# The effectiveness of prevention programs on underage drinking research paper

Health & Medicine, Alcoholism

and Alcohol Knowledge

# The Effectiveness of Prevention Programs on Underage Drinking

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The U. S. Department of Health and Human Services (2007) considers underage drinking a major public health problem. In 2008, emergency rooms treated around 190, 000 juveniles for injuries related to alcohol abuse (Substance Abuse and Mental Health Services Administration, 2011). Alcohol is the most widely used drug by minors in the United States, accounting for 11% of all alcohol consumption. Binge drinking accounts for more than 90% of juvenile alcohol abuse. According to Substance Abuse and Mental Health Services Administration (SAMHSA), even though the level of alcohol use among juveniles has dropped significantly from 2002-2010, juvenile alcohol consumption remains high for all age groups with the level of drinking increasing between age groups (Fig. 1). Nearly a quarter of minors aged 16-17, and roughly half of minors aged 18-20 reported using alcohol within the past month.

Underage drinking (i. e., consumption of ethanol-based alcoholic beverages by persons under age 21) is associated with problems at school, as students who drink have poor attendance and lower grades (Roebuck, French, & Dennis, 2004). Alcohol consumption is also related to various social problems, like fighting and hanging out with the wrong crowd, which in turn often lead to legal problems as those under the influence will drink and drive (Carpenter, 2007). According to the Centers for Disease Control and Prevention (CDC), motor vehicle accidents are the leading cause of death

among teenagers in the United States—in 2009, there were over 3, 000 deaths of teens aged 15-19. Another 350, 000 had to receive emergency treatment for injuries incurred in motor-vehicle accidents. Alcohol was involved in the great majority of cases. Underage drinking has also been linked to sexually-related diseases due to unprotected sex, as well as behavior-related problems, such as mental problems, depression, suicide/overdose deaths, homicide and risk of injury (Miller, Naimi, Brewer, & Jones, 2007; Substance Abuse and Mental Health Services Administration, 2011; U. S. Department of Health and Human Services, 2007).

Various studies suggest that specific psychosocial risk factors (e. g., genetic predisposition, environmental influences, personality traits, and alcohol knowledge) are strongly associated with juvenile alcohol use (Miller, Naimi, Brewer, & Jones, 2007). As genetics determine the body's tolerance to alcohol and propensity for alcoholism, or alcohol dependence, children of alcoholics have an increased risk for underage drinking (Holder et al., 2000; Miller, Naimi, Brewer, & Jones, 2007). Both peers and parents provide varying levels of environmental influences over juveniles' attitudes towards alcohol, as well as over their accessibility to alcohol (Perry et al., 2000; Williams et al., 1999). Additionally, certain personality traits (e. g., impulsive, sensation-seeking, dependent) may be related to juveniles' decision to either refrain from or try alcohol (Miller, Naimi, Brewer, & Jones, 2007). Finally, knowledge about alcohol's effect on the brain, body, and behavior guides juveniles' decisions to engage in underage drinking and

seems to be the focus of most prevention programs (Perry et al., 2000; Wagenaar et al., 2000; Williams et al., 1999).

## Personality Traits and Underage Drinking

Research has shown that certain personality traits, such as impulsivity, risk-taking, and sensation seeking, predispose juveniles to engage in alcohol usage (Arnett, 2005 as cited in NIAAA, 2006). Baer (2002, as cited in NIAAA, 2006) explained that sensation seeking and impulsivity, which are related to deviant behavior and non- compliance, are predictors of heavy drinking among juveniles. A high sensation-seeker or a risk-taker possesses a heightened need to participate in dangerous or risky behavior such as the consumption of alcohol which most times lead to other deviant behaviors. The perception of young people often causes them to partake in risky activities, such as excessive drinking (i. e. consuming five or more drinks at one time). Young people who fail to avoid harm or harmful situations were prone to drinking and alcohol-related problems (Jones, 1998, as cited in NIAA, 2006). Many juveniles, due to the immaturity of their frontal lobes (involved in decision making and reasoning), engage in alcohol consumption (especially in large amounts and over short periods of time) because they feel invincible and do not perceive themselves as being vulnerable to negative, drinking-related consequences (Arnett, 2005, as cited in NIAA, 2006).

