

Reconceptualizing Drug Use Prevention Processes

Reconceptualizando los procesos de prevención del consumo de drogas

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Resumen

En el campo de la prevención del consumo de drogas se ha avanzado mediante la convergencia de las teorías del comportamiento humano, una mejor comprensión de los factores asociados con el inicio de dicho consumo, y unas metodologías de investigación más sofisticadas que no afectan sólo al diseño del estudio y la medición, sino también al análisis de datos. Por todas estas razones, se precisa de una reconceptualización de la intención y la función de la prevención con el fin de perfeccionar el desarrollo de la intervención y de la aplicación.

Esta revisión se centra principalmente en la prevención del consumo de drogas, pero sus implicaciones son claras para otros comportamientos de resultado de la prevención. Los conceptos incluidos en este artículo se ven estimulados por los avances recientes en la comprensión del desarrollo neurobiológico y se han revisado tomando en consideración la interacción entre vulnerabilidad individual e influencias ambientales. También se recurre al concepto de socialización y al papel de la socialización y de los agentes socializadores en cualquier sociedad.

Palabras Clave: prevención, toma de decisiones, vulnerabilidad, medio ambiente, socialización.

Abstract

The field of drug use prevention has been advanced through a convergence of theories of human behavior, a more enhanced understanding of the factors that have been found to be associated with the onset of drug use, and more sophisticated research methodologies impacting not only study design and measurement but also data analysis. For these reasons, there is a need for a reconceptualization of the intent and function of prevention in order to refine intervention development and implementation.

This review will focus primarily on drug use prevention but the implications are clear for other prevention outcome behaviors. The concepts included in this paper are stimulated by recent advances in understanding neurobiological development and revised understanding of the interaction between individual vulnerability and environmental influences. It also draws on the concept of socialization and the role of socialization and socializing agents in any society.

Key words: prevention, decision making, vulnerability, environmental, socialization.

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Drug use poses a particularly interesting focal point to discuss prevention. Initially the use of drugs is a behavior, not a disease or disorder per se. However, progression to abuse and dependence and then to drug use disorders with associated neurobiological changes and other health and social problems does occur. Although sparse, information regarding this progression from use to abuse to dependence indicates that non-continuation after initial use varies by drug type (Figure 1). For instance, approximately 40 percent of U.S. high school seniors aged 17-18 years who reported ever using crack, cocaine, or heroin at least once in their lifetimes indicated that they no longer were using these drugs in the year prior to survey. However, only 9 percent of those ever using alcohol and 20 percent of those ever using tobacco or marijuana indicated that they no longer used these substances (Johnston, O'Malley, Bachman, & Schulenberg, 2013). Furthermore, epidemiological studies

indicate that the transition from initial use to abuse also varies by drug type as well as age of onset (Anthony & Petronis, 1995; Chen, Storr, & Anthony, 2009; Florez-Salamanca et al., 2013; Lopez-Quintero et al., 2011; Wagner & Anthony, 2002). These studies suggest three important points: 1) initial drug use is driven primarily by social or environmental factors (Glantz & Pickens, 1992); 2) discontinuation of initial use of some drugs is normative; and, 3) transitions to abuse and dependence seem to be more related to age of initiation rather than to duration of use (controlling for amount used) (Anthony & Petronis, 1995; Chen et al., 2009; Florez-Salmanaca et al., 2013; Lopez-Quintero et al., 2011; Wagner & Anthony, 2002). From the perspective of prevention then, likely points for intervention are prior to and after the time of initiation of use when drug use is driven more by social factors and before progression to abuse and dependence when neurobiological factors begin to dominate (Glantz & Pickens, 1992).

