There was a positive and significant direct effect from neighborhood physical disorder to marijuana use (0.219, $p < 0.05$) controlling for gender, race, and free and reduced price meal (FARPM) status. The direct effect from neighborhood social environment to marijuana use was not significant. These results converge with previous research linking vacant housing with young adult marijuana use but do not provide empirical support for the neighborhood social environment as a determinant of drug taking. Better explication of the social environment is needed to understand its relationship to drug use.

Humensky, J. L. (2010). Are adolescents with high socioeconomic status more likely to engage in alcohol and illicit drug use in early adulthood? *Substance Abuse Treatment, Prevention, and Policy*, 5.

Background: Previous literature has shown a divergence by age in the relationship between socioeconomic status (SES) and substance use: adolescents with low SES are more likely to engage in substance use, as are adults with high SES. However, there is growing evidence that adolescents with high SES are also at high risk for substance abuse. The objective of this study is to examine this relationship longitudinally, that is, whether wealthier adolescents are more likely than those with lower SES to engage in substance use in early adulthood. Methods: The study analyzed data from the National Longitudinal Survey of Adolescent Health (AddHealth), a longitudinal, nationally-representative survey of secondary school students in the United States. Logistic regression models were analyzed examining the relationship between adolescent SES (measured by parental education and income) and substance use in adulthood, controlling for substance use in adolescence and other covariates. Results: Higher parental education is associated with higher rates of binge drinking, marijuana and cocaine use in early adulthood. Higher parental income is associated with higher rates of binge drinking and marijuana use. No statistically significant results are found for crystal methamphetamine or other drug use. Results are not sensitive to the inclusion of college attendance by young adulthood as a sensitivity analysis. However, when stratifying by race, results are consistent for white non-Hispanics, but no statistically significant results are found for non-whites. This may be a reflection of the smaller sample size of non-whites, but may also reflect that these trends are driven primarily by white non-Hispanics. Conclusions: Previous research shows numerous problems associated with substance use in young adults, including problems in school, decreased employment, increases in convictions of driving under the influence (DUI) and accidental deaths. Much of the previous literature is focused on lower SES populations. Therefore, it is possible that teachers, parents and school administrators in wealthier schools may not perceive as great to address substance abuse

treatment in their schools. This study can inform teachers, parents, school administrators and program officials of the need for addressing drug abuse prevention activities to this population of students.

Lee, R. (2012). Community violence exposure and adolescent substance use: Does monitoring and positive parenting moderate risk in urban communities? *Journal of Community Psychology, 40*(4), 406-421.

This study investigates whether monitoring and positive parenting moderate the relationship between community violence exposure (CVE) and youth substance use. Analyses utilized a subsample (N = 2197) of a cross-sectional, ethnically diverse, urban school district sample. Dependent variables were any past year alcohol or drug use (AOD) and binge drinking. Independent variables were CVE, perceptions of parental monitoring, and positive parenting. Sixty-four percent of the sample witnessed beatings, 16.5% witnessed stabbings or shootings; 45% and 19.5% reported AOD consumption and binge drinking, respectively. After controlling for confounders, logistic regression models indicated that CVE was significantly and positively related to AOD and binge drinking. Parental monitoring was inversely related to AOD and binge drinking. Significant interactions between CVE and parenting variables were not found. Additional research is needed to identify factors at multiple levels of the social ecology that buffer the impact of community violence on adolescent substance use.

✓ Legleye, S., Beck, F., Khlat, M., Peretti-Watel, P., & Chau, N. (2012). The influence of socioeconomic status on cannabis use among French adolescents. *Journal of Adolescent Health, 50*(4), 395-402.

Purpose: To investigate the influence of the family socioeconomic status (F-SES) on various intensities and frequencies of cannabis use in late adolescence. Design/Settings/Participants: Data were obtained from a cross-sectional survey conducted in 2008, which was representative of French youth aged 17 (n = 39,542). Outcomes were overall use (abstinence, lifetime use, 1–9, and 10+ uses in the past year) for all adolescents, and frequent use for those who smoked cannabis at least 10 times in the past year (≤9, 10–19, 20+ uses in the past month). Additionally, cannabis use disorders and heavy use (having smoked at least 4 joints last time) were studied among previous-year users. F-SES was the highest occupational category of both parents (in 7 categories, from managers/professionals [used as the reference category] to inactive/unemployed). Multinomial logistic regressions were computed controlling for gender; other substances use; parental separation; parental use of alcohol, tobacco, and cannabis; housing, being out of school, and sociability. Findings: For overall use, we found a strong positive social gradient: the lower the F-SES or the higher the frequency of use, the lower the odds ratio (OR) (from .85 to .52 for 10+ uses in the past year among farmers). For frequent use, we found a strong negative gradient: the lower the F-SES category, the higher the OR (from 1.02 to 2.05 among inactive/unemployed), and likewise for cannabis use disorder and heavy use (OR = 1.85 and 2.03 among inactive/unemployed). Conclusions: Adolescents from affluent families are more prone to experimentation with cannabis and to use it at low levels but present lower levels of frequent, heavy, or problematic use than those from other SES categories. Mechanisms that hinder transition to intensive use should be investigated.

Mason, M. J. (2010). Mental health, school problems, and social networks: Modeling urban adolescent substance use. *The Journal of Primary Prevention, 31*(5-6), 321-331.

This study tested a mediation model of the relationship with school problems, social network quality, and substance use with a primary care sample of 301 urban adolescents. It was theorized that social network quality (level of risk or protection in network) would mediate the effects of school problems, accounting for internalizing problems and relations with parents, on substance use. Results of path modeling with AMOS showed that the model provided a very good fit to the data and demonstrated partial mediation effects of social network quality on substance use. The standardized mediated effect of school problems on substance use, mediated by social network quality, was 0.13 ($p < .01$, 95% CI [.072, .189]). An effect size measure was applied to determine what proportion of the total effect was mediated by the intervening (social network quality) variable and produced a 0.34 effect size. The results highlight the potential preventive role of social network quality in addressing urban adolescent substance use.

Martino, S. C., Ellickson, P. L., & McCaffrey, D. F. (2008). Developmental trajectories of substance use from early to late adolescence: A comparison of rural and urban youth. *Journal of Studies on Alcohol and Drugs, 69*(3), 430-440.

This study investigated differences in the development of heavy drinking and marijuana use among students in urban and rural areas and assessed whether any such differences can be accounted for by locality differences in racial/ethnic makeup, social disorganization/ low social bonding, feelings of despondency and escapism, and the availability of drugs. Method: Drawn from 62 South Dakota middle schools involved in a drug prevention field trial, participating students were assigned to a locality category based on the location of their seventh-grade school. Schools in metropolitan areas were distinguished from schools in nonmetropolitan areas. Schools in nonmetropolitan areas were further distinguished into those in micropolitan (medium and large towns) and noncore (rural areas without towns and with small towns) areas. We used latent growth curve analysis to model the influence of locality on the development of heavy drinking and marijuana use from ages 13 to 19 and to determine whether differences in development across locality were attributable to location-based differences in race/ethnicity, social disorganization/bonding, feelings of despondency and escapism, and alcohol and marijuana availability. Results: Heavy drinking increased at a faster rate among youth living in micropolitan areas compared with youth living in metropolitan areas. Marijuana use increased at a faster rate among youth living in metropolitan and micropolitan areas compared with youth living in noncore areas. Differences in the rate of change in heavy drinking were attributable to differences in the racial/ethnic composition of metropolitan and micropolitan areas. Differences in the rate of change in marijuana use were attributable to differences in residential instability and marijuana availability. Conclusions: This study underscores the diversity of drug use within rural communities, suggesting that living in a very rural area is protective against some forms of drug use but that living in a rural area that includes a medium or large town is not.

Mayet, A., Legleye, S., Chau, N., & Falissard, B. (2010). The mediation role of licit drugs in the influence of socializing on cannabis use among adolescents: A quantitative approach. *Addictive Behaviors, 35*(10), 890-895.

Licit substance use could be an early stage leading on to cannabis use. The aim of the study was to test a hypothetical sequential process leading from socializing to cannabis use so as to evaluate the mediator role of tobacco and alcohol. Data was derived from a French nationwide survey carried out in 2005 involving 29,393 teenagers aged 17. The analysis used structural

equation modelling. The sequence tested was: socializing with friends—tobacco/alcohol use—cannabis use—cannabis use disorders (CUD). Tobacco and alcohol consumptions appeared to be similarly influenced by the time spent with friends. However, tobacco mediation explained 57% of the sequence leading to cannabis use and 61% of the sequence leading to CUD, while the role of alcohol was weaker, at around 13%. Our results underline the effect of peer influence, in the course of night-out socializing, on substance use among adolescents, and the importance of tobacco mediation in the process leading to cannabis use and misuse. This suggests that prevention in places frequented by adolescents should primarily target tobacco consumption, which explains the largest part of cannabis use variance. However, processes linking substance uses seem to be more complex, with the existence of reverse pathways from cannabis to licit drugs. Thus, the gateway effects of tobacco and alcohol require further exploration in relation to simultaneous polysubstance use.

McCrystal, P., Percy, A., & Higgins, K. (2007). The cost of drug use in adolescence: Young people, money and substance abuse. *Drugs: Education, Prevention & Policy*, 14(1), 19-28.

It is now common for young people in full-time compulsory education to hold part-time jobs. However, while the 1990s experienced a rise in illicit drug use particularly among young people and an increase in the level of interest in identifying factors associated with drug use, little attention has been paid to the influence of the money young people have to spend and its potential links with drug use. Four thousand five hundred and twenty-four young people living in Northern Ireland completed a questionnaire in school year 10 (aged 13/14 years). The findings suggested that there was a positive association between the amount of money young people received (and its source) and higher rates of drug use. The study concludes that money, and how it is spent by young people, may be an important factor for consideration when investigating drug use during adolescence. The findings may help inform drug prevention strategies, particularly through advice on money management, and taking responsibility for their own money.

Redonnet, B., Chollet, A., Fombonne, E., Bowes, L., & Melchior, M. (2012). Tobacco, alcohol, cannabis and other illegal drug use among young adults: The socioeconomic context. *Drug and Alcohol Dependence*, 121(3), 231-239.

Background Low socioeconomic position predicts risk of substance abuse, yet few studies tested the role of preexisting familial and individual characteristics. Methods Data come from the TEMPO (Trajectoires Epidémiologiques en Population) study (community sample in France, 1991–2009, n = 1103, 22–35 years in 2009) set up among offspring of participants of an epidemiological study (GAZEL). Past 12-month substance use was assessed in 2009 by self-completed mail survey: regular tobacco smoking, alcohol abuse (AUDIT), cannabis use, problematic cannabis use (CAST), other illegal drug use. Socioeconomic position was defined by educational attainment, occupational grade, employment stability and unemployment. Covariates included demographics (age, sex, relationship status, parenthood), family background (parental income, parental tobacco smoking, parental alcohol use), and juvenile characteristics (psychological problems, academic difficulties) measured longitudinally. Results 35.8% of study participants were regular smokers, 14.3% abused alcohol, 22.6% used cannabis (6.3% had problematic cannabis use) and 4.1% used other illegal drugs. Except for alcohol abuse, substance use rates were systematically higher in individuals with low, rather than intermediate/high, socioeconomic position (age and sex-adjusted ORs from 1.75 for cannabis use to 2.11 for tobacco smoking and 2.44 for problematic cannabis use). In multivariate analyses

these socioeconomic disparities were decreased, but remained statistically significant (except for illegal drugs other than cannabis). Conclusions Tobacco smoking, alcohol, cannabis and polysubstance use are common behaviors among young adults, particularly those experiencing socioeconomic disadvantage. Interventions aiming to decrease substance abuse and reduce socioeconomic inequalities in this area should be implemented early in life.

Reboussin, B. A., Green, K. M., Milam, A. J., Furr-Holden, D. M., Johnson, R. M., & Jalongo, N. S. (2015). The role of neighborhood in urban Black adolescent marijuana use. *Drug and Alcohol Dependence, 154*, 69-75.

Background: The present study examined the influence of neighborhood factors on transitions in marijuana involvement during adolescence in a sample of primarily low-income, urban Black youth. **Methods:** 556 Black adolescents were interviewed annually beginning in first grade as part of a longitudinal study. Latent class analysis (LCA) was used to examine stages of marijuana involvement from 6th to 9th grades. The influence of neighborhood disorder, drug activity, violent crime, safety and disadvantage on transitions in marijuana involvement was tested using latent transition analysis (LTA). **Results:** There was evidence for three stages of involvement: no involvement, offered, and use and problems. Involvement increased steadily during adolescence with a slightly greater risk to transition from offers to use between 6th and 7th grades. Neighborhood disorder (AOR = 1.04, CI = 1.00, 1.08), drug activity (AOR = 1.12, CI = 1.02, 1.22) and disadvantage (AOR = 1.44, CI = 1.10, 1.92) were associated with the transition from marijuana offers to use and problems. Neighborhood disorder (AOR = 1.07, CI = 1.02, 1.11), drug activity (AOR = 1.19, CI = 1.10, 1.29) and violent crime (AOR = 1.17, CI = 1.03, 1.32) were associated with transitioning rapidly from no involvement to use and problems. **Conclusions:** Understanding how neighborhoods could be organized and provided with supports to discourage marijuana use and promote non-drug using behaviors should be an important goal of any prevention program in low-income, urban Black neighborhoods. Enhancing citizen participation and mobilization to address the social processes of neighborhood disorder has the potential to reduce marijuana involvement in these neighborhoods.

Sutherland, A. (2012). Is parental socio-economic status related to the initiation of substance abuse by young people in an English city? An event history analysis. *Social Science & Medicine, 74*(7), 1053-1061.

This paper aims to examine the relationship between parental socio-economic status (SES) and adolescent substance use. The central question posed in the title is approached in two stages. First, theoretical and empirical research in this area is reviewed. Second, data from an ongoing longitudinal study of young people in England (the Peterborough Adolescent and Young Adult Development Study – PADS+) are used to highlight the nature of this relationship in one city. Results from discrete-time event history analyses show that when examining what predicts initiation of substance use, familial and demographic factors emerge as important predictors, but SES does not appear to be relevant. The concluding discussion focuses on whether support is found for hypotheses derived from the existing literature and implications for future research.