According to Jackson, (2005, as cited in NIAAA, 2006), anxiety disorders, negative moods, and the feeling of depression is likely to influence alcohol use. Lisansky and Gomberg (1982), and Mayer (1998) all cited in Tomori

(1994) that high levels of depression, anxiety, low esteem, and low educational goals are all familiar personality traits that are associated with adolescent problem drinking. Teenagers often use alcohol to cope with these traits and feelings. Thompson (1989, as cited in Tomori, 1994), purported that alcohol is used to relieve stress, regulates moods, enhances communication skills, and boots low self esteem. This notion was also supported by Cooper et al. (2000, as cited in NIAAA, 2006) who found that individuals consume alcohol to cope with negative feelings.

## Genetic Predisposition and Underage Drinking

The genetic predisposition to drink alcohol is believed to be inherited, but should be considered a risk factor rather than one's destiny (Bowles Center for Alcohol Studies, 2012). Compared with children of nonalcoholic's (non-COAs), children of alcoholic parents (COAs) have approximately four times greater risk of becoming alcoholics themselves
(West & Prinz, 1987). Alcoholism or alcohol dependence is defined by the American Medical Association (AMA) as " a primary, chronic disease with genetic, psychosocial, and environmental factors influencing its development and manifestations." Many researchers examining the genetic predisposition for alcoholism will use either twin studies (e. g., Schwartz, 2009) or adoption studies (e. g., Beaver, Nedelec, Rowland, & Schwartz, 2012) to examine evidence of genetic etiology of alcoholism (e. g., Crowe, 2012). Monozygotic twins (i. e., identical twins sharing 100% genetic material) who are raised with a family history of alcoholism are twice as likely to abuse alcohol as dizygotic twins (i. e., fraternal twins)( NIAAA, 2012). Twin studies have shown

that age at first drink may also environmentally mediate increased risk of alcohol dependence (Schwartz, 2009). Researchers have also found that sex may influence alcoholism as identical male twins are more likely than female identical twins to develop alcohol dependency (Crowe, 2012). These findings support the notion that genetics predispose a person to drink (National Institute of Alcohol Abuse and Alcoholism (NIAAA), 2012).

Adoption studies have shown that an adopted child whose natural parents were alcoholic would have higher susceptibility for alcoholism than those whose natural parents were non-alcoholic (Beaver, Nedelec, Rowland, & Schwartz, 2012).

Risk factors may increase or decrease depending on a variety of environmental, social, and physiological factors that converge with genetics, including one's tolerance to alcohol, metabolism, height and weight combination, etc. (NIAAA, 2006). Buddy (2007) found that individuals who have a family history of alcoholism exhibited a dysfunctional stress response prior to developing alcohol dependency. In contrast, individuals who did not have a family history of alcoholism exhibited a dysfunctional stress response following the development of alcohol dependency. In conclusion, the research demonstrates that the genes involved in alcoholism, combined with environmental factors, influence one's susceptibility to alcohol dependence (Coloingwood, 2012).

## Environmental

Adolescent drinking behavior is influence by many socializing agents, particularly parents and peers. According to Sancho, Miguel and Aldas

(2011), parents have the most influence on a child's development from early to mid adolescence. Kelly, Leonora, and Hunn (2002) explain underage drinking using Beck & Lockhart's model of parental involvement as a product of low/ closed communication between parent and child. Low or closed communication between parent & child can be interpreted as no or little exchange of words between the two, this can lead to drinking since parents don't warn their children about the harm & effects. In contrast, open communication between a parent and child reduces the possibility of underage drinking. Open communication can be interpreted as parents constantly exchanging words with their children about alcohol, and knowing about their where about. Another way that parents influence their adolescent's use of alcohol is to model habitual alcohol consumption (Jackson, Heriksen, Dickinson, and Levine, 1997). Parents who drink provide accessibility to alcohol to their children since alcohol is easily found in their own house.

Peer interaction also contributes to underage drinking. According to Hood (1996), the approximate onset age of underage drinking is fifteen years. In mid to late adolescence, juveniles begin to interact more with their peers than with their parents, giving the former a greater influence in either diverting or engaging them in underage drinking (Palmqvist & Santavirta, 2006). Adolescents may begin drinking Alcohol to fill a social void at a time when others around them are also drinking (Windle et al., 2008). Accessibility to alcohol is commonly provided through associations with peers, particularly at parties (NSDUH, 2008). Adolescents' need

## Underage Drinking Prevention Programs

Two main types of prevention programs have targeted underage drinking, including school-based only interventions (e. g., Drug Abuse Resistance Education, DARE), that seek to educate juveniles about the risks of alcohol consumption; and environmental interventions (e. g., Project Northland), which engage schools and the community to curtail juvenile access to alcohol (Jones & Heaven, 1998). Project DARE is a drug prevention program implemented in 1983 for elementary schools, currently in use by 75% of U. S. school districts (Lynam et al., 1999). DARE is taught by police officers and focuses on how resistance to peer pressure to try or use drugs. Advocates of DARE, claim that the program has been proven a success in the prevention or reduction of juvenile drug use (Bonnie & O'Connell, 2004). However, an examination by Lynam et al. (1999) comparing students in the prevention group who received 16 weeks of instruction and those in the control group who learned about drugs as part of their health curriculum did not differ in terms of alcohol, cigarette, or marijuana use, attitudes toward drug use, or self-esteem. The results of their study underscore that prevention programs aimed at juveniles should target specific risk factors, should be implemented more regularly, and consider juvenile drug abuse within a social context.