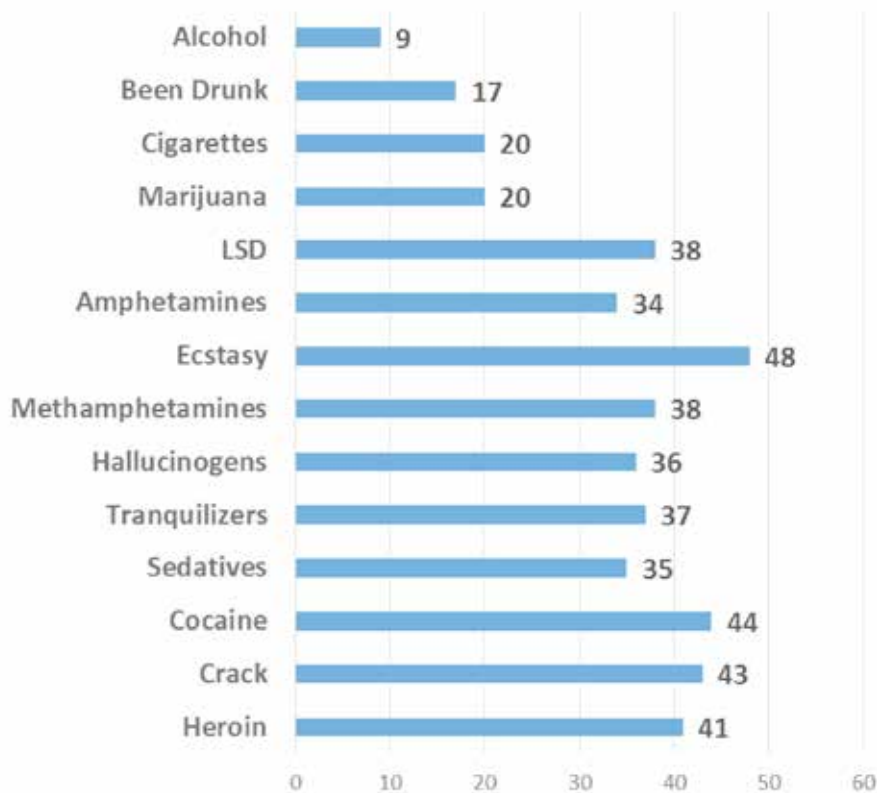


Figure 1. Noncontinuation Rates: Percentage of Lifetime Users Who Did Not Use in the Last 12 Months in Students in Grade 12 (17-18 Years Old). (Source: Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2013). Monitoring the Future national survey results on drug use, 1975-2012. Volume I: Secondary school students. Ann Arbor: Institute for Social Research, The University of Michigan)

Behavior and Decision Making

Theories of human behavior and particularly health-related behaviors tend to be of two types: social cognition and stage models (Sutton, 2002). Social cognition models set out a number of cognitive and affective factors that are related to intent and ultimately to engagement in behaviors. Inclu-

ded in social cognition models are the health belief model, theory of reasoned action, self-efficacy, and theory of planned behavior (Ajzen, 1991). The stage models such as the transtheoretical model (Prochaska, 2008) have similar components but suggest a readiness-to-change continuum dimension and a process of moving along the continuum to action

(Sutton, 2002; Weinstein, Rothman, & Sutton, 1998). Subsumed under these theories but not explicit is decision making, whereby benefits and costs associated with the behavior in question are weighed against each other. Factors that are con-

sidered in this 'weighing' process include beliefs and values associated with the performance of the behavior, perceptions of the normative nature of the behavior, and, an assessment of one's ability to perform the behavior (Figure 2).