Tobler, A. L., Komro, K. A., Dabroski, A., Aveyard, P., & Markham, W. A. (2011). Preventing the link between SES and high-risk behaviors: 'Value-added' education, drug use and delinquency in high-risk, urban schools. *Prevention Science, 12*(2), 211-221.

We examined whether schools achieving better than expected educational outcomes for their students influence the risk of drug use and delinquency among urban, racial/ethnic minority youth. Adolescents (n = 2,621), who were primarily African American and Hispanic and enrolled in Chicago public schools (n = 61), completed surveys in 6th (aged 12) and 8th (aged 14) grades. Value-added education was derived from standardized residuals of regression equations predicting school-level academic achievement and attendance from students' sociodemographic profiles and defined as having higher academic achievement and attendance than that expected given the sociodemographic profile of the schools' student composition. Multilevel logistic regression estimated the effects of value-added education on students' drug use and delinquency. After considering initial risk behavior, value-added education was associated with lower incidence of alcohol, cigarette and marijuana use; stealing; and participating in a group-against-group fight. Significant beneficial effects of value-added education remained for cigarette and marijuana use, stealing and participating in a group-against-group fight after adjustment for individual- and school-level covariates. Alcohol use (past month and heavy episodic) showed marginally significant trends in the hypothesized direction after these adjustments. Inner-city schools may break the links between social disadvantage, drug use and delinquency. Identifying the processes related to value-added education in order to improve school environments is warranted given the high costs associated with individual-level interventions.

Wray-Lake, L., Maggs, J. L., Johnston, L. D., Bachman, J. G., O'Malley, P. M., & Schulenberg, J. E. (2012). Associations between community attachments and adolescent substance use in nationally representative samples. *Journal of Adolescent Health, 51*(4), 325-331.

Purpose: Social capital and social attachment theories of substance use argue that positive bonds to society and the conventional values they promote deter adolescents from substance use. Using nationally representative samples of U.S. high school seniors, we hypothesized that adolescents' community attachments, measured by social trust, social responsibility, and religiosity, would be negatively associated with lifetime and 30-day substance use. **Method:** We used repeated cross-sectional nationally representative high school senior data from 1976 to 2008 Monitoring the Future Study cohorts (weighted N = 64,246; 51.6% female). Participation rate ranged from 77% to 86% across years. A series of multiple linear and logistic regressions examined unique associations of adolescents' social trust, social responsibility, and religiosity with lifetime and 30-day use of cigarettes, alcohol, marijuana, hallucinogens, cocaine, amphetamines, barbiturates, tranquilizers, and narcotics. Models controlled for gender, race, college aspirations, high school grades, parents' education, and survey year. **Results:** Social trust, social responsibility, and religiosity showed independent negative associations with use of cigarettes, alcohol, marijuana, and six other types of drugs. After accounting for controls, community attachments related to lower lifetime and past 30-day use. Associations were consistent across measures, except social responsibility was not associated with binge drinking or lifetime illicit drugs besides marijuana. **Conclusions:** Study strengths included nationally representative samples, diverse substance use measures, and inclusion of controls. We extend theory by suggesting that distinct aspects of adolescents' community attachments uniquely relate to lower substance use. Results suggest potential public health benefits of integrating promotion of community attachments with substance use prevention.

3.4. Studies of multiple concomitant factors (30)

Abadi, M. H., Shamblen, S. R., Thompson, K., Collins, D. A., & Johnson, K. (2011). Influence of risk and protective factors on substance use outcomes across developmental periods: A comparison of youth and young adults. *Substance Use & Misuse, 46*(13), 1604-1612.

Data were collected from samples of youth (ages 11–18; N = 38,268) and young 10 adults (ages 18–24; N = 602) across 30 Tennessee counties using surveys and telephone interviews conducted in 2006–2008. Data were analyzed using hierarchical nonlinear modeling to determine: (1) which risk and protective factors predicted alcohol and marijuana use, and (2) whether predictors differed as a function of developmental period. Findings provide preliminary evidence that prevention efforts need to take into consideration the changing environment and related influences as youth age, especially as they move from a more protected community environment to one where they live somewhat independently. Implications and limitations are discussed.

Agrawal, A., Silberg, J. L., Lynskey, M. T., Maes, H. H., & Eaves, L. J. (2010). Mechanisms underlying the lifetime co-occurrence of tobacco and cannabis use in adolescent and young adult twins. *Drug and Alcohol Dependence, 108*(1–2), 49-55.

Using twins assessed during adolescence (Virginia Twin Study of Adolescent Behavioral Development: 8–17 years) and followed up in early adulthood (Young Adult Follow-Up, 18–27 years), we tested 13 genetically informative models of co-occurrence, adapted for the inclusion of covariates. Models were fit, in Mx, to data at both assessments allowing for a comparison of the mechanisms that underlie the lifetime co-occurrence of cannabis and tobacco use in adolescence and early adulthood. Both cannabis and tobacco use were influenced by additive genetic (38–81%) and non-shared environmental factors with the possible role of non-shared environment in the adolescent assessment only. Causation models, where liability to use cannabis exerted a causal influence on the liability to use tobacco fit the adolescent data best, while the reverse causation model (tobacco causes cannabis) fit the early adult data best. Both causation models (cannabis to tobacco and tobacco to cannabis) and the correlated liabilities model fit data from the adolescent and young adult assessments well. Genetic correlations (0.59–0.74) were moderate. Therefore, the relationship between cannabis and tobacco use is fairly similar during adolescence and early adulthood with reciprocal influences across the two psychoactive substances. However, our study could not exclude the possibility that ‘gateways’ and ‘reverse gateways’, particularly within a genetic context, exist, such that predisposition to using one substance (cannabis or tobacco) modifies predisposition to using the other. Given the high addictive potential of nicotine and the ubiquitous nature of cannabis use, this is a public health concern worthy of considerable attention.

Boys, A., Marsden, J., Fountain, J., Griffiths, P., Stillwell, G., & Strang, J. (1999). What influences young people's use of drugs? A qualitative study of decision-making. *Drugs: Education, Prevention & Policy, 6*(3), 373-387.

Examined the motivating factors that shape the decisions young people make to use drugs or alcohol. Results are presented from in-depth interviews conducted with 50 16-21 yr olds. Analysis reveal individual-level influences (the perceived functions of drug use (or specific purpose for using a particular substance), drug-related expectancies, physical/psychological state, commitments, and

boundaries) and social/contextual-level influences (environment, availability, finance, friends/peers, and media) on decision-making. Of these, the perceived function for using a particular substance was identified as particularly influential.

Burdzovic Andreas, J., & Pape, H. (2015). Who receives cannabis use offers: A general population study of adolescents. *Drug and Alcohol Dependence*.

Background: Drug use is predicated on a combination of “willingness” and “opportunity”. That is, independent of any desire to use drugs, a drug use opportunity is required; be it indirect (i.e., being in a drug-use setting) or direct (i.e., receiving a direct drug offer). However, whether some youth are more likely to encounter such direct drug use opportunities is not fully known. AIMS: We examined whether certain characteristics placed adolescents at greater risk for being offered cannabis, after accounting for a number of demographic-, contextual-, interpersonal-, and personal-level risk factors. METHODS: We utilized data from a Norwegian school survey (n=19,309) where the likelihood of receiving cannabis offer in the past year was estimated using logistic regression models. Substantive focus was on the individual and combined effects of personal (i.e., delinquency) and interpersonal (i.e., cannabis-using close friend) risk factors. Separate models were fit for middle- and high-school students. RESULTS: Delinquency was a significant risk factor for receiving cannabis offers, as was a cannabis-using best friend. In addition, peer cannabis use increased the risk of cannabis offers mostly for adolescents on the lower delinquency spectrum, but less so for highly delinquent adolescents. These interaction effects were primarily driven by the middle-school cohort. CONCLUSIONS: Cannabis offers were more likely to be extended to youth of certain high-risk profiles. Targeted prevention strategies can therefore be extended to a general profile of younger adolescents with externalizing problems and cannabis-using peers.

Case, S., & Haines, K. (2003). Promoting Prevention: Preventing youth drug use in Swansea, UK, by targeting risk and protective factors. *Journal of Substance Use*, 8(4), 243-251.

The multi-agency, multiple-intervention Promoting Prevention initiative aims to prevent drug use and youth offending in Swansea. It was evaluated using a computer-based interactive questionnaire with 580 young people aged 11-18 years. Results indicate that exposure to risk factors within the main domains of the young person's life (family, school, neighbourhood, psychological) significantly increases the likelihood that they will ever become involved in drug use ('ever takers'), whilst ever takers are three times more likely to offend than young people who have never taken an illicit drug ('never takers'). The evaluation indicates that Promoting Prevention's cross-cutting, consultative and risk-focused methodology is an effective way of targeting interventions to prevent and reduce drug use among young people in Swansea.

Chen, L.-Y., Crum, R. M., Strain, E. C., Martins, S. S., & Mojtabai, R. (2015). Patterns of concurrent substance use among adolescent nonmedical ADHD stimulant users. *Addictive Behaviors*, 49, 1-6.

Objectives: There are growing concerns about nonmedical use of ADHD stimulants among adolescents; yet, little is known whether there exist heterogeneous subgroups among adolescents with nonmedical ADHD stimulant use according to their concurrent substance use. Methods: We used latent class analysis (LCA) to examine patterns of past-year problematic substance use (meeting any criteria for abuse or dependence) in a sample of 2203 adolescent participants from the National Surveys on Drug Use and Health 2006–2011 who reported past-year nonmedical use of ADHD stimulants. Multivariable latent regression was used to assess the

association of socio-demographic characteristics, mental health and behavioral problems with the latent classes. Results: The model fit indices favored a four-class model, including a large class with frequent concurrent use of alcohol and marijuana (Alcohol/marijuana class; 41.2%), a second large class with infrequent use of other substances (Low substance class, 36.3%), a third class characterized by more frequent misuse of prescription drugs as well as other substances (Prescription drug +class; 14.8%), and finally a class characterized by problematic use of multiple substances (Multiple substance class; 7.7%). Compared with individuals in Low substance class, those in the other three classes were all more likely to report mental health problems, deviant behaviors and substance abuse service use. Conclusions: Adolescent nonmedical ADHD stimulants users are a heterogeneous group with distinct classes with regard to concurrent substance use, mental health and behavioral problems. The findings have implications for planning of tailored prevention and treatment programs to curb stimulant use for this age group.

Epstein, M., et al. (2015). Trajectories of marijuana use from adolescence into adulthood: Environmental and individual correlates. *Developmental Psychology*, 51(11), 1650-1663.

This study sought to identify trajectories of marijuana use in the Seattle Social Development Project (n = 808) sample from age 14 through 30, and to examine the extent to which individuals in these trajectories differed in their substance use problems, mental health, problem behavior, economic outcomes, and positive functioning at age 33. In addition, analyses examined between-trajectory differences in family, peer, school, neighborhood, individual, mental health, and substance use factors at key developmental points in adolescence and adulthood. Four trajectories of marijuana use were identified: nonusers (27%), adolescent-limited (21%), late-onset (20%), and chronic (32%) users. At age 33, the chronic trajectory was associated with the worst functioning overall. The late-onset group reported more substance use and sexual risk behavior than nonusers, but was otherwise not differentiated. The adolescent-limited group reported significantly lower educational and economic outcomes at age 33 than the late-onset and nonuser groups. In analyses at earlier ages, adolescent-limited and late-onset groups reported more problems in functioning during the period of escalation in use and improvement in functioning with the beginning of desistance. Implications for prevention are discussed, particularly the unique risks associated with early adolescent versus later onset of marijuana use.

Fearnow-Kenney, M., Hansen, W. B., & McNeal, R. B., Jr. (2002). Comparison of psychosocial influences on substance use in adolescents: Implications for prevention programming. *Journal of Child & Adolescent Substance Abuse*, 11(4), 1-24.

This paper compares the potential for twelve psychosocial variables to act as change agents (mediators) in substance use prevention programs. A sample (N = 4,412) of students in grades six through eleven were surveyed during two consecutive years of a longitudinal study. A five-factor model of psychosocial influences was used to predict subsequent alcohol, cigarette, and marijuana use. Structural equation modeling revealed that a factor labeled Drug Attitudes most consistently related to decreased future use of all three substances. The four variables composing this factor were beliefs about consequences, normative beliefs, lifestyle incongruence, and commitment. In several cases, current use mediated the relationship between a mediator factor and future use. Relationships between psychosocial factors and substance use varied little across age groups (middle school vs. high school students). Some effects were substance-specific. Implications for substance use prevention programming are discussed.

Grigsby, T. J. H., Forster, M., Soto, D. W., Baezconde-Garbanati, L., & Unger, J. B. (2014). Problematic substance use among Hispanic adolescents and young adults: Implications for prevention efforts. *Substance Use & Misuse, 49*(8), 1025-1038.

Using data collected between 2005 and 2012 from a longitudinal study of acculturation patterns and substance use among Hispanic youth in Southern California (N = 2722), we fit multivariate logistic regression models to estimate the association of type and frequency of drug use, friend and parent drug use, cultural orientation (measured by the ARSMA-II), and psychological distress (CES-D score) in 10th grade with problematic substance use (measured with the RAPI) in (i) 11th grade and (ii) young adulthood. We conclude that future intervention efforts with Hispanic adolescents and young adults should target polysubstance and problem users and emphasize inter-individual, structural, and cultural processes as they relate to problematic substance use.)

Guo, J., Hill, K. G., Hawkins, J. D., Catalano, R. F., & Abbott, R. D. (2002). A developmental analysis of sociodemographic, family and peer effects on adolescent illicit drug initiation. *Journal of the American Academy of Child & Adolescent Psychiatry, 41*(7), 838-845.

Examined the effects of sociodemographic, family, and peer predictors on the developmental patterns of illicit drug initiation from ages 12 to 21 years. A gender-balanced, ethnically diverse urban sample of 808 children in Seattle was surveyed at age 10 in 1985 and followed prospectively to age 21 in 1996. Discrete-time survival analysis was used to assess the effects of sociodemographic, family, and peer factors on the risk of initiation. The risk for initiating illicit drug use increased steadily from ages 12 to 21. High family conflict, low family bonding, and high peers' antisocial activities predicted higher risk of initiation across this developmental period. The effect of family bonding began to decline after age 18, while the effect of peers' antisocial activities began to increase after age 15. Few gender and ethnic differences were found. Prevention programs need to include family and peer factors as important targets. Parents should create a warm and supportive family environment with appropriate supervision and control throughout adolescence. Association with antisocial peers should be reduced, especially in high school. Interventions addressing these family and peer factors should have beneficial effects across gender and ethnic groups.