Project Northland is a longitudinal, multi-phase experiment sponsored by The National Institute on Alcohol Abuse and Alcoholism of the National Institutes of Health (NIAAA) based on social theories that focuses on developing alcohol resistance skills, as recommended by both the National Research Council (NRC), Institute of Medicine (IOM), and Substance Abuse and Mental

Health Services Administration (SAMHSA) (Bonnie, & O'Connell, 2004; Smith, Goldman, Greenbaum, & Christiansen, 1995). This prevention program uses multi-competent and multi-disciplinary strategies that address both intrinsic and extrinsic elements associated with underage drinking by simultaneously reducing the availability of alcohol and enforcing sanctions against drinking (Perry et al., 2002).

In the initial phase, services were provided to randomly selected group of sixth-graders who were then compared to a control group of eighth graders two-years later to evaluate alcohol-related clinical problems, the ability to procure alcoholic beverages, the tendency to use alcohol, drink heavily, ability to function in school, and family functioning before and after intervention. The results showed a significant reduction in alcohol consumption in the intervention cohort, especially among adolescents who reported no use of alcohol at the beginning of the study. Monthly and weekly drinking among eighth-graders in the intervention districts was 20% and 30% lower, respectively, compared to students in the control districts. A minimal intervention consisting of a short classroom program was instituted in the next phase either during the 9th grade (5 sessions) or the 11th grade (6 sessions) that focused on alcohol-reduction education and other facets (e. g., community programs, parent education, social-legal consequences via mock trials). However, there was no intervention program of any kind during the next grade 10th and 12th respectively). Initial progress eroded, particularly when the shortened program was implemented in 11th grade (Perry et al., 2002). Thus, a ' no intervention period' clearly

underscores the importance of sustained intervention throughout the adolescent year.

## Criminological Theory: The Social Development Model

The most successful underage drinking programs operate under a community-based Social Development Model (SDM), which is based on external and internal theories of control (Lonczak, et al., 2001). The concept behind the external theory of control is that there are sociological factors outside the control of the individual that exert a psychological force to restrain the individual's behavior within the boundaries set by society (Rotter, 1996). These forces include individuals like parents, teachers, or law enforcement officers; or institutions, like schools, youth groups or religious organizations. The SDM model adopts a risk-focused preventive strategy that strives to develop a youth's bond with society by promoting the development of socially acceptable beliefs and standards (Lehman, Hawkins, & Catalano, 1994). Youth that have developed a bond with society also develop high standards of behavior and are less likely to break rules that lie outside the norm of acceptable behavior. Members of society can help create and maintain this bond by creating opportunities for the youth to become involved in society, by helping the youth develop the skills that will allow for greater participation in society, and by recognizing the youth's contribution to society. Thus, successful underage drinking programs like Project Northland create opportunities for youths to strengthen bonds within the family, and create bonds within the community, through a wide variety of neighborhood, school, and church programs. By involving the full community

in the program, Project Northland fostered an environment of sustained external social control. The concept behind the internal theory of control is that youth are capable of monitoring and controlling their own behavior, and that the stronger the external controls are, the stronger the internal controls become (Rotter, 1996). For example, were a youth to be faced with a situation where the youth is being pressured to drink, a strong bond with society will guide the youth into making the right choice and refuse the drink, because doing so would disappoint others.

## The primary objective of this study is to develop and evaluate an expanded DARE juvenile alcohol prevention program.

Methods

Participants

The study will enroll 100 students randomly chosen from the general pool of students enrolled in the New York City School District (NYCSD). NYCSD was chosen for this study because this district has one of the worst underage drinking problems. The students will then be randomized into Group 1 (n= 50), to be assigned to a traditional DARE drinking intervention program, or to Group 2 (n= 50), to be assigned to an expanded DARE-Expanded drinking intervention program. Exclusion criteria will consist of students who have participated in other prevention programs, and students who have been living in the NYCSD for less than a year. The study will run from the Fall Semester 2012 to the Spring Semester 2019. At the end of the study, only those students who complete the full program will be evaluated for the

outcome variables. A limitation of this study is that it cannot control for attrition.