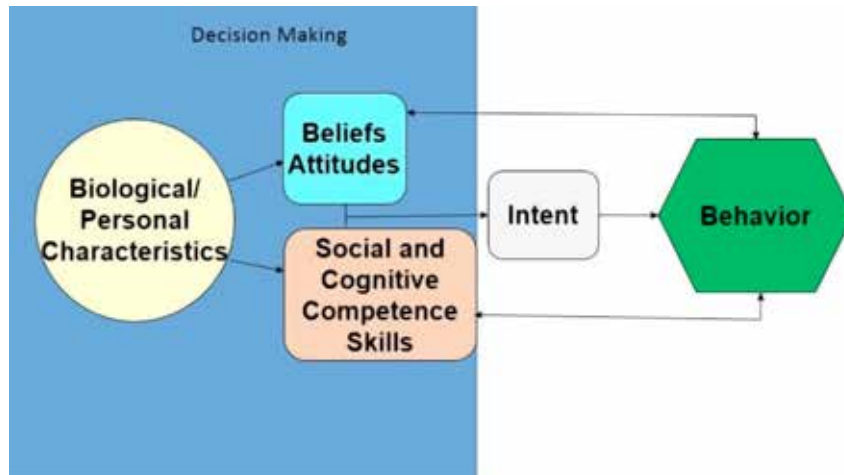


Figure 2. Decision Making, Intent and Behavior

Decision making is a cognitive operation that requires an ability to process and evaluate information within a personal and social framework. Effective decision making from a societal perspective then requires having cognitive competence and acquiring the skills to assess information and social and environmental cues. These competencies and skills evolve developmentally over time from infancy through adulthood.

Decision Making and Cognitive and Social Competencies

Human development is marked by an expected range of intellectual abilities associated with language and numeracy skills, emotional and psychological functioning and associated social competency. Recent neuroscience research indicates a high level of neuroplasticity that takes place as humans develop from infancy into adulthood (e.g., Cicchetti & Blender, 2006). Over the course of development, children's social experiences increase quantitatively in terms of the number of new social situations that arise requiring enhancements of learned behaviors and acquisition of new behaviors. In addition children's social skills increase qualitatively as more complex skills are acquired and children become more adaptive in negotiating new situations. Several factors are related to these developmental achievements. Among these factors is not only advancing brain development but also exposure to expanded social experiences as children engage in social groups beyond their immediate families such as within the school and community settings. These groups not only provide social stimuli they also socialize children to recognize social cues, within new settings and provide models for appropriate behaviors. With proper guidance, as children are exposed to more diverse settings, influences, and social cues they will improve their ability to make better behavioral decisions and more accurately respond to new situations.

Children who experience any deficits in their cognitive development or in their abilities to achieve these skills are more vulnerable to environmental influences that can impact their decision making ability (e.g., Best, Miller, & Jones, 2009; Levin et al., 2012; Weller & Fisher, 2013). Furthermore, it is not only children who experience developmental deficits who are vulnerable but also normal adolescence itself is a period of many challenges as the brain continues to develop in the context of hormonal and other normal biological processes. The adolescent developmental period is fraught with stress and erratic emotions that can lead to poor decision making thus increasing the likelihood of engaging in risky behaviors that may have negative health and social outcomes (e.g., Fareri, Martin, & Delgado, 2008; Van Leijenhorst et al., 2010).

Wanting to form interpersonal attachments and to be considered a "good" social group member has a neurocognitive foundation. A key component of being a good group member is being sensitive to the social context (Adolphs, 2009; Blakemore, 2008; Frith, 2007; Heatherton, 2011). Developmentally, this means forming attachments and being sensitive to the social and physical environment and being able to balance what is best for self and what is best for the group, eventually leading individuals to recognize the importance of behavioral inhibition (Heatherton & Wheatly, 2010; Zucker, Heitzeg, & Nigg, 2011).

New Perspectives

The findings from the above research have suggested the need to develop a new agenda to guide future investigations. There appear to be three inter-related themes for exploration. The first theme examines impediments to cognitive, emotional, and social developmental processes that make individuals vulnerable to negative coping behaviors (Fishbein & Rideour, 2013). The second, and perhaps less well developed

theme examines micro- and macro-level influences or experiences that place vulnerable individuals at risk to engage in negative behaviors (Fishbein, 2013). The third theme emerges from resiliency research that has articulated the characteristics and skills that help individuals adapt to challenging experiences (Garmezy, 1985; Masten, Best, & Garmezy, 1990).