Isralowitz, R., & Reznik, A. (2006). Brief Report: Binge drinking among high-risk male and female adolescents in Israel. *Journal of Adolescence, 29*(5), 845-849.

A major factor attributed to the problem and consequences of underage alcohol use is binge drinking. The objective of this study was to examine binge drinking and other alcohol-related problem behaviour among high-risk male and female adolescents who were from alternative schools and programs because of learning and/or behaviour problems. Self-report data were collected from a purposive sample of 917 adolescents in Israel who ranged from 12 to 18 years. Binge drinking during the last 30 days prior to the survey was reported by 33% of males and 23% of females ($p < .001$). Results of other alcohol-related behaviour showed gender status not related to being in a car when the driver had been drinking (12%) or having driven a car or motorcycle after drinking (5%). Multiple regression analysis showed binge drinking related to what a youth does with time; a decline in relations with family members; selling drugs; and, having been in a serious fight during the last 12 months. Country of origin, i.e. born in Israel or the Former Soviet Union, was not found linked to binge drinking. Further research of binge drinking and alcohol-related problem behaviour among high-risk youth is important so that it can be applied to immediate and longstanding prevention efforts.

Johnson, J. L., Evers, K. E., Paiva, A. L., Van Marter, D. F., Prochaska, J. O., Prochaska, J. M., et al. (2006). Prevention profiles: Understanding youth who do not use substances. *Addictive Behaviors, 31*(9), 1593-1606.

This study replicates innovative profiles of prevention among students not using substances but who may be at different risks for acquisition. Using the Transtheoretical Model constructs of Decisional Balance and Temptations, cluster analyses were performed on four independent samples of students (n = 1240) in the USA, England and Israel. For each sample, the same four distinct profiles emerged. ANOVAs indicated that the processes of prevention varied significantly across these profiles. The prevention profiles were extended to youth in Elementary, Middle, and High Schools and from a focus on single substances to multiple substances, including alcohol, tobacco, and illicit drugs. Implications for developing prevention programs are also discussed.

Koutra, K., Kritsotakis, G., Orfanos, P., Ratsika, N., Kokkevi, A., & Philalithis, A. (2014). Social capital and regular alcohol use and binge drinking in adolescence: A cross-sectional study in Greece. *Drugs: Education, Prevention & Policy, 21*(4), 299-309.

Aims: The purpose of this study is to examine the gender-specific associations of different dimensions of individual-level social capital with regular alcohol consumption and binge drinking in 16–17 years old adolescents in Crete, Greece. **Methods:** Of the 835 randomly selected students, 708 completed the Youth Social Capital Scale and the Health Behaviours in School-aged Children (HBSC) questionnaire from April through June 2008 and 650 (92%) were included in this analysis. The outcome of interest was regular alcohol use and binge drinking. A gender specific backward stepwise logistic multivariate regression was performed adjusted for potential confounders. **Findings:** For both boys and girls, higher score on some structural social capital subscales was associated, per unit increase, with increased likelihood of regular drinking. Neighbourhood connections were also associated with increased binge drinking in girls. Cognitive social capital subscales were associated with decreased likelihood of binge drinking in girls. For both genders, total social capital-score was positively associated with the probability of regular, but not of binge drinking. **Conclusions:** Cognitive and structural social capital dimensions have different patterns of association with regular and binge alcohol use in adolescent boys and girls. Social capital's dimensions should receive greater emphasis for the design of effective preventive interventions in adolescence, particularly in the light of an increasing prevalence of alcohol consumption in modern societies.

Lamont, A., Woodlief, D., & Malone, P. (2014). Predicting high-risk versus higher-risk substance use during late adolescence from early adolescent risk factors using latent class analysis. *Addiction Research & Theory, 22*(1), 78-89.

Much of the existing risk factor literature focuses on identifying predictors of low levels of substance use versus higher-levels of substance use. In this article, we explore more nuanced patterns of alcohol, tobacco and other drug (ATOD) use during late adolescence. Our aims were to: (1) identify subgroups of youth with qualitatively different patterns of ATOD use and (2) explore whether membership among qualitatively distinct, high-risk classes could be predicted based on early adolescent risk factors. Data came from a selected subsample of the National Longitudinal Survey of Youth (n = 1689). Predictors were measured when youth were about 12 years old; ATOD use was assessed when youth were aged 17 years. Results showed that adolescent ATOD use is not a homogenous behavior. Four distinct classes of adolescent ATOD

users were derived. Each class had a qualitatively distinct and discriminable pattern of ATOD use. Ecological predictors were shown to differentiate between latent classes, with peer factors playing a particularly important role in differentiating between high-risk and higher-risk users. Implications for prevention and limitations are discussed.

Lee, C.-Y. S., Winters, K. C., & Wall, M. M. (2010). Trajectories of substance use disorders in youth: Identifying and predicting group memberships. *Journal of Child & Adolescent Substance Abuse, 19*(2), 135-157.

This study used latent class regression to identify latent trajectory classes based on individuals' diagnostic course of substance use disorders (SUDs) from late adolescence to early adulthood as well as to examine whether several psychosocial risk factors predicted the trajectory class membership. The study sample consisted of 310 individuals originally recruited as children in a long-term prospective study. Diagnoses of alcohol or cannabis use disorders (abuse or dependence) were assessed when individuals were 18 (T1), 20 (T2), and 22 (T3) years old. The results showed that two trajectory classes were identified for both alcohol and cannabis use disorder cases and that the trajectory class membership was predicted by being male, dropping out of high school, receiving a diagnosis of CD or ODD in childhood, having an early age of onset of alcohol or cannabis use, previously using illicit drugs other than cannabis, and the number of risk factors an individual is exposed to. Prevention work should focus on the individuals exposed to these risk factors previously to decrease their likelihood of transition from drug use or single diagnosis to repeated diagnosis during the early years of emerging adulthood.

Martins, S. S., Storr, C. L., Alexandre, P. K., & Chilcoat, H. D. (2008). Adolescent ecstasy and other drug use in the National Survey of Parents and Youth: The role of sensation-seeking, parental monitoring and peer's drug use. *Addictive Behaviors, 33*(7), 919-933.


The association between high sensation-seeking, close friends' drug use and low parental monitoring with ecstasy (MDMA) use in adolescence was examined in a sample of US household-dwelling adolescents aged 12-18 years (N = 5049). We also tested whether associations were of stronger magnitude than associations between these correlates and marijuana or alcohol/tobacco use in adolescence. Data from Round 2 of the National Survey of Parents and Youth (NSPY) Restricted Use Files (RUF) was analyzed via Jackknife weighted multinomial logistic regression models. High sensation-seekers were more likely to be ecstasy, marijuana, and alcohol/tobacco users, respectively, as compared to low sensation-seekers. High sensation-seeking and close friends' drug use were more strongly associated with ecstasy as compared to marijuana and alcohol/tobacco use. Low parental monitoring was associated with marijuana use and alcohol/tobacco use and there was a trend for it to be associated with ecstasy use. Ecstasy use is strongly associated with peer drug use and more modestly associated with high sensation-seeking. School prevention programs should target high-sensation-seeking adolescents and also encourage them to affiliate with non-drug using peers.

Mayock, P. (2005). 'Scripting' risk: Young people and the construction of drug journeys. *Drugs: Education, Prevention & Policy, 12*(5), 349-368.

The concept of risk, and its centrality to social life, is theoretically much discussed within late modernity. This paper examines young people's drug use and their drug transitions within a framework of risk drawing on findings from a longitudinal ethnographic study of drug use among young people in a Dublin inner-city community. Fifty-seven young people aged between 15 and 19

years, including non-users, recreational, and problematic drug users, were recruited into the study in 1998. Contact was re-established with 42 of the study's participants in 2001. Individual interviews and focus group discussions, supported by prolonged participation within the study site, were the primary methods of data collection. Drawing on the young people's situated accounts of their drug-taking events, routines, and practices across time, the findings highlight the complex social negotiations involved in the construction of drug journeys. Analyses of change in drug use behaviour over the study period demonstrate that drug transitions unfold alongside dynamic and changing perceptions of safety and risk. Responses to 'risk' within youth drug scenes were contextually shaped, open to situational revision over time, and, in many instances, drug taking was habitual, not calculated. Put differently, young people 'script' risk as they gain experience in the world. The type of calculus involved in the making of drug journeys is fluid and relational, socially contingent rather than static, and subject, at times, to constrained agency linked to social and economic marginalization. It is argued that models of risk that rely on individualistic and rationalistic assumptions struggle to accommodate the fluidity and contradiction that characterizes much drug use. Implications for strategies and initiatives aimed at reducing drug-related harm are discussed.

Nargiso, J. E., Ballard, E. L., & Skeer, M. R. (2015). A systematic review of risk and protective factors associated with nonmedical use of prescription drugs among youth in the United States: A social ecological perspective. *Journal of Studies on Alcohol and Drugs*, 76(1), 5-20.

Objective: The purpose of this study was to identify the strongest and most consistent risk and protective factors associated with nonmedical use of prescription drugs (NMUPD) in multiple contexts, specifically in community-, school-, interpersonal-, and individual-level domains. 

Method: A literature search was conducted to review studies published from 2006 to 2012 that examined NMUPD among adolescents. Included were original research studies that focused specifically on risk and protective factors or review articles that included a section on factors associated with NMUPD. Risk and protective factors were included only if a minimum of two methodologically sound research studies reviewed the variable. Results: A variety of risk and protective factors were associated with adolescent NMUPD. At the community level, evidence suggested that ease of access increased the risk of NMUPD. Parental and peer prescription drug use and approval of NMUPD were associated with misuse of prescription drugs within the interpersonal domain. At the school level, academic failure/low educational attainment was associated with high school student NMUPD. However, results for college students' academic failure and NMUPD were inconclusive. At the individual level, previous use of substances was found to be a significant risk factor for NMUPD, as was adolescent aggressive/delinquent behavior and greater perceived risk or harm of use. **Conclusions: NMUPD is a serious concern among adolescents and emerging adults. Several areas exist for prevention efforts within the context of the community, school, interpersonal, and individual domains. Thus, to curb NMUPD, multifaceted approaches are needed that target factors across multiple domains.**

Patrick, M. E., O'Malley, P. M., Kloska, D. D., Schulenberg, J. E., Johnston, L. D., Miech, R. A., & Bachman, J. G. (2015). Novel psychoactive substance use by us adolescents: Characteristics associated with use of synthetic cannabinoids and synthetic cathinones. *Drug and Alcohol Review*.

Introduction and Aims: The current study documents the characteristics associated with the use of two novel psychoactive substances: synthetic cannabinoids and synthetic cathinones. Design and Methods: Nationally representative samples of students in 8th (n = 9665), 10th (n = 10 655) and 12th (n = 10 057) grades across the US were included in the Monitoring the Future study from 2012 to 2014. Results: There were relatively few differences in prevalence based on

sociodemographic characteristics, although boys were at greater risk for use of synthetic cannabinoids in 12th grade (used by 10.3% of boys and 6.4% of girls) and for use of synthetic cathinones in 10th grade (used by 1.0% of boys and 0.4% of girls). Synthetic drug use was also associated with truancy and use of cigarettes, alcohol, and marijuana. Discussion and Conclusions Prevention and intervention efforts for novel psychoactive substance use should focus primarily on polysubstance users and youth who are disengaged from school.

Ragsdale, K., Porter, J. R., Mathews, R., White, A., Gore-Felton, C., & McGarvey, E. L. (2012). 'Liquor before beer, you're in the clear': Binge drinking and other risk behaviours among fraternity/sorority members and their non-Greek peers. *Journal of Substance Use, 17*(4), 323-339.

Objective: To examine “college drinking culture” and explore alcohol use and other variables among a sample of US college students. Methods: Bivariate crosstabulation and logistic regression analyses were used to examine associations between alcohol use, gender, Greek membership and risk behaviours among a random sample of 823 undergraduates who completed a health behaviour survey. Results: Respondents who binged were significantly more likely to be male and belong to a fraternity/ sorority. Fraternity bingers were significantly more likely to engage in physical fights ($p < 0.05$) than non-Greek male bingers. Sorority bingers were significantly more likely to be injured ($p < 0.01$), drive under the influence of alcohol (DUI) ($p < 0.001$), be sexually victimised ($p < 0.01$) and engage in unwanted sex ($p < 0.05$) than non-Greek female bingers. Fraternity members who binged frequently (≥ 3 times in 2 weeks) were significantly more likely to DUI ($p < 0.01$) and engage in unprotected sex ($p < 0.05$) than were those who binged intermittently. Sorority members who binged frequently were significantly more likely to DUI ($p < 0.05$) than were those who binged intermittently. Conclusion: Prevention efforts likely to be effective in changing binge drinking among college students should be gender specific, consider peer drinking norms, target “windows of risk” and be tailored to the campus’ culture of drinking.

Sale, E., Sambrano, S., Springer, J. F., & Turner, C. W. (2003). Risk, protection, and substance use in adolescents: A multi-site model. *Journal of Drug Education, 33*(1), 91-105.

This article reports findings from a national longitudinal cross-site evaluation of high-risk youth to clarify the relationships between risk and protective factors and substance use. Using structural equation modeling, baseline data on 10,473 youth between the ages of 9 and 18 in 48 high-risk communities around the nation are analyzed. Youth were assessed on substance use (cigarette, alcohol, and marijuana use), external risk factors including family, school, peer and neighborhood influences, and individual risk and protective factors including self-control, family connectedness, and school connectedness. Findings indicate strong direct relationships between peer and parental substance use norms and substance use. Individual protective factors, particularly family and school connectedness were strong mediators of individual substance use. These findings suggest that multi-dimensional prevention programming stressing the fostering of conventional anti-substance use attitudes among parents and peers, the importance of parental supervision, and development of strong connections between youth and their family, peers, and school may be most effective in preventing and reducing substance use patterns among high-risk youth.

Shutay, J. C., Williams, J., & Shutay, R. A. (2011). Predicting conduct disorder, drug use and court involvement for expelled adolescents: Developing theoretically based explanatory models by gender. *Applied Psychology in Criminal Justice*, 7(1), 9-28.