This rethinking and reformulation of the processes associated with engagement in high-risk behaviors suggests a “*psychological chain*” reaction whereby developmental vulnerability and risk are necessary but not sufficient to move someone to drug use. Adaptive skills and pro-social attitudes may serve to alter the path to engagement in negative behaviors for vulnerable individuals.

Socialization Processes and Agents

Learning how to relate to other members of one’s social group is called socialization, i.e., “...the means by which social and cultural continuity are attained” (Clausen, 1968, p. 5). Socialization includes the internalization of societal goals, norms, and values associated with behaviors that society considers acceptable and appropriate by age and gender. It is the implied goals, norms and values that inform how information for decisions are evaluated and behaviors selected.

Research shows that early exposure to caregivers’ responses to children’s needs and caregivers’ interactions with fa-

mily members and the influence of ever expanding micro- and macro-level environmental factors sets a trajectory as to how successful children grow into prosocial adolescents and adults. Even very vulnerable children will respond to responsive parenting (e.g, Brody, Beach, Philbert, Chen, & Murry, 2009; Degarmo, Reid, Fetrow, Fisher, & Antoine, 2013). Reinforcement of prosocial attitudes and behaviors in a positive and supportive peer relationships, school environment and nurturing community for instance, has been found to guide children to make appropriate and healthy behavioral decisions.

Every society relies on a number of socialization agents who serve as guides to societal members. Socialization agents represent influencers at the micro-level environment such as parents and caregivers, extended family, peers, religious leaders and school administrators and staff. They also represent the macro-level environment such as the physical and social neighborhoods, economic and political organizations, and the mass media (Fishbein, 2013). Each of these socialization agents serves a different role in the process and applies varying information and influence throughout society members’ lifespans (Kellam, Branch, Agrawal, & Ensminger, 1976). Furthermore, there is an interaction between the micro- and macro-level environments that either enhance or impede positive socialization (Figure 3).

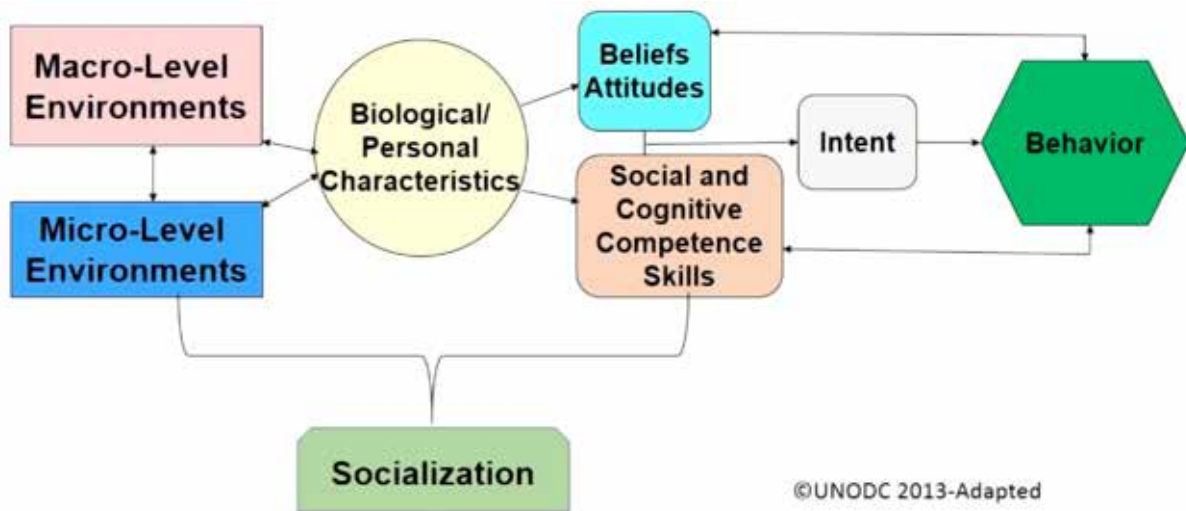


Figure 3. An Interaction of Personal Characteristics and the Micro- and Macro-Level Environments and Socialization

Reconceptualization of the Prevention Process

Drawing from the above discussion is a new way of thinking about drug use prevention as a socialization agent. Within the conceptual framework then, preventive interventions become part of the socialization process to guide decision making and to provide the skills needed to effectively engage in prosocial and healthy behaviors. Prevention strategies then can operate within the micro- and macro-environmental in-

fluences on the socialization processes in two ways (Figure 4). Prevention can function to train socialization agents such as parents or caregivers and teachers to improve or enhance their socialization roles through interventions that focus on parenting or classroom management skills or enhancing the home and school environment. Prevention interventions can also function as socialization agents themselves when they are designed to directly engage children, adolescents, or adults. Probably the most common of these interventions include school-based drug use prevention curricula.

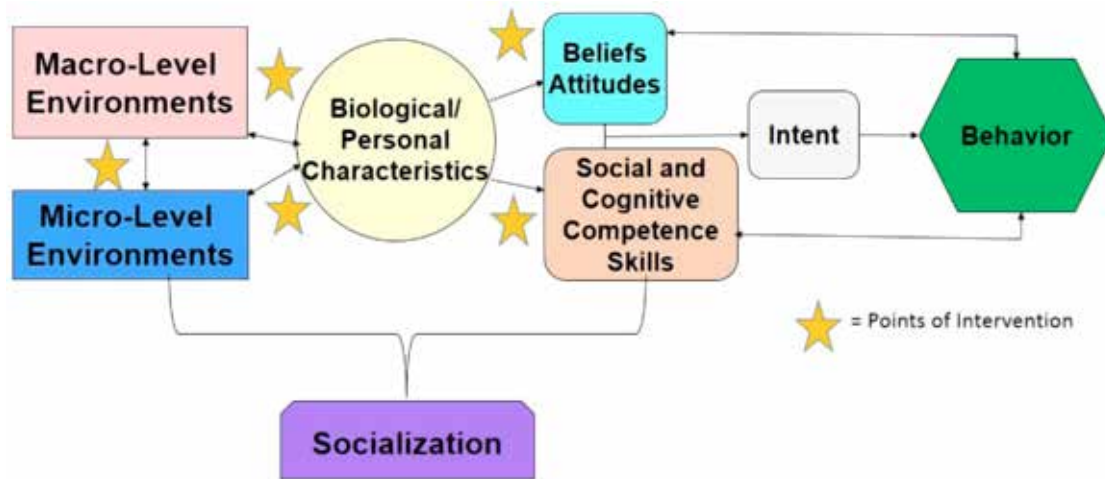


Figure 4. An Interaction of Personal Characteristics and the Micro- and Macro-Level Environment, Socialization, and Points of Intervention

Environmental and policy-based prevention interventions can also be included within this framework. In general these interventions are designed as social control measures that for substance use (to include alcohol, tobacco as well as other drugs) target availability and accessibility by such actions as increasing the costs of alcohol and tobacco through taxation or implementing no-smoking policies or drug-free zones around schools or park areas. Within the proposed conceptualization of prevention, although environmental prevention strategies are commonly viewed as external to the individual, the individual's behavioral decision is the primary focus. For instance, policies that raise the legal age for purchasing alcohol or that raise the price of cigarettes increases the costs of accessing alcohol and tobacco. These costs then are weighed against the perceived benefits from drinking and smoking and potentially will dissuade such behaviors. In addition, these interventions support the norm that substance use is not acceptable (Chaloupka, Yurelki, & Fong, 2012; Cook & Moore, 2002; Wagenaar, Salois, & Komro, 2009).