The purpose of this research study was to explore the interactive and unique predictive ability of general strain theory, social control theory and self-control theory on conduct disorder scores as measured by the BASC-2, illicit drug use and court involvement of a sample of expelled adolescents. In addition, this study examined the moderating role of gender with regard to the applicability of the three theories. A clinical and adaptive profile for 267 expelled adolescents was obtained through the collection of BASC-2 data from the students, teachers and parents/guardians. The results of this study indicate that the applicability of GST and SCT depend not only on the gender of the youth, but also on the type of deviant behavior being explained. However, no support for self-control theory was found regardless of the gender of the adolescent or the type of delinquency tested. The implications of these results are discussed along with a potential course of action for prevention and intervention.

Spooner, C., & Hall, W. (2002). Public policy and the prevention of substance-use disorders. *Current Opinion in Psychiatry*, 15(3), 235-239.

Drug prevention has traditionally focused on influencing individual attitudes and behaviours. In particular, efforts have been directed towards adolescents in the school setting. However, evaluations of school-based drug education have identified limited success. There is increasing recognition that drug abuse is one of a number of risk behaviours, including truancy, delinquency and mental health problems, which share common antecedents that begin in the early years of childhood. Furthermore, these behaviours are shaped by macroenvironmental influences including the economic, social, cultural, and physical environment. Drug prevention needs to adopt a broader perspective: with greater collaboration in related programmes such as crime prevention and suicide prevention; with greater attention to the macroenvironmental influences on problem behaviours; and with greater attention to healthy development in the first years of childhood.

Sun, A.-P., Thomas Maurer, A., & Ho, C.-H. (2003). Predictors of college students' binge-drinking: Experience of an Urban university in the Southwest. *Alcoholism Treatment Quarterly*, 21(4), 17-36.

This study explores predictors of college student binge-drinking. Eight hundred and seventy-two students were surveyed using the CORE questionnaire. A stepwise logistic regression model comprising 10 theoretically relevant variables was analyzed. Contrary to the belief of many people, our study found that variables of gender and perception of campus drinking norm were not significant predictors. Six variables survived the logistic regression model in predicting college student binge-drinking: Close friends' disapproval; perception of positive effects of alcohol; with whom they are living; precollege drinking history; marital status; and perception of risks of binge-drinking. Implications for future research and campus substance abuse prevention and intervention are also discussed.

Thompson, E. A., Connelly, C. D., Thomas-Jones, D., & Eggert, L. L. (2013). School difficulties and co-occurring health risk factors: Substance use, aggression, depression, and suicidal behaviors. *Journal of Child and Adolescent Psychiatric Nursing, 26*(1), 74-84.

Problem: Effective prevention requires understanding vulnerable populations, early signs of health risks, and the impact of social contexts. We tested a model of co-occurring mental health risks among at-risk youth experiencing school difficulties. **Methods:** We analyzed data from a random sample of 336 at-risk youth, grades 9–12, who completed a comprehensive risk/protective factors assessment. **Findings:** Simultaneously controlling for correlations among health risks, we observed systematic associations among risk factors, with generally consistent patterns for males and females. **Conclusions:** The findings underscore the importance of developing interventions that incorporate contextual influences and of identifying common adaptable strategies for attenuating co-occurring health risks for at-risk youth.

Tucker, J. S., Ewing, B. A., Miles, J. N. V., Shih, R. A., Pedersen, E. R., & D'Amico, E. J. (2015). Predictors and consequences of prescription drug misuse during middle school. *Drug and Alcohol Dependence, 156*, 254-260.

Objectives: Non-medical prescription drug use (NMPDU) is a growing public health problem among adolescents. This is the first study to examine the correlates of early NMPDU initiation during middle school, and how early initiation is associated with four domains of functioning in high school (mental health, social, academic, and delinquency). **Methods:** Students initially in 6th–8th grades from 16 middle schools completed in-school surveys between 2008 and 2011 (Waves 1–5), and a web-based survey in 2013–2014 (Wave 6). We used discrete time survival analysis to assess predictors of initiation from Waves 1 to 5 based on students who provided NMPDU information at any of these waves ($n = 12,904$), and regression analysis to examine high school outcomes associated with initiation based on a sample that was followed into high school, Wave 6 ($n = 2539$). **Results:** Low resistance self-efficacy, family substance use, low parental respect, and offers of other substances from peers were consistently associated with NMPDU initiation throughout middle school. Further, perceiving that more of one's peers engaged in other substance use was associated with initiation at Wave 1 only. By high school, those students who initiated NMPDU during middle school reported lower social functioning, and more suspensions and fighting, compared to students who did not initiate NMPDU during middle school. **Conclusion:** NMPDU initiation during middle school is associated with poorer social functioning and greater delinquency in high school. It is important for middle school prevention programs to address NMPDU. Such programs should focus on both family and peer influences, as well as strengthening resistance self-efficacy.

Vaughan, E. L., Kratz, L. M., Escobar, O. S., & Middendorf, K. G. (2013). Latino subgroup as a moderator of the relationship between language usage and alcohol use in a national sample of Latino emerging adults. *Journal of Latina/o Psychology, 1*(3), 182-194.

Emerging adulthood represents a period of increased risk for alcohol use. For Latino emerging adults, less is known regarding the role cultural variables play in alcohol use behaviors. Research in this area has primarily been conducted using Latino college student samples and/or a single Latino subgroup. This study investigates Latino subgroup as a moderator of the relationship between language usage and alcohol use variables, using a nationally representative sample of

Latino emerging adults from the National Longitudinal Study of Adolescent Health (Add Health). Participants (n = 2,477) identified as Mexican/Mexican American, Cuban/Cuban American, Puerto Rican, or Central/South American/Other Hispanic. Results of regression analyses indicated that gender, education, and language usage have a differential impact on alcohol use and binge drinking behaviors among individuals from different Latino subgroups. Implications for future research and alcohol prevention are discussed.

Viana, A. G., Trent, L., Tull, M. T., Heiden, L., Damon, J. D., Hight, T. L., & Young, J. (2012). Non-medical use of prescription drugs among Mississippi youth: Constitutional, psychological, and family factors. *Addictive Behaviors*, 37(12), 1382-1388.

Objective: The non-medical use of prescription drugs (NMUPD) among youth is a significant public health concern, ranking as the second most frequently used class of drug in youth after marijuana. Given the complex and multiple pathways that may lead to NMUPD in youth, this study examines predictors of NMUPD across constitutional, psychological, and family/peer domains. **Method:** An ethnically diverse sample of 6790 youth in the 6th–12th grades enrolled in public schools throughout Mississippi completed a battery of questionnaires as part of a broader school-based mental health screening initiative in Mississippi (Behavioral Vital Signs Project). **Results:** The lifetime prevalence rate of NMUPD in our sample was 6.5%. Pain medications were the most commonly used (57%), followed by benzodiazepines (44%), prescription stimulants (e.g., Ritalin, Concerta, Focalin, Dexedrine; 37%), SSRIs (29%), and antipsychotics (24%). Almost a quarter of NMUPD youth used these drugs for 10 days or more during the 30-day period prior to completing the survey, and 8% reported daily use. Binary logistic regression analyses revealed that race; grade level; anxiety, mood, and suicide-related symptoms; and substance use involvement significantly increased risk for NMUPD in youth. **Conclusions:** NMUPD among youth is a clinically-relevant and multi-determined phenomenon. Findings from this study identify factors relevant to understanding youth NMUPD and also highlight the need for additional research and targeted prevention and intervention programs for NMUPD among youth.

Wright, D. A., Bobashev, G., & Folsom, R. (2007). Understanding the relative influence of neighborhood, family, and youth and adolescent drug use. *Substance Use & Misuse*, 42(14), 2159-2171.

In the United States, a variety of programs have been developed to prevent substance use among youth. These programs often target youth directly, and may also have components that address the relational influence of families, schools, and communities. We discuss clustering of youth marijuana use within and between households and neighborhoods. As often discussed in the literature, we consider analyzing "components of variance" in a hierarchical sample design with two or more levels. With a continuous outcome variable, the estimated relative size of variance components at each level can be interpreted as its relative "importance." We estimate variance components when the outcome is dichotomous, and find that for the use of marijuana in the past year, the role of the individual (individual adolescent vs. role of household vs. role of neighborhood) is quite prominent (79% of variation). A similar result is observed for the continuous scale variable of individual positive attitudes toward drug use (83%). For continuous constructs related to either household (parental monitoring) or neighborhood (neighborhood disorganization) the majority of variation still occurs at the individual level (67% and 51%, respectively), although they reveal significant percent variation (about 30%) at the corresponding family or neighborhood levels as well. We discuss the use of variance component methodology and the relevance for prevention programs.

Voelkl, K. E., & Frone, M. R. (2000). Predictors of substance use at school among high school students. *Journal of Educational Psychology, 92*(3), 583-592.

Although many studies have examined the predictors of overall substance use among adolescents, few have focused on the high school setting as a specific context for substance use. Therefore, predictors of alcohol and marijuana use at school were examined in a sample of high school students. The general hypotheses were that substance use at school depends on (a) personal predispositions, (b) the situational opportunity for substance use at school, and (c) the interaction of predispositions and opportunity. Several interactions were found suggesting that personal predispositions are more strongly related to substance use at school when students believe they have the opportunity to use alcohol and drugs without getting caught.



Part IV:

Research and Evaluation Methods

Part IV: Research and Evaluation Methods

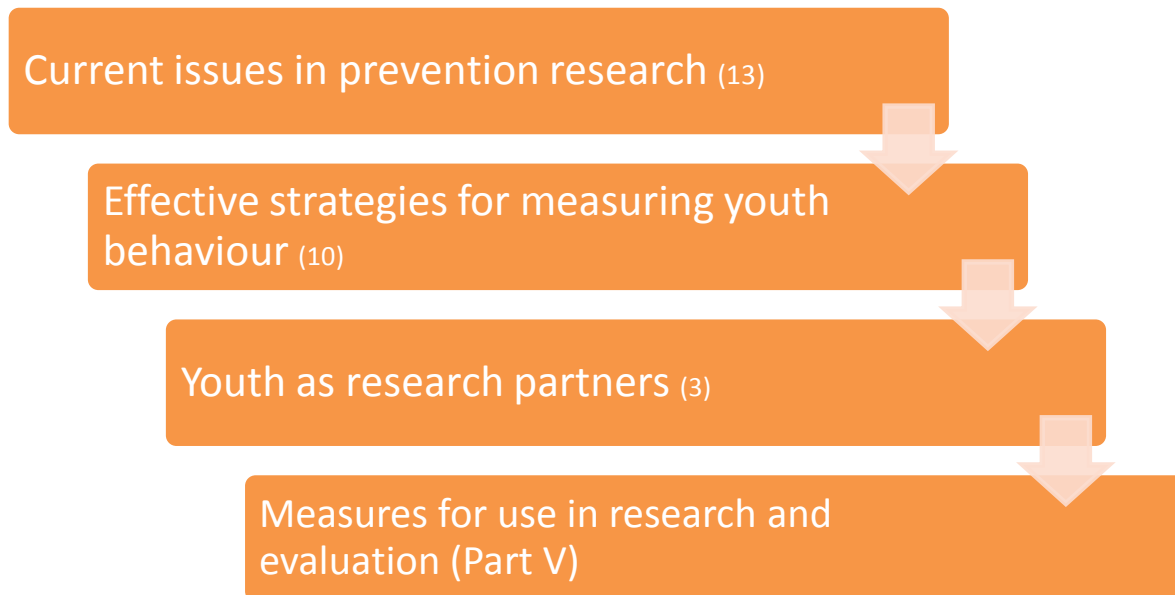


Figure 4: Organization of evaluation methods literature.

4.1. Current issues in substance use prevention research

Birckmayer, J. D., Holder, H. D., Yacoubian, G. S., & Friend, K. B. (2004). A general causal model to guide alcohol, tobacco, and illicit drug prevention: Assessing the research evidence. *Journal of Drug Education, 34*(2), 121-153.

The problems associated with the use of alcohol, tobacco, and other drugs (ATOD) extract a significant health, social, and economic toll on American society. While the field of substance abuse prevention has made great strides during the past decade, two major challenges remain. First, the field has been disorganized and fragmented with respect to its research and prevention practices; that is, there are often separate ATOD prevention "specialists." Second, both the prevention researchers who test the efficacy of specific prevention strategies and the practitioners who implement prevention efforts often lack an overall perspective to guide strategy selection. To address these limitations, an ATOD causal model is presented that seeks to identify those variables (Domains) that are theoretically salient and empirically connected across alcohol, tobacco, and illicit drugs. For the researcher, the model demonstrates important commonalities, as well as gaps, in the literature. For the practitioner, the model is a means to recognize both the complexity of the community system that produces ATOD problems and the multiple intervention points that are possible within this system. Researchers and practitioners are thus challenged to work synergistically to find effective and cost-effective approaches to change or reduce ATOD use and associated problems.

Botvin, G. J., & Griffin, K. W. (2005). Prevention science, drug abuse prevention, and Life Skills Training: Comments on the state of the science. *Journal of Experimental Criminology*, 1(1), 63-78.

There has been tremendous growth in the field of prevention science over the past two decades. The defining features of contemporary prevention science are high quality empirical research using rigorous and well-established scientific methods, careful hypothesis testing, and the systematic accumulation of knowledge. One area where substantial progress has been made is in the understanding of the etiology and prevention of tobacco, alcohol, and illicit drug abuse. In this paper, the authors review the growth in prevention as a scientific enterprise, discuss advances in drug abuse prevention research, and review the effectiveness of one approach to the problem of adolescent drug abuse, the Life Skills Training (LST) program, and the methodological strengths of the LST evaluation research. In addition, the authors provide a response to criticism regarding two types of data analysis in evaluation research--in particular to D. M. Gorman's comments (see record 2006-04207-003) on the current authors' LST research, and show that these data analyses can help address a number of important research questions with implications for theory and practice. First, the analysis of high fidelity subsamples can address research questions about the importance of program implementation fidelity; and second, composite measures of concurrent tobacco, alcohol, and marijuana use (i.e., polydrug use) are useful in testing research questions about program effects on more serious levels of drug involvement. With an increasing number of randomized controlled trials underway, the field of prevention science is contributing to a new generation of evidence-based approaches and policies that, if widely utilized, offer the potential of reducing the mortality and morbidity associated with a number of major health and social problems.