The proposed framework also encompasses the risk and protective factor perspective that has been a mainstay of prevention since 1992 (Hawkins, Catalano, & Miller, 1992). Risk and protective factors are indicators of the vulnerability-environmental interaction. In a recent chapter for their forthcoming book, *Defining Prevention Science* (in press), Petras and Sloboda regrouped these risk and protective factors into two categories: societal or contextual and individual and the intrapersonal environment. The contextual factors include influences such norms that support or tolerate substance use, availability/access to substances, or neighborhood disorganization. The individual and intrapersonal factors are more related to influences such as physiological features, family history of substance use, poor or inconsistent family management, or academic failure. These factors represent individual vulnerabilities or deficiencies and/or failed socialization processes. Knowledge of the risk status of the group participating in the prevention intervention informs the development of the content, structure, and delivery of the prevention intervention in the same way that other characteristics of the target group do such as age or gender. The mediators of the

intervention are guided by socialization elements of decision making such as processing and evaluating information within the context of normative and acceptable health-related parameters also appropriate to these same characteristics.

Conclusion

The field of prevention research has evolved over the past three decades into an emergent new science. Prevention science, a term coined by Coe and colleagues in 1993, is multidisciplinary, drawing on research findings and theories from psychology, sociology, human development, epidemiology, health economics, and, genetics among other related areas. As any science develops it requires ongoing review and reconceptualization. The success of substance use prevention researchers in developing effective prevention interventions and policies, resulting in the International Standards on Drug Use Prevention, published by the United Nations Office on Drugs and Crime (UNODC, 2013), has prompted the need for a new concept of the prevention process (Foxcroft, 2013). This editorial is an attempt to begin a discourse toward integrating new etiological research findings with sociopsychological theories of engagement in behaviors that have negative health and social outcomes. Several researchers of negative or deviant behaviors such as Brook, Zhang, Balka, & Brook (2012); Oetting & Donnermeyer (1998); Sutherland & Cressey (1992) or Tarter et al. (2012) specifically discuss the concept of being socialized into criminal behaviors as well as substance use. The concepts of socialization and decision making processes are not new to the field of prevention but have remained implied more than explicit. The above discussion calls for these concepts to be well integrated into the prevention science lexicon and to serve as core components of conceptual frameworks that guide the development of prevention interventions.