Ferrer-Wreder, L., Cadely, H. S.-E., Domitrovich, C. E., Small, M. L., Caldwell, L. L., & Cleveland, M. J. (2010). Is more better? Outcome and dose of a universal drug prevention effectiveness trial. *The Journal of Primary Prevention*, 31(5-6), 349-363.

Two evidence-based interventions, Life Skills Training and TimeWise, were combined in an effectiveness trial. Participants were predominately African American youth (N = 715; M[_{age}] = 12). The study authors provide an empirical demonstration of the implications of incorporating dosage information in intervention outcome analyses. Study results showed no program-related benefits for drug use. Results indicated intervention-related benefits for assertiveness and anxiety management skills and drug use intentions as well as a reduction in detrimental leisure motivations. High program exposure and lesson coverage tended to be connected to intervention benefits. Study findings also documented ways that dosage information provides insight into interventions and their effects.

✓ Flay, B. R., Biglan, A., Boruch, R. F., Castro, F. G. I., Gottfredson, D., Kellam, S., et al. (2005). **Standards of Evidence: Criteria for Efficacy, Effectiveness and Dissemination.** *Prevention Science*, 6(3), 151-175.

Ever increasing demands for accountability, together with the proliferation of lists of evidence-based prevention programs and policies, led the Society for Prevention Research to charge a committee with establishing standards for identifying effective prevention programs and policies. Recognizing that interventions that are effective and ready for dissemination are a subset of effective programs and policies, and that effective programs and policies are a subset of efficacious interventions, SPR's Standards Committee developed overlapping sets of standards. These Standards were designed to assist practitioners, policy makers, and administrators to determine which interventions are efficacious, which are effective, and which are ready for dissemination. Under these Standards, an efficacious intervention will have been tested in at least two rigorous

trials that (1) involved defined samples from defined populations, (2) used psychometrically sound measures and data collection procedures; (3) analyzed their data with rigorous statistical approaches; (4) showed consistent positive effects (without serious iatrogenic effects); and (5) reported at least one significant long-term follow-up. An effective intervention under these Standards will not only meet all standards for efficacious interventions, but also will have (1) manuals, appropriate training, and technical support available to allow third parties to adopt and implement the intervention; (2) been evaluated under real-world conditions in studies that included sound measurement of the level of implementation and engagement of the target audience (in both the intervention and control conditions); (3) indicated the practical importance of intervention outcome effects; and (4) clearly demonstrated to whom intervention findings can be generalized. An intervention recognized as ready for broad dissemination under these Standards will not only meet all standards for efficacious and effective interventions, but will also provide (1) evidence of the ability to "go to scale"; (2) clear cost information; and (3) monitoring and evaluation tools so that adopting agencies can monitor or evaluate how well the intervention works in their settings. Finally, the Standards Committee identified possible standards desirable for current and future areas of prevention science as the field develops. If successful, these Standards will inform efforts in the field to find prevention programs and policies that are of proven efficacy, effectiveness, or readiness for adoption and will guide prevention scientists as they seek to discover, research, and bring to the field new prevention programs and policies.

Gandhi, A. G., Murphy-Graham, E., Petrosino, A., Chrismer, S. S., & Weiss, C. H. (2007). The Devil Is in the Details: Examining the Evidence for 'Proven' School-Based Drug Abuse Prevention Programs. *Evaluation Review*, 31(1), 43-74.

In an effort to promote evidence-based practice, government officials, researchers, and program developers have developed lists of model programs in the prevention field. This article reviews the evidence used by seven best-practice lists to select five model prevention programs. The authors' examination of this research raises questions about the process used to identify and publicize programs as successful. They found limited evidence showing substantial impact on drug use behavior at posttest, with very few studies showing substantial impact at longer follow-ups. The authors advocate additional long-term follow-up studies and conclude by suggesting changes in the procedures for developing best-practice lists.

Hathaway, A. D., et al. (2010). Whither RDS? An investigation of respondent driven sampling as a method of recruiting mainstream marijuana users. *Harm Reduction Journal*, 7.

Background: An important challenge in conducting social research of specific relevance to harm reduction programs is locating hidden populations of consumers of substances like cannabis who typically report few adverse or unwanted consequences of their use. Much of the deviant, pathologized perception of drug users is historically derived from, and empirically supported, by a research emphasis on gaining ready access to users in drug treatment or in prison populations with higher incidence of problems of dependence and misuse. Because they are less visible, responsible recreational users of illicit drugs have been more difficult to study. Methods: This article investigates **Respondent Driven Sampling (RDS)** as a method of recruiting experienced marijuana users representative of users in the general population. Based on sampling conducted in a multi-city study (Halifax, Montreal, Toronto, and Vancouver), and compared to samples gathered using other research methods, we assess the strengths and weaknesses of RDS recruitment as a means of gaining access to illicit substance users who experience few harmful consequences of their use. Demographic characteristics of the sample in Toronto are compared

with those of users in a recent household survey and a pilot study of Toronto where the latter utilized nonrandom self-selection of respondents. Results: A modified approach to RDS was necessary to attain the target sample size in all four cities (i.e., 40 'users' from each site). The final sample in Toronto was largely similar, however, to marijuana users in a random household survey that was carried out in the same city. Whereas well-educated, married, whites and females in the survey were all somewhat overrepresented, the two samples, overall, were more alike than different with respect to economic status and employment. Furthermore, comparison with a self-selected sample suggests that (even modified) RDS recruitment is a cost-effective way of gathering respondents who are more representative of users in the general population than non-random methods of recruitment ordinarily produce. Conclusions: Research on marijuana use, and other forms of drug use hidden in the general population of adults, is important for informing and extending harm reduction beyond its current emphasis on 'at-risk' populations. Expanding harm reduction in a normalizing context, through innovative research on users often overlooked, further challenges assumptions about reducing harm through prohibition of drug use and urges consideration of alternative policies such as decriminalization and legal regulation.

✓ Holder, H. (2009). Prevention programs in the 21st century: **What we do not discuss in public**. *Addiction*, 105(4), 578-581.

Prevention research concerning alcohol, tobacco and other drugs faces a number of challenges as the scientific foundation is strengthened for the future. Seven issues which the prevention research field should address are discussed: lack of transparency in analyses of prevention program outcomes, lack of disclosure of copyright and potential for profit/income during publication, post-hoc outcome variable selection and reporting only outcomes which show positive and statistical significance at any follow-up point, tendency to evaluate statistical significance only rather than practical significance as well, problem of selection bias in terms of selecting subjects and limited generalizability, the need for confirmation of outcomes in which only self-report data are used and selection of appropriate statistical distributions in conducting significance testing. In order to establish a solid scientific base for alcohol, tobacco and drug prevention, this paper calls for discussions, disclosures and debates about the above issues (and others) as essential. In summary, the best approach is always transparency.

Hüsler, G., Werlen, E., & Rehm, J. (2005). The Action Plan--A New Instrument to Collect Data on Interventions in Secondary Prevention in Adolescents. *Substance Use & Misuse*, 40(6), 761-777.

It is difficult to draw causal conclusions about the effectiveness of secondary prevention programs for adolescents at risk, when the programs use a variety of different interventions. The Action Plan is an instrument that is designed to make collection of such data possible. This allows calculating different kinds of intervention patterns for each participant and program, which, in combination with outcome measures, gives an estimate of successful vs. less successful interventions. The study compared intervention patterns from 12 different sites in a national intervention program in Switzerland. The program, called supra-f (www.supra-f.ch), started in 1999 and will end in 2005. Results are presented from the ongoing study with approximately 600 adolescents. We calculated effect sizes (ES) to compare interventions with outcome measures. Effect sizes (ES) are presented on well being, coping, self-esteem, delinquency, and substance use (cigarettes, alcohol, cannabis) in relation to intervention packages, risk groups (low, moderate, high), and age (two groups: 11-15 and 16-20 years of age) using data collected from 1999-2002.

Macleod, J., Hickman, M., & Smith, G. D. (2005). Reporting bias and self-reported drug use. *Addiction*, 100(4), 562-563.

Percy and colleagues report that 17% of participants reporting cannabis use at recruitment to a large prospective study later denied that they had ever used cannabis. 'Recanting' of reports of use of most other illicit drugs was even higher and the strongest predictor of recanting was interim exposure to drugs education. The authors agree with the suggestion of Fendrich that this casts doubt on the strength of evidence for the effectiveness of most drug prevention interventions. But what these data illustrate is reporting bias, and this has wider implications for epidemiological studies on correlates of illicit drug use--particularly studies on cannabis, usually the only illicit drug whose use is common enough in general population samples for effects to be estimated. Reporting of drug use will be influenced by perceptions of social desirability. Reporting bias can also generate apparently strong and robust effects. What is needed are objective measures--mainly of drug use but also, where possible, of the outcomes drug use may be related to. These measures should be collected alongside self-reports so that effects suggested by both can be compared. Thus, as long as one remains unable to discount the influence of reporting bias on the available evidence of the causes and consequences of illicit drug use the meaning of much of this evidence will remain uncertain.

Mills, J., & Bogenschneider, K. (2001). Can communities assess support for preventing adolescent alcohol and other drug use? Reliability and validity of a community assessment inventory. *Family Relations*, 50(4), 355-375.

This study examines the reliability and validity of the Youth Support Inventory, a tool designed for community coalitions to assess the availability of local resources and supports that previous research indicates are important for preventing adolescent alcohol and other drug use. Citizen members in 17 community coalitions completed the inventory. In tests of validity, a higher score (i.e., more community support) was associated with less adolescent alcohol use. In tests of reliability, the inventory was reduced from 55 to 40 items. Of the prevention strategies identified by the coalition, 94% addressed resources the local assessment indicated were not extensively available in the community.

Percy, A., McAlister, S., Higgins, K., McCrystal, P., & Thornton, M. (2005). Response consistency in young adolescents' drug use self-reports: A recanting rate analysis. *Addiction*, 100(2), 189-196.

Aims: To assess the reliability of drug use reports by young respondents, this study examined the extent of recanting previous drug use reports within an ongoing longitudinal survey of adolescent drug use. Here, recanting was defined as a positive report of life-time drug use that was subsequently denied 1 year later. The covariates of recanting were also studied. Design: An ongoing longitudinal survey of young adolescents (Belfast Youth Development Study) in Northern Ireland. Setting: Pencil and paper questionnaires were administered to pupils within participating schools. Measurements: Measures analysed included (a) recanting rates across 13 substances, (b) educational characteristics, (c) offending behaviour and (d) socioeconomic status. Findings: High levels of drug use recanting were identified, ranging from 7% of past alcohol use to 87% of past magic mushroom use. Recanting increased with the social stigma of the substance used. Denying past alcohol use was associated with being male, attending a catholic school, having positive attitudes towards school, having negative education expectations and not reporting any offending behaviour. Recanting alcohol intoxication was associated with being male and not reporting serious

offending behaviour. Cannabis recanting was associated with having negative education expectations, receiving drugs education and not reporting serious offending behaviour. Conclusions: The high levels of recanting uncovered cast doubts on the reliability of drug use reports from young adolescents. Failure to address this response error may lead to biased prevalence estimates, particularly within school surveys and drug education evaluation trials.

- ✓ Rulison, K. L., Gest, S. D., & Osgood, D. W. (2015). Adolescent peer networks and the potential for the diffusion of intervention effects. *Prevention Science*, 16(1), 133-144.

Many evaluation studies assess the direct effect of an intervention on individuals, but there is an increasing interest in clarifying how interventions can impact larger social settings. One process that can lead to these setting-level effects is diffusion, in which intervention effects spread from participants to non-participants. Diffusion may be particularly important when intervention participation rates are low, as they often are in universal family based prevention programs. We drew on socialization and diffusion theories to articulate how features of peer networks may promote the diffusion of intervention effects. Then, we tested the measurement properties of ten social network analytic (SNA) measures of diffusion potential. Data were from 42 networks ($n = 5,784$ students) involved in the PROSPER intervention trial. All families of sixth-grade students were invited to participate in a family based substance use prevention program, and 17 % of the families attended at least one session. We identified two dimensions of network structure—social integration and location of intervention participants in their peer network—that might promote diffusion. Analyses demonstrated that these SNA measures varied across networks and were distinct from traditional analytic measures that do not require social network analysis (i.e., participation rate, how representative participants are of the broader population). Importantly, several SNA measures and the global network index predicted diffusion over and above the effect of participation rate and representativeness. We conclude by recommending which SNA measures may be the most promising for studying how networks promote the diffusion of intervention effects and lead to setting-level effects.

Sambrano, S., Springer, J. F., Sale, E., Kasim, R., & Hermann, J. (2005). Understanding Prevention Effectiveness in Real-World Settings: The National Cross-Site Evaluation of High Risk Youth Programs. *The American Journal of Drug and Alcohol Abuse*, 31(3), 491-513.

The National Cross-Site Evaluation is a large multisite evaluation (MSB) of 48 substance abuse prevention programs, 5,934 youth participating in programs, and 4,539 comparison youth programs. Data included a self-report questionnaire administered at 4 points in time, detailed dosage data on over 217,000 program contacts, and detailed site visit information. In a pooled analysis, the programs did not demonstrate significant positive effects on a composite outcome measure of tobacco, alcohol, and marijuana use in the previous 30 days. However, disaggregated analyses indicated that 1) sites in which comparison groups had strong opportunity to participate in prevention programs suppressed observed effects; 2) youth who had already started using before they entered programs reduced use significantly more than comparison youth who had started using; and 3) both males and females who participated in programs significantly reduced use relative to comparisons, but in very different patterns. Combining these patterns produced an apparent null effect. Finally, programs that incorporated at least 4 out of 5 effective intervention characteristics identified in the study significantly reduced use for both males and females relative to comparison youth. The lessons produced by this study attest to the value of MSB designs as a source of applicable knowledge about prevention interventions.

4.2. Effective strategies for measuring youth behaviour

Bellamy, N. D., Springer, U. F., Sale, E. W., & Espiritu, R. C. (2004). Structuring a multi-site evaluation for youth mentoring programs to prevent teen alcohol and drug use. *Journal of Drug Education, 34*(2), 197-212.

Despite mentoring's rapidly increasing popularity as an intervention for the prevention of teen alcohol and drug abuse and associated problems, there is little research consensus on its overall effectiveness or on the core principles and components that define effective mentoring. To advance knowledge concerning this important prevention intervention, the Center for Substance Abuse Prevention has designed and funded a multi-site cooperative agreement involving seven mentoring programs. The programs are designed to provide a rigorous outcome evaluation that allows comparisons of differing approaches to organizing and delivering mentoring services to adolescents at high risk for substance abuse. The cooperative agreement guidelines set service parameters and options that focus on issues that are grounded in past research on mentoring prevention interventions. The cooperative agreement includes a quasi-experimental, longitudinal multi-site evaluation that provides evidence-based recommendations to advance the effective use of mentoring as a prevention strategy.

Briney, J. S., Brown, E. C., Hawkins, J. D., & Arthur, M. W. (2012). Predictive validity of established cut points for risk and protective factor scales from the Communities That Care Youth Survey. *The Journal of Primary Prevention, 33*(5-6), 249-258.

Community coalitions are a popular strategy to coordinate activities and resources to prevent adolescent substance use and delinquent behavior. Despite early evidence of their lack of effectiveness, a new generation of community coalitions has shown positive results in preventing youth substance use and delinquency. This success can be attributed to coalition decision making focused on reducing local risk factors and increasing local protective factors through the use of evidence-based prevention programs. A previous study using cross-sectional data established cut point values for scales measuring risk and protective factors on the Communities That Care Youth Survey (CTCYS) to identify high levels of risk and low levels of protection in communities on each scale. The current study extended this previous research by using longitudinal data to assess the validity of risk and protective factor cut point values in predicting substance use and delinquent behavior 1 year after risk and protection were measured. The findings demonstrate the predictive validity of cut points for risk and protective factor scales measured by the CTCYS and suggest their utility in guiding prevention efforts.

Coman, E. N., Lin, C. A., Suggs, S. L., Iordache, E., McArdle, J. J., & Barbour, R. (2014). Altering dynamic pathways to reduce substance use among youth: Changes achieved by dynamic coupling. *Addiction Research & Theory, 22*(6), 505-514.

This study illustrates the modeling of mutual dynamical changes to assess the comparative effectiveness of intervention effects of substance use prevention programs. Youth Action Research for Prevention aimed to improve self-efficacy and strengthen drug prevention skills among African American, Caribbean and Latino youth from high-risk US neighborhoods. Applying the Latent Change Scores dynamical modeling to a four-wave longitudinal data set, we demonstrate that the intervention has spurred a strong dynamic coupling effect between Internal Locus of Control (ILC) and Intent to Use Substances (IUS) in the intervention group ($n_I = 113$), as well as new mutual dynamic links—i.e. changes in ILC causing subsequent IUS changes, and vice versa; these were not manifested in the comparison group ($n_C = 202$). The dynamic models

explain well the wave-like pattern of mutual changes uncovered in the intervention group. Our findings carry strong methodological implications for policy makers, practitioners and addiction researchers alike: dynamic modeling can be critical in uncovering the mechanisms involved in derailing the development of addictions.

Daniulaityte, R., Siegal, H. A., Carlson, R. G., Kenne, D. R., Starr, S., & DeCamp, B. (2004). Qualitative epidemiologic methods can improve local prevention programming among adolescents. *Journal of Alcohol and Drug Education, 48*(2), 73-83.

The Ohio Substance Abuse Monitoring Network (OSAM) is designed to provide accurate, timely, qualitatively-oriented epidemiologic descriptions of substance abuse trends and emerging problems in the state's major urban and rural areas. Use of qualitative methods in identifying and assessing substance abuse practices in local communities is one of the main assets of OSAM Network. Qualitative methods are sensitive to local contextual variability, flexible enough to capture emergent trends, and can be implemented with limited financial resources. This paper describes how qualitative epidemiologic methods, like those used by the OSAM Network, could be applied to inform substance abuse prevention activities, particularly those directed at adolescents.

Donaldson, S. I., Thomas, C. W., Graham, J. W., Au, J. G., & Hansen, W. B. (2000). Verifying drug abuse prevention program effects using reciprocal best friend reports. *Journal of Behavioral Medicine, 23*(6), 585-601.

Considerable research suggests that social influences-based drug abuse prevention programming has produced the most consistently successful preventive effects. However, a common criticism of this literature is that most prevention intervention studies rely solely on self-reported substance use. The purpose of this study was to assess the effects of normative education, arguably the most successful component of social influence based prevention programs, on alcohol and cigarette consumption using both self- and reciprocal best friend reports of substance use. Analyses of subsamples of data from 11,995 8th-, 9th-, and 10th-grade students participating in the Adolescent Alcohol Prevention Trial showed that normative education significantly delayed the onset of alcohol use across the 8th, 9th, and 10th grades among public school students. A similar but somewhat less robust pattern was found for cigarette use. These results suggest that self-report bias does not account for previous findings and demonstrate rather convincingly that normative education is an effective drug prevention strategy for public school settings.

Hopson, L. M., & Steiker, L. K. H. (2008). Methodology for evaluating an adaptation of evidence-based drug abuse prevention in alternative schools. *Children & Schools, 30*(2), 116-127.

The purpose of this article is to set forth an innovative methodological protocol for culturally grounding interventions with high-risk youths in alternative schools. This study used mixed methods to evaluate original and adapted versions of a culturally grounded substance abuse prevention program. The qualitative and quantitative methods concurrently explore behaviors around drugs and alcohol, contextual variables for youth substance abuse and related factors, cultural perspectives regarding drug-related attitudes and behaviors, and the complex reasons behind students' substance use choices. Although questionnaires were used to note demographics, cultural and acculturative variables, drug use, drug and alcohol attitudes and expectancies, and school culture variables, focus groups capture the voices of the students and staff and trends that cannot be fully understood through questionnaires. In this study, focus groups

aid in the understanding of student drug and alcohol choices, attitudes, and behaviors and help the researchers hone in on questions and necessary changes to future research procedures.

Laenen, F. V. (2009). "I don't trust you, you are going to tell", adolescents with emotional and behavioural disorders participating in qualitative research. *Child: Care, Health and Development*, 35(3), 323-329.

Background: Some groups of young people are considered difficult to reach and study. One such group consists of adolescents with emotional and behavioral disorders (EBD), who have problems with verbal intelligence, thought focusing and paying attention. During a 2-year research study into the preferences of adolescents with EBD regarding drug prevention policy, the author examined these young people's opinions and their experience of participation in research. Methods: A qualitative, youth-centred method was used, combining group techniques (focus groups, nominal group techniques and feedback sessions) and involving 160 adolescents, aged 12-21 years, with EBD, living in residential settings of the disability sector. Results: It is possible to carry out qualitative research with young people with EBD. This population is very vulnerable, negatively influenced by their previous experiences and by the social group that they belong to. They have an aversion to 'being studied', and their self-esteem and confidence are low. However, it is possible to build up trust. Conclusions: It has become clear that there is no reason for excluding adolescents with EBD from participation in research. Research is possible and successful, providing sufficient effort is put into building up trust with these emotionally scarred young people.

Liu, L. C., & Flay, B. R. (2009). Evaluating mediation in longitudinal multivariate data: Mediation effects for the Aban Aya Youth Project drug prevention program. *Prevention Science*, 10(3), 197-207.

This study illustrates a method to evaluate mediational mechanisms in a longitudinal prevention trial, the Aban Aya Youth Project (AAYP). In previous studies, interventions of AAYP were found to be effective in reducing the growth of violence, substance use and unsafe sex among African American adolescents. In this article, it is hypothesized that the effects of the interventions in reducing the growth of substance use behavior were achieved through their effects in changing intermediate processes such as behavioral intentions, attitudes toward the behavior, estimates of peers' behaviors, best friends' behaviors, and peer group pressure. In evaluating these mediational mechanisms, difficulties arise because the growth trajectories of the substance use outcome variable and some of the mediating variables were curvilinear. In addition, all of the multivariate mediational measures had planned missing data so that a score from the multiple items for a mediator could not be formed easily. In this article, a latent growth modeling (LGM) approach is introduced; namely, a two-domain LGM mediation model, in which the growth curves of the outcome and the mediator are simultaneously modeled and the mediation effects are evaluated. Results showed that the AAYP intervention effects on adolescent drug use were mediated by normative beliefs of prevalence estimates, friends' drug use behavior, perceived friends' encouragement to use, and attitudes toward the behavior.

Mattaa, M., & Rantala, K. (2007). The evaluator as a critical interpreter: Comparing evaluations of multi-actor drug prevention policy. *Evaluation: The International Journal of Theory, Research and Practice*, 13(4), 457-476.

Evaluation research mixes administrative objectives with social scientific aims. This article distinguishes between three types of evaluation research based on the role of the evaluator. First, social engineers seek mechanisms that have objectively measurable outcomes. Second, programme promoters act as counselling resources for community developers or other stakeholders. Instead of these two traditional roles, this article considers a third type of evaluation

which is based on the role of the evaluator as a critical interpreter, embodied in the sociological intervention approach. The role of the critical interpreter is illustrated by two cases where evaluation has focused on the policy of devolved responsibility combined with community-based prevention. The interventions took place in very different settings: a large-scale, long-lasting evaluation of a large and expensive policy-testing programme and an independent, voluntary and brief evaluation of small-scale, local groups. The comparison of these demonstrates that the context of evaluation determines the more specific type of a critical interpretation.

Ridenour, T. A., et al. (2015). Detecting initiation or risk for initiation of substance use before high school during pediatric well-child check-ups. *Drug and Alcohol Dependence*, 150, 54-62.

Background: Youth substance use (SU) is prevalent and costly, affecting mental and physical health. American Academy of Pediatrics and Affordable Care Act call for SU screening and prevention. The Youth Risk Index © (YRI) was tested as a screening tool for having initiated and propensity to initiate SU before high school (which forecasts SU disorder). YRI was hypothesized to have good to excellent psychometrics, feasibility and stakeholder acceptability for use during well-child check-ups. Design: A high-risk longitudinal design with two cross-sectional replication samples, ages 9–13 was used. Analyses included receiver operating characteristics and regression analyses. Participants: A one-year longitudinal sample (N = 640) was used for YRI derivation. Replication samples were a cross-sectional sample (N = 345) and well-child check-up patients (N = 105) for testing feasibility, validity and acceptability as a screening tool. Results: YRI has excellent test–retest reliability and good sensitivity and specificity for concurrent and one-year-later SU (odds ratios = 7.44, CI = 4.3–13.0) and conduct problems (odds ratios = 7.33, CI = 3.9–13.7). Results were replicated in both cross-sectional samples. Well-child patients, parents and pediatric staff rated YRI screening as important, acceptable, and a needed service. Conclusions: Identifying at-risk youth prior to age 13 could reap years of opportunity to intervene before onset of SU disorder. Most results pertained to YRI's association with concurrent or recent past risky behaviors; further replication ought to specify its predictive validity, especially adolescent-onset risky behaviors. YRI well identifies youth at risk for SU and conduct problems prior to high school, is feasible and valid for screening during well-child check-ups, and is acceptable to stakeholders.

4.2. Youth as research partners

Brazg, T., Bekemeier, B., Spigner, C., & Huebner, C. E. (2011). Our community in focus: The use of photovoice for youth-driven substance abuse assessment and health promotion. *Health Promotion Practice, 12*(4), 502-511.

The successful development and implementation of prevention curricula requires seeking strategies that combine the strengths of researchers and community members. Because young people are considered to be the experts in their own lives, it is important to determine effective ways to engage them in substance abuse assessment and prevention initiatives. The community-based participatory action research methodology of photovoice is one way to engage youth in assessment of this public health issue. "Our Community in Focus" was a project that used the photovoice methodology to engage high school youth in a community-based assessment of adolescent substance use and abuse. Through the photovoice method, youth were able to reflect their community's strengths and concerns with regards to adolescent substance abuse, as they took photographs to answer the question "What contributes to adolescents' decisions to use or not to use alcohol and other drugs?" The youth and the community were highly receptive to the project and its methodology, and photographs taken by photovoice participants presented a compelling argument for action.

Helm, S., Lee, W., Hanakahi, V., Gleason, K., McCarthy, K., & Haumana. (2015). Using photovoice with youth to develop a drug prevention program in a rural Hawaiian community. *American Indian and Alaska Native Mental Health Research, 22*(1), 1-26.

Introduction: Substance use represents a significant and persistent health disparity among Native Hawaiian youth and communities. A community-university participatory action research project was conducted to develop a Native Hawaiian model of drug prevention. Methods: Ten youth participated in eight Photovoice focus groups. Focus group transcripts and the youths' SHOWED (see, happening, our, why, empower, do) worksheets were analyzed. Results: Emergent analyses are described regarding focus group theme identification and the meaning of each theme. Youth-selected exemplary photographs and researcher-selected exemplary quotations are provided. Implications: Native Hawaiian drug prevention will be place-based in culturally significant community locations, experiential, and guided by multigenerational teaching and learning.

Kulbok, P. A., Meszaros, P. S., Bond, D. C., Thatcher, E., Park, E., Kimbrell, M., & Smith-Gregory, T. (2015). Youths as partners in a community participatory project for substance use prevention. *Family & Community Health: The Journal of Health Promotion & Maintenance, 38*(1), 3-11.

This community-based participatory research project aimed to develop strategies to prevent youth substance use in a rural county. This article (1) describes the project phases, (2) examines unique contributions and considerations of youth involvement, and (3) explores the youths' perspective. Twelve youths, aged 16 to 18 years, joined parents, community leaders, and research specialists on the community-based participatory research team. The youths were integrally involved in all phases including the community assessment, community leader interviews, selection of a substance use prevention program, and program implementation. Youths reported sustained enthusiasm, experiences of authentic leadership, development of research skills, and greater awareness of their community.



Part V: Measures for Use in Research and Evaluation

Part V: Measures for Use in Research and Evaluation

Overview

The following is a compendium of measures that can be used in the evaluation or research of child and youth programs, services, and supports. These measures support a resiliency model, i.e., examining strengths or protective factors and risk factors.

Measures are organized into two sections:

Section One: Compendiums of Measures. Includes documents that have been compiled which contain numerous measures for use in research and evaluation.

Section Two: Multi-Dimensional Measures. Outlines single measures yet within each measure, there exists two or more subscales.

Some measures are copyrighted and therefore must be purchased OR permission of the author must be obtained prior to use; other measures are not copyrighted and therefore can be used in evaluation and research.

In some cases the evaluator/researcher should contact the author of the measure before using in an evaluation. In these instances email addresses of the authors have been provided.

To view measures and any accompanying documents, please see accompanying files (e.g., 'Section One_Compndium of Measures'). Measures are listed in each section file by letter and then name (e.g., A-The Hemingway). In some cases websites are provided where more information can be found beyond what is available in each file (e.g., research papers etc).