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References

- Adolphs, R. (2009). The social brain: Neural basis of social knowledge. *Annual Review of Psychology, 60*, 693-716. doi: 10.1146/annurev.psych.60.110707.163514.
- Ajzen, I. (1991). The theory of planned behavior. *Organization Behavior and Human Decision Processes, 50*, 179-211.
- Anthony, J. C., & Petronis, K. R. (1999). Early-onset drug use and risk of later drug problems. *Drug and Alcohol Dependence, 40*, 9-15.
- Best, J. R., Miller, P. H., & Jones, L. L. (2009). Executive function after age 5: Changes and correlates. *Developmental Review, 29*, 180-200.
- Blakemore, S. J. (2008). Development of the social brain during adolescence. *Quarterly Journal of Experimental Psychology, 61*, 40-49.
- Brody, G. H., Beach, S. R., Philbert, R. A., Chen, Y. F., & Murray, V.M. (2009). Prevention effects moderate the association of 5-HTTLPR and youth risk behavior initiation: Gene x environment hypotheses tested via randomized prevention design. *Child Development, 80*, 645-661. doi: 10.1111/j.1467-8624.2009.01288.x.
- Brook, J. S., Zhang, C., Balka, E. B., & Brook, D. W. (2012). Pathways to children's externalizing behavior: A three-generation study. *Journal of Genetic Psychology, 173*, 175-197.
- Chaloupka, F. J., Yurelki, A., & Fong, G. T. (2012). Tobacco taxes as a tobacco control strategy. *Tobacco Control, 2*, 172-180. doi: 10.1136/tobaccocontrol-2011-050417.
- Chen, C. Y., Storr, C. L., & Anthony, J. C. (2009). Early-onset drug use and risk for drug dependence. *Addictive Behaviors, 34*, 319-322. doi: 10.1016/j.addbeh.2008.10.021.
- Cicchetti, D., & Blenzer, J. A. (2006). A multi-level-of-analysis perspective on resilience: Implications for the developing brain, neural plasticity, and preventive interventions. *Annals of the NY Academy of Science, 1094*, 248-258.
- Clausen, J.A. (1968). *Socialization and society*. Boston, MA: Little Brown & Company.
- Cook, P. J., & Moore, M. J. (2002). The economics of alcohol abuse and alcohol-control policies. *Health Affairs, 2*, 120-133.
- Degarmo, D. S., Reid, J. B., Fetrow, B. A., Fisher, P. A., & Antoine, K. D. (2013). Preventing Child Behavior Problems and Substance Use: The Pathways Home Foster Care Reunification Intervention. *Journal of Child and Adolescent Substance Abuse, 22*, 388-406.
- Fareri, D. S., Martin, L. N., & Delgado, M. R. (2008). Reward-related processing in the human brain: Developmental consideration. *Developmental Psychopathology, 20*, 1119-1121. doi: 10.1017/S0954579408000576.
- Fishbein, D. H., & Ridenour, T. A. (2013). Advancing trans-disciplinary translation for prevention of high-risk behaviors: Introduction to the Special Issue. *Prevention Science, 14*, 201-205. doi: 10.1007/s11121-013-0394-6.
- Fishbein, D. H. (2013). *An introduction to the etiology of drug use and substance abuse*. Unpublished manuscript, United Nations Office on Drugs and Crime, Vienna, Austria.
- Florez-Salamanca, L., Secades-Villa, R., Hasin, D. S., Cottler, L., Wang, S., Grant, B. F., & Bianco, C. (2013). Probability and predictors of transitions from abuse to dependence on alcohol, cannabis, and cocaine: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *American Journal of Drug and Alcohol Abuse, 39*, 168-179. doi: 10.3109/00952990.2013.772618.
- Foxcroft, D. R. (2013). Can prevention classification be improved by considering function of prevention? *Prevention Science*. Advance online publication. doi: 10.1007/211121-013-0435-1.
- Frith, C. D. (2007). The social brain? Philosophical Transactions of the Royal Society of London Series B Biology, 362, 671-678.
- Garnezy, N. (1985) Broadening research on developmental risk. In W. Frankenburg, R. Emde & J. Sullivan (Eds.), *Early identification of children at risk: An international Perspective* (pp. 289-303). New York, NY: Plenum Press.
- Glantz, M. D. & Pickens, R. W. (1992). Vulnerability to drug abuse: Introduction and overview. In M. D. Glantz & R. W. Pickens (Eds.), *Vulnerability to drug abuse* (pp. 1-14). Washington, DC: American Psychological Association.
- Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin, 112*, 64-105.
- Heatherton, T. F. (2011). Neuroscience of self and self-regulation. *Annual Review in Psychology, 62*, 363-90. doi: 10.1146/annurev.psych.121208.131616.
- Heatherton, T. F., & Wheatley, T. (2010). Social neuroscience. In R. F. Baumeister & E. Finkel (Eds.), *Advanced social psychology* (pp. 575-612). New York: Oxford University Press.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2013). *Monitoring the Future national survey results on drug use, 1975-2012. Volume I: Secondary school students*. Ann Arbor: Institute for Social Research, The University of Michigan.
- Kellam, S., Branch, J., Agrawal, K., & Ensminger, M. (1976). *Mental health and going to school: The Woodlawn Program of assessment, early intervention, and evaluation*. Chicago, IL: The University of Chicago Press.
- Levin, I. P., Xue, G., Weller, J. A., Reimann, M., Lauriola, M., & Bechura, A. (2012). A neuropsychological approach to understanding risk-taking for potential gains and losses. *Frontiers of Neuroscience*, online doi 10.3389/fnins.2012.00015.
- Lopez-Quintero, C., Perex de los Cobos, J., Hasin, D. S., Okuda, M., Wang, S., Grant, B. F., & Bianco, C. (2011).