Section Three: Articles Related to Measurement. Provides summaries of articles focused on single measures.

5.1 Compendiums of Measures

A. Measures Violence-Related Attitudes, Behaviors, and Influences among Youths: A Compendium of Assessment Tools (Second Edition) Various authors

This 373 page compendium provides “*researchers and prevention specialists with a set of tools to assess violence-related beliefs, behaviors, and influences, as well as to evaluate programs to prevent youth violence. If you are new to the field of youth violence prevention and unfamiliar with available measures, you may find this compendium to be particularly useful. If you are an experienced researcher, this compendium may serve as a resource to identify additional measures to assess the factors associated with violence among youths. Although this compendium contains more than 170 measures, it is not an exhaustive listing of available measures. A few of the more widely used measures to assess aggression in children, for example, are copyrighted and could not be included here. Other measures being used in the field, but not known to the authors, are also not included.*” (From Compendium introduction)

Measures are organized into 4 assessment topics:

1. **Attitudes and beliefs** (aggression/delinquency; couple violence; education and school; employment; gang; gender roles; guns; and television)
2. **Psychosocial and cognitive** (aggressive fantasies; attachment to role models; attributional bias; depression; emotional or psychological distress; ethnic identity; fatalism; future aspirations; hopelessness; hostility; moral reasoning; perceived likelihood of involvement in violence and other problem behaviors; perceptions of self; personal safety; responsibility and citizenship; self-efficacy, impulse control; desire of control, and coping; self-esteem; sense of caring and support; and social consciousness)
3. **Behaviour** (aggressive and violent behaviour; concentration; conflict resolution skills; dating violence; delinquent and disciplinary behaviour; drug and alcohol use; exposure to gangs; handgun access; impulsivity; leisure activity; parental control; safety and threats; social competence; social problem solving skills; victimization; weapon carrying)
4. **Environment** (disciplinary practices; family communication; family conflict and hostility; family relationships; parent-child relationships; parental attitudes toward antisocial behaviour and aggression; parental involvement; parental monitoring and supervision; quality of life; collective efficacy; community involvement; community resources; exposure to violence; fear of crime; neighbourhood cohesion; neighbourhood disorganization; neighbourhood integration and exchange; neighbourhood satisfaction; and social control.

B. Ansell-Casey Life Skills Assessment (ACLSA) Casey Family Programs

Casey Family Programs (Casey) from 1994-2000 developed a tool for use by the child welfare field to assess life skills. Readiness Four levels of the ACLSA were created for youth **ages 8-10 (I), 11-14 (II), 15-18 (III), and 19 and older (IV)**. There are also corresponding caregiver and special population assessment tools. In addition, a short form was developed for youth ages 11-18 to be used as a high level screening and/or research tool. The purpose of all five assessments is to indicate life skills mastery across several domains (e.g., daily life tasks; self-care; social development; work and study skills; money management; housing and community; and resources). The measures provide an indication of skill level and readiness for living on one's own. Please see manual for a complete overview. For more information about Casey Family Program, please visit: <http://www.casey.org/>

C. Social-Emotional Learning Assessment Measures for Middle School Youth

Social Development Research Group, University of Washington

Based on a review of 73 measures, the Social Development Research Group recommends 10 measures for examining social-emotional learning in youth. Most measures are used for youth up to grade 12 (ages are outlined for each measure). Three of the ten are free while the other seven must be purchased for use.

- Behavioral and Emotional Rating Scale: Second Edition (BERS-2)
- ASEBA: Child Behavior Checklist (CBCL), Teacher Report Form (TRF), and Youth Self-Report (YSR)
- Communities That Care (CTC) Survey (Free)
- The Comprehensive School Climate Inventory (CSCI)
- Developmental Assets Profile (DAP)
- Devereux Student Strengths Assessment (DESSA)
- School Social Behaviors Scale, Second Edition (SSBS-2)
- Social Skills Improvement System Rating Scales (SSIS-Rating Scale)
- Strengths and Difficulties Questionnaire (SDQ) (FREE – Go to online link-Available in multiple languages)
- Washington State Healthy Youth Survey (HYS) (FREE)

This report outlines their criteria for choosing the above measures, information about each measure and contact information (permission to use or purchase price) for each measure.

D. Identifying Indicators and Tools for Measuring Social and Emotional Healthy Living

Schonert-Reichl, K. A., Stewart Lawlor, M., Oberle, E., & Thomson, K.

This report synthesizes key information in the field of social and emotional health. Within the document are links to organizations that have measures available on their websites. Copies of the tools, information regarding target ages and psychometric properties of the following measures are outlined in the document.

Measure	Age group	Source of data	Psychometrics	Availability	Appendix: Section
A) Health Behaviour in School-Aged Children Survey	Ages 11 - 15	Self-report	Good	Free	I
B) Early Development Instrument	Ages 5 - 6	Parent and teacher reports	Good	Free	II
C) Middle Year Development Instrument	Ages 9-14	Self-report	Evaluation in process	Under review	---
D) Strengths and Difficulties Questionnaire	Ages 3 - 16	Self, parent, and teacher reports	Good	Free	III
E) California Healthy Kids Survey	Ages 12 - 17	Self-report	Good	Free	IV
F) Index of Child Well-Being in the European Union	Ages 0 - 19	Data/statistics obtained at the country level	Good	Under review	---

5.2. Multi-Dimensional Measures

A. The Hemingway: Measure of Adolescent Connectedness (Child and Adolescent Version)

Karcher, M. J.

For access email Michael Karcher: michael.karcher@utsa.edu

*“The 78 item Measure of Adolescent Connectedness, version 5full, has fifteen subscales, including connectedness to religion, romantic partners, mother, father, and kids from other cultures. The second version is the 57 item Adolescent, version 5short. The short version does not include those extra five scales, which some schools have preferred to not include in their surveys (fearing parents would not like to have their children asked about religion, dating, race, or about each parent specifically). Otherwise the two scales are the same. The items in the measure were empirically derived. These scales are currently undergoing a national norming to establish base rates for youth across grades, sexes, and ethnic groups; therefore, only basic information on subscale reliability is presented in this manual. Information from studies describing the development of the scale and the factor. The 78 item Measure of Adolescent Connectedness, version 5full, has **fifteen subscales**, including connectedness to religion, romantic partners, mother, father, and kids from other cultures. The second version is the 57 item Adolescent, version 5 short. The short version does not include those extra five scales, which some schools have preferred to not include in their surveys (fearing parents would not like to have their children asked about religion, dating, race, or about each parent specifically). Otherwise the two scales are the same. The items in the measure were empirically derived. These scales are currently undergoing a national norming to establish base rates for youth across grades, sexes, and ethnic groups; therefore, only basic information on subscale reliability is presented in this manual. Information from studies describing the development of the scale and the factor. “*

(Information from Manual introduction)

Please visit: <http://adolescentconnectedness.com/survey.php> to view surveys in Chinese, French and Spanish as well as more information on reporting.

B. The ROPELOC: Review of Personal Effectiveness and Locus of Control

Richards, G. E., Ellis, L., & Neill, J. T.

For access email James Neill: jamestneill@gmail.com

The ROPELOC instrument originally developed by Richards over 10 years and then by Richards and Neill over a further 7 years has been further developed to tap into key actions and behaviours that indicate a person's effectiveness in a variety of critical areas of life. The new ROPELOC instrument has grown out of testing on over 10,000 training program participants in a wide variety of program types. The ROPELOC items are grounded in self-perceptions but expressed and interpreted in terms of behaviours.

Other, often popular, measures which purport to measure multiple dimensions, have been found wanting, are insensitive to change, unreliable or have poor psychometrics. The ROPELOC overcomes these shortcomings and provides a short, easily administered useful multidimensional instrument with sound psychometric properties.

The ROPELOC has 14 scales; including personal abilities and beliefs (Self-Confidence, Self-Efficacy, Stress Management, Open Thinking), social abilities (Social Effectiveness, Cooperative Teamwork, Leadership Ability), organisational skills (Time Management, Quality Seeking, Coping with Change) an energyscale called Active Involvement and a measure of overall effectiveness in all aspects of life. In addition, the instrument has an in-built Control Scale that helps to determine whether changes reported in the other scales are due to program effects or simply due to retesting on the same instrument. The two Locus of Control scales measure the tendency to take responsibility for self-actions and successes.

Two different samples of high school students were used to trial the new ROPELOC. The first trial sample (n= 1250) had internal reliabilities (Cronbach alpha) for its 14 subscales of between .79 and .93 and an average internal reliability of .85 and an overall alpha of .96. In the second trial sample (n= 1475) the internal reliabilities ranged between .71 and .90 (mean= .83) for younger students aged 11-13 yrs and between .73 and .91 (mean=.84) for older students aged 14-16 yrs. The average inter-scale correlations was .43 (highest correlation = .62) indicating good discrimination between the closely allied dimensions of life effectiveness as measured by the ROPELOC.

(From:

<http://wilderdom.com/abstracts/RichardsEllisNeill2002ROPELOCComprehensiveInstrumentReviewingPersonalEffectiveness.htm>)

C. Life Effectiveness Questionnaire (LEQ-H)

Richards, G. & Neill, J.

For access email James Neill: jamestneill@gmail.com

Originally designed to measure the effectiveness of outdoor and adventure education programs among youth (has been used with children as young as 10 and through to college age), LEQ is a 24-item self-report instrument which assesses eight distinct scales: Time Management, Social Competence, Achievement Motivation, Intellectual Flexibility, Task Leadership, Emotional Control, Active Initiative, and Self-Confidence. Please see conditions of use at: http://wilderdom.com/wiki/LEQ:Conditions_of_use

D. “People in My Life”(PIML): A Self-Report Measure of Attachment in Late Childhood

Ridenour, T. A., Greenberg, M. T., & Cook, E.
For access email Ty Ridenour: tar27@pitt.edu

A measure of attachment for middle childhood in four areas: parents/caregivers; friends, school and neighbourhood. Parent Factors: Trust, communication, alienation; Friend factors: Trust, communication, alienation/dissatisfaction with friends, delinquency; School Factors: affiliation/bonding, school bonding, teacher affiliation, dissatisfaction with teacher, school dangerousness; Neighbourhood factors: positive neighbourhood, neighbourhood dangerousness.

E. Skills for Everyday Living Penn State and Purdue Universities

Measures designed to assess 5 areas in the youth development: communication, goal setting, decision-making, critical thinking skills and problem-solving. For more information and background, please see: <http://www.humanserviceresearch.com/youthlifeskillevaluation/evaltools1218.htm>

5.3. Articles Related to Measurement

Arriola, K. R. J., et al. (2009). Reliability and validity of the Alcohol Consequences Expectations Scale. *American Journal of Health Behavior*, 33(5), 504-512.

Objectives: To examine the reliability and validity of a new measure of alcohol outcome expectations for college students, the Alcohol Consequences Expectations Scale (ACES). **Methods:** College students (N=169) completed the ACES and several other measures. **Results:** Results support the existence of 5 internally consistent subscales. Additionally, the ACES is associated with conceptually similar measures and self-reported drinking behavior. **Conclusions:** This study supports the reliability of the ACES and its subscales and provides preliminary evidence of construct and criterion-related validity. Pending further investigation, this scale may be used to inform the development of alcohol abuse prevention programs on college campuses.

Castellanos-Ryan, N., O'Leary-Barrett, M., Sully, L., & Conrod, P. (2013). Sensitivity and specificity of a brief personality screening instrument in predicting future substance use, emotional, and behavioral problems: 18-month predictive validity of the Substance Use Risk Profile Scale. *Alcoholism: Clinical and Experimental Research*, 37(Suppl 1), E281-E290.

Background: This study assessed the validity, sensitivity, and specificity of the Substance Use Risk Profile Scale (SURPS), a measure of personality risk factors for substance use and other behavioral problems in adolescence. **Methods:** The concurrent and predictive validity of the SURPS was tested in a sample of 1,162 adolescents (mean age: 13.7 years) using linear and logistic regressions, while its sensitivity and specificity were examined using the receiver operating characteristics curve analyses. **Results:** Concurrent and predictive validity tests showed that all 4 brief scales—hopelessness (H), anxiety sensitivity (AS), impulsivity (IMP), and sensation seeking (SS)—were related, in theoretically expected ways, to measures of substance use and other behavioral and emotional problems. Results also showed that when using the 4 SURPS subscales to identify adolescents “at risk,” one can identify a high number of those who developed problems (high sensitivity scores ranging from 72 to 91%). And, as predicted, because each scale is related to specific substance and mental health problems, good specificity was obtained when using the individual personality subscales (e.g., most adolescents identified at high risk by the IMP scale developed conduct or drug use problems within the next 18 months [a high specificity score of 70 to 80%]). **Conclusions:** The SURPS is a valuable tool for identifying adolescents at high risk for substance misuse and other emotional and behavioral problems. Implications of findings for the use of this measure in future research and prevention interventions are discussed.

Chilenski, S. M., Greenberg, M. T., & Feinberg, M. E. (2010). The community substance use environment: The development and predictive ability of a multi-method and multiple-reporter measure. *Journal of Community & Applied Social Psychology*, 20(1), 57-71.

This study tested the feasibility and utility of developing a multiple-method and multiple-reporter measure that describes the community substance use environment. Data on community-level norms and availability of substances were reported by 5261 students and 181 prevention-focused community leaders (CL) involved in the 28 promoting school-university-community partnerships to enhance resilience (PROSPER) Project communities between 2002 and 2005. Additionally, locations of alcohol and tobacco outlets were geocoded. Initially, these four subscales were

aggregated to measure the community substance use environment. Analyses demonstrated this measure was associated with community rates of adolescent reported cigarette use, but it was not associated with community rates of adolescent reported alcohol use. Further analyses tested the relative strength of the four different subscales in predicting rates of student use. Implications of these results for the field of community-based prevention are discussed, as well as limitations and future directions.

Fernandez-Artamendi, S., Fernández-Hermida, J. R., Muñoz-Fernández, J., Secades-Villa, R., & García-Fernández, G. (2012). Screening of cannabis-related problems among youth: The CPQ-A-S and CAST questionnaires. *Substance Abuse Treatment, Prevention, and Policy*, 7.

Background: Cannabis use among young people is a significant problem, making particularly necessary validated screening instruments that permit secondary prevention. The purpose of this study was to analyze and compare the psychometric properties of the CAST and CPQ-A-S questionnaires, two screening instruments specifically addressing the youth population. **Methods:** Information was obtained on sociodemographics, frequency of substance use, psychopathological symptoms and cannabis-use problems, and the CPQ-A-S and CAST were applied, as well as an infrequency scale for discarding responses made randomly. The sample was made up of 144 young people aged 16 to 20 that had used cannabis in the last month, of which 71.5% were boys. Mean age of the sample was 17.38 years (SD = 1.16). **Results:** The results show that from the psychometric point of view both the CAST and the CPQ-A-S are good screening instruments. **Conclusions:** The CAST is shorter and presents slightly better internal consistency than the CPQ-A-S. Both instruments show high sensitivity and specificity in the detection of young people dependent on cannabis according to the DSM IV-TR criteria. The CPQ-A-S appears to show greater capacity for detecting psychopathological distress associated with use. Both questionnaires yield significant odds ratios as predictors of frequent cannabis use and of the DSM IV-TR abuse and dependence criteria. In general, the CPQ-A-S emerges as a better predictor than the CAST

Newton, N. C., et al. (2016). The validity of the Substance Use Risk Profile Scale (SURPS) among Australian adolescents. *Addictive Behaviors*, 53, 23-30.

Aims: This study investigated the validity of a brief personality screening measure for substance use in adolescents, the Substance Use Risk Profile Scale (SURPS), among Australian adolescents. **Design and participants:** A total of 527 adolescents (mean age: 13.38 years, SD =0.43) from seven Australian schools were assessed at two time points 24 months apart. The concurrent and predictive validity of the SURPS was determined using a series of linear and logistic regressions, and was compared to the results in a United Kingdom (UK) sample. SURPS subscale scores for the Australian population were also reported and compared to those in the UK. **Findings:** Overall, the SURPS subscale scores for Australian adolescents were similar to those for adolescents from the UK. Tests of concurrent and predictive validity in the Australian sample demonstrated that the all four personality profiles—Hopelessness (H), Anxiety Sensitivity (AS), Impulsivity (IMP), and Sensation Seeking (SS)—were related to measures of substance use and other behavioural and emotional characteristics. In addition, all the predicted specific prospective relationships between the personality profiles and particular substance use and other behavioural problems were confirmed except that H was not associated with illicit drug use. Overall, the results were similar between the Australian and UK samples. **Conclusions:** The SURPS is a valid and useful measure for identifying Australian adolescents at high-risk for substance use and other emotional and behavioural problems. Implications for prevention are discussed.


Appendix A: Other Documents of Interest

Arts Programs to Reduce Delinquent Behaviour

Stinson, A. (2008). A Review of Cultural Arts Programs and Outcomes for At-Risk Youths. *Best Practices In Mental Health*, 5 (1), 10-25.

Researchers report that the number of child delinquents between the ages of seven and twelve being seen in the juvenile court systems has increased 33 percent over the last decade. Research shows that a number of well-designed prevention programs have become a viable option and popular way for communities to address the developmental needs of youths during the times that are often associated with delinquent behavior. Prevention programs designed with a cultural arts format have received tremendous interest, support, and financial funding from federal and local agencies, corporate donors, and other private parties, as they have demonstrated the ability to support at-risk youths in acquiring adaptive social, vocational, and emotional skills that foster self-esteem, self-efficacy, and reduced interest in committing crimes. This article evaluates cultural arts programs designed to serve at-risk youths in developing adaptive social, emotional, behavioral, and artistic skills. Most of the programs are based on a framework of best practices for positive youth development and/or youth violence prevention philosophy.

Canadian Update on Level of Substance Use among Youth

Leslie, K. (2008). "Alcohol and drug use among teenagers. *CMAJ: Canadian Medical Association Journal* 178(2), 149-149. 

The article presents the findings of different studies regarding the alcohol and drug use among teenagers in Canada. It mentions about a survey that shows alcohol is the most commonly used substance among teenagers in which 1 out of 5 young adults drinks in a way that may put them at risk. Furthermore, another report indicates that some youth are at greater risk than others of having drug or alcohol problems. Meanwhile, the article also provides information on how to detect a teenager if he is using drugs.

GLBT2SQ

US Department of Health and Human Services (2001). A Provider's Introduction to Substance Abuse Treatment for Lesbian, Gay, Bisexual, and Transgender Individuals.

The Williams Institute (November 2009). Best Practices for Asking about Sexual Questions on Surveys.

Psychological Well-Being of Youth

Lincoln, K. D. (2000). Social Support, Negative Social Interactions, and Psychological Well-Being. *The Social Service Review* 74(2), 231-252.

Research examining the relationship between social support and psychological well-being has largely ignored the negative side of social interactions. However, empirical evidence suggests that negative interactions can potentially be more harmful than social support is helpful. This article critically reviews the literature investigating the relationship between social support and negative social interactions and their simultaneous effect on psychological well-being. A review of 28 studies revealed that there are conceptual, theoretical, and methodological limitations associated with this body of research. In order to unravel some of these limitations, studies are grouped according to three conceptual models: the additive effects model, the moderator model, and the domain specific model. Finally, the article discusses directions social work practice research should take to tackle and fully appreciate the complexities of the relationship between social support and psychological well-being.

Mahoney, J., Schweder, A., Stattin, H. (2002). Structured after-school activities as a moderator of depressed mood for adolescents with detached relations to their parents. *Journal of Community Psychology*, 30(1), pp.69-86.

This study investigated whether participation in structured after-school activities moderates the association between detached parent–adolescent relationships and adolescent depressed mood. A representative sample of 539 14-year-olds and their parents were assessed concerning adolescent participation in after-school activities, the parent–adolescent relationship, and adolescent depressed mood. Results showed that adolescents with detached relations to their parents reported high levels of depressed mood. Adolescents who participated in after-school activities reported low levels of depressed mood compared to adolescents not participating in such activities; however, this was primarily true of participants who perceived high support from their activity leader. Support from after-school activity leaders was particularly important for a subgroup of youth characterized by highly detached relations to their parents. Although girls reported higher levels of depressed mood than did boys, the associated benefits of perceived support from an activity leader were consistent across gender.

The Search Institute

Benson, P. L, Roehlkepartain, E. C, and Sesma, A. (2004) Tapping into the Power of Community. Building Assets to Strengthen Substance Abuse Prevention. *Search Institute Insights and Evidence*. Vol. 2 (1), 1-14.

“Search Institute® is an independent, nonprofit, nonsectarian organization committed to helping create healthy communities for every young person. Because we believe that “all kids are our kids,” we create books and other materials that welcome and respect people of all races, ethnicities, cultures, genders, religions, economic backgrounds, sexual orientations, and abilities. Our Mission: To provide leadership, knowledge, and resources to promote healthy children, youth, and communities.”

<http://www.search-institute.org>

Workplace Policies

Miller, T., Novak, S. P., Galvin, D. M., Spicer, R. S., Cluff, L., & Kasat, S. (2015). School and work status, drug-free workplace protections, and prescription drug misuse among Americans ages 15–25. *Journal of Studies on Alcohol and Drugs*, 76(2), 195-203.

Objective: We assessed the prevalence and characteristics of prescription drug misuse among youth ages 15–25 to examine differences by student and employment status, and associations with workplace antidrug policies and programs. **Method:** Multivariate logistic regressions analyzed associations in weighted data on the 20,457 young adults in the combined 2004–2008 National Surveys on Drug Use and Health. Demographic controls included sex, race, community size, and age group. **Results:** After we accounted for demographic controls, at ages 15–25, students were less likely than nonstudents to misuse prescription drugs. Segmenting student from nonstudent groups, working consistently was associated with a further reduction in misuse for those ages 18–25. When we controlled for demographics and substance use history, both Employee Assistance Program (EAP) services and awareness that one’s employer had a drug-free workplace policy were associated with significantly lower misuse of prescription drugs (OR = 0.85 for each program, 95% CI [0.73, 1.00] and [0.72, 1.00]). Associations of workplace antidrug policies and programs with marijuana use and with Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition, criteria for alcohol abuse and dependence contrasted sharply with these patterns. All four aspects were significantly associated with lower marijuana use. None was associated with problem drinking. **Conclusions:** Protective effects of drug-free workplace policy and EAPs persist after other substance use was controlled for. Comparing the effects of workplace programs on illicit drug use and problem drinking versus prescription misuse suggests that those protective associations do not result from selection bias. Thus, drug-free workplace policies and EAPs appear to help protect younger workers against prescription misuse. If workplace substance use disorder programs focused prevention messages and interventions on prescription drug misuse, their impact on misuse might increase.

Think Tank/Project Reports

Haase, T. & Pratschke, J. & National Advisory Committee on Drugs (2010). Risk and Protection Factors for Substance Use Among Young People. Stationary Office, Dublin.

http://www.drugsandalcohol.ie/14100/1/NACD_RiskYoungPeopleSchool.pdf

This comparative study of early school leavers and school attending students differs from many other studies about substance use among young people in that it looks at the underlying risk and protective factors that influence young people’s decisions regarding substance use.

The study identifies a limited number of highly significant risk and protective factors which can increase or decrease the risk of using substances among 15 to 18 year-olds in Ireland. It draws the conclusion that both the family (the young person’s parents above all) and the educational institution can have a major impact on this decision. The study indicates that the involvement of parents with their children is a major protective factor, reducing the risk of substance use, as is having a positive experience of school and learning. The study suggests that the implementation of a range of policies with the potential to reduce early school-leaving is in itself one of the most effective intervention strategies to reduce substance use among young people.

Stewart-Brown S (2006). What is the evidence on school health promotion in improving health or preventing disease and, specifically, what is the effectiveness of the health promoting schools approach? Copenhagen, WHO Regional Office for Europe (Health Evidence Network report; <http://www.euro.who.int/document/e88185.pdf>)

The issue School health promotion, based on a wide range of research and practice, has evolved over the course of the last 50 years, alongside health promotion in other settings. During the 1990s, WHO, working jointly with the European Commission and the Council of Europe, developed the health promoting schools initiative. It is a multifactorial approach that covers teaching health knowledge and skills in the classroom, changing the social and physical environment of the school, and creating links with the wider community. This synthesis seeks to determine the effectiveness of health promotion in schools and, more specifically, the effectiveness of the “health promoting schools” approach. The synthesis builds on the last comprehensive review in this field, published in 1997. Findings This synthesis identified good quality systematic reviews that covered mental health, aggressive behaviour, healthy eating, physical activity, substance use and misuse, driver education, and peer approaches. Reviews of programmes that promoted mental health in schools (including preventing violence and aggression) show these programmes to be among the most effective ones in promoting health. Of these programmes, the ones that were most effective were of long duration and high intensity, and involved the whole school. New reviews that focused on promoting healthy eating and physical activity confirmed an earlier review, which found that multifactorial interventions, particularly those involving changes to the school environment, were effective. Four new reviews of programmes that focused on promoting the prevention of substance use confirmed previous findings that these programmes are relatively ineffective. Also, programmes on preventing suicide reduced suicide potential, depression, stress and anger, but less rigorous studies suggested a potential harmful effect in young males. In some (but not all) studies, peer-delivered health promotion was found to be effective, compared with teacher-led interventions, and this approach was highly valued by the young people involved. The systematic review, which evaluated health outcomes of programmes that used elements of the health promoting schools approach, included small studies of variable quality. It found apparent benefits to the social and physical environment of the school, and some studies found the programmes benefited health-related behaviour (dietary intake and physical fitness). No reviews evaluated the cost– effectiveness of the programmes or interventions. Policy considerations Health promotion in schools can improve children’s health and well-being. Among the most effective programmes are those that promote mental health, healthy eating and physical activity. Programmes on preventing substance abuse have not been shown to be effective and may be better addressed in a more holistic programme that promotes mental health. Programmes on preventing suicide can reduce suicide potential, but potential harmful effects in young males should be considered. Although programmes based on peer-delivered health promotion are highly valued by young people, their effectiveness varies. Some evidence supports key components of the health promoting schools programme – namely, that programmes should be sustained, multifactorial, whole school approaches that provide appropriate training. However, there is a lack of evidence on all the elements that contribute to an effective health promotion programme, or to the health promoting schools approach as a whole. A holistic evaluation of programmes in local settings is needed.

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Appendix C: Key Journals for Substance Use Prevention

Addiction
Addictive Behaviors
American Journal of Preventative Medicine
The American Journal of Drug and Alcohol Abuse
Journal of Primary Prevention
Drug and Alcohol Dependence
Drug and Alcohol Review
Drugs: Education, Prevention & Policy
Early Intervention in Psychiatry
Evaluation Review
Health Education
International Journal of Child Health and Human Development
International Journal of Drug Policy
Journal of Adolescent Health
Journal of Alcohol and Drug Education
Journal of American College Health
Journal of Child & Adolescence Substance Abuse
Journal of Community Psychology
Journal of Drug Education
Journal on Studies on Alcohol and Drugs
Journal of Substance Use
Journal of Youth and Adolescence
Prevention Science
Psychology of Addictive Behaviors
Substance Abuse Treatment, Prevention, and Policy
Substance Use and Misuse

Appendix D: Summary of Targeted Searches

PsycINFO Literature Review Parameters:

Search years: 2000-2016

Other criteria: English language

Peer-reviewed articles

Search Terms	Initial Results	Downloaded for Review	Already included from previous 2016 search (not downloaded again)	Additional articles uncovered ⁷	Final Number of new articles include in the review
Youth + prevention + harm reduction	40	16	3	1	14
Youth + prevention + computer	48	8	3	0	6
Youth + prevention + technology	46	2	2	2	3
Youth + prevention + neuroscience	0	0	0	0	0
Youth + brain + substance	45	3	0	1	3
Prevention + mental health + substance (limited by subgroups 'school age' and 'adolescence')	466	143	18	4	62
Youth + prevention + binge drinking	55	36	4	1	19
College + prevention + binge drinking	70	36	1	2	26
Youth + prevention + cannabis	44	15	6	2	8
Prevention + drugs + driving (limited by subgroups 'adolescence' and 'young adulthood')	33	8		0	3
Drug driving + prevention	7	0	1	0	0
Youth + prevention + prescription drugs	20	15	6	0	4
Youth + prevention + psychoactive	8	0	0	0	0
Systematic review + youth + drugs	43	8	3	0	5

⁷ One of the search tools is a mechanism whereby similar articles are suggested.