- Probability and predictors of transition from first use to dependence on nicotine, alcohol, cannabis, and cocaine: Results of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). *Drug and Alcohol Dependence*, 115, 120-130. doi:10.1016/j.drugalcdep.2010.11004.
- Masten, A., Best, K., & Garmezy, N. (1990). Resilience and development: Contributions from the study of children who overcame adversity. *Developmental Psychopathology*, 2, 425-444.
- Mrazek, P.J., & Haggerty, R.J. (1994). *Reducing risks for mental disorders: frontiers for preventive intervention research*. Washington, D.C.: Institute of Medicine.
- Oetting, E. R., & Donnermeyer, J.F. (1998). Primary socialization theory: The etiology of drug use and deviance, I. *Substance Use and Misuse*, 33, 975-1026.
- Petras, H., & Sloboda, Z. (in press). A conceptual foundation for prevention. In Z. Sloboda & H. Petras (Eds.), *Defining prevention science*. New York, NY: Springer.
- Prochaska, J. O. (2008). Decision making in the Transtheoretical Model of Behavior Change. *Medical Decision Making*, 28, 845-849. doi: 10.1177/0272989X08327068.
- Sutherland, E. H., & Cressey, D. (1992). *Principles of criminology*. (11th ed.). Lanham, MD.: AltaMira Press.
- Sutton, S. (2002). Health behavior: Psychosocial Theories. Retrieved at: <http://userpage.fu-berlin.de/~schez/fo-lien/Sutton.pdf>
- Tarter, R., Kirisci, L., Mezzich, A., Ridenour, T., Fishbein, D., Horner, M.,... Vanyukov, M. (2012). Does the "gateway" sequence increase prediction of cannabis use disorder development beyond deviant socialization? Implications for prevention practice and policy. *Drug and Alcohol Dependence*, 123, 72-78. doi: 10:1016/j.drugalcdep.2012.01.015.
- United Nations Office on Drugs and Crime. (2013). *International Standards on Drug Use Prevention*. Retrieved at: <http://www.unodc.org/unodc/en/prevention/prevention-standards.html>.
- Van Leijenhorst, L., Gunther Moor, B., Op de Macks, Z. A., Rombouts, S. A., Westenberg, P. M., & Crone, E.A. (2010). Adolescent risk decision-making: Neurocognitive development of reward and control regions. *NeuroImage*, 51, 345-355. doi: 10.1016/j.neuroimage.2010.02.038.
- Wagenaar, A. C., Salois, M. J., & Komro, K. A. (2009). Effects of beverage alcohol price and tax levels on drinking: A meta-analysis of 1003 estimates from 112 studies. *Addiction*, 104, 179-190. doi: 10.1111/j.1360-0443.2008.02438.x.
- Wagner, F. A., & Anthony, J. C. (2002). From first drug use to drug dependence: Developmental periods of risk for dependence upon marijuana, cocaine, and alcohol. *Neuropsychopharmacology*, 26, 479-488. doi: 10.1038/S0893-133X(01)00367-0.
- Weinstein, N. D., Rothman, A. J., & Sutton, S. R. (1998). Stage theories of health behavior: conceptual and methodological issues. *Health Psychology*, 17, 290-299.
- Weller, J. A., & Fisher, P. A. (2013). Decision-making deficits among maltreated children. *Child Maltreatment*, 18, 184-194. doi: 10.1177/1077559512467846.
- Zucker, R. A., Heitzeg, M. M., & Nigg, J.T. (2011). Parsing the undercontrol/disinhibition pathway to substance use disorders: A multilevel developmental problem. *Child Development Perspectives*, 5, 248-255.