## Design

The study will be a two-group randomized quasi-experimental study. The effect of two independent variables on underage drinking will be evaluated: the traditional DARE program, and the expanded DARE-Expanded program. Two dependent variables will be used to determine success of the programs, prevalence of drinking and prevalence of binging.

## Materials and Scoring

Materials. Measurement of variables related to the goals of the intervention programs includes the administration of an online computer-assisted self-interviewing (CASI) questionnaire to enhance confidentiality and encourage higher rates of self-reporting. There will be 20 questions in the survey, and the majority of the survey (17/20) will consist of close-ended, exhaustive and mutually exclusive questions to provide uniformity. Outcome measures will include self-reported use of selected substances, and several risk and protective factors known to be predictive of substance use. The period over which changes are to be assessed is to run from the Fall Semester 2012 to the Spring Semester 2019. The relative success of the two programs will be measured by comparing prevalence rates for students in Group 1 to those in Group 2.

Scoring. Answers to the survey will be evaluated with a SPSS program for frequencies and fit. Cross-tabulations and Chi square will be conducted for each type of DARE program against each of the outcome variables.

## Programs

Both the traditional DARE program, and the DARE-Expanded program will be integrated into the school's health curriculum. Lesson plans specifically targeting the effect of underage drinking on the body and mind will be implemented once a week and are to include at least one lecture each semester by a healthcare professional, as well as participation by local law enforcement officers through a series of oral presentations, and consist of at least two presentations per semester. Students will also participate in a series of field trips to alcohol rehabilitation centers, once per semester.

## Procedure

All students within the NYCSD are required to enroll in a health class from 6th-12th grade. Four of those classes will include a traditional DARE program in their curricula, another four will include an expanded DARE-Expanded program, and the rest of the health classes will cover their normal curricula. Students entering the 6th grade during the Fall Semester of 2012, who have been residents of the district for at least a year, and who have not participated in any drinking program will be randomly assigned to one of the eight health classes with a DARE program in their curricula. Participation will be mandatory. However, should a student opt out of the study at the start of the first semester of the study for any reason, a new student will be enrolled in his or her place. Thereafter, attrition will be allowed to take its course. Students in Group 1 will be enrolled in a traditional DARE program for two consecutive semester. Students in Group 2 will be enrolled in an expanded DARE-Expanded program for seven consecutive years.

We first evaluated the prevalence of drinking within the two groups. Figure 1 is a cross-tabulation of the prevalence of alcohol drinking and the DARE program the students participated in. The drinking to non-drinking ratios were . 24 (10/41) and . 27 (14/51) for Group 1 and Group 2, respectively, suggesting that the extended DARE program offered no significant benefit over the traditional DARE program.

## Figure 1. Correlation Between Type of DARE Prevention Program and Prevalence of Underage Drinking.

We then evaluated the correlation between underage drinking and drinking in the family. The ratio of drinking to non-drinking students fro students with drinking family members was . 31 (22/70) versus . 09 (2/22) for students whose family members do not drink alcohol, strongly suggesting that the environmental is a critical factor affecting underage drinking.

## Figure 2 Correlation between family drinking and juvenile drinking

We also evaluated the relationship between binge drinking and type of DARE program and family drinking status. The ratio of binge drinkers to non-binge drinkers for Group 1 was more than twice as high as that of students in Group 2, . 46 (16/35) versus . 20 (11/54), respectively, suggesting that although the prevalence of drinking is higher in Group 2, when they engage in drinking they do so at lower levels than students in Group 1. A similar correlation was found between binge drinking and students with families who drank, a ratio of . 71 (10/14) for students with family members who drink versus . 23 (17/75) versus for students with non-drinking family members.

## Figure 3 Correlation between type of DARE program and binge drinking

Figure 4 Correlation between family drinking and binge drinking

The next step was to evaluate where the students are doing their drinks, and see if it correlates with family drinking; that is, whether the students are doing their drinking at home. The private home drinking ratio for students with a non-drinking family was . 25 (23/92) versus a ratio of . 125 (3/24) for students with drinking family members. Most students did their drinking outdoors, strongly suggesting that underage drinking is a social event, a ratio of . 59 (54/92) for those in a drinking family and of . 42 (10/24) for those with a drinking family.

## Figure 5 Correlation between family drinking and place of drinking

Conclusion

The data strongly suggest that the factor with the most impact on underage drinking is having a family member who drinks alcohol.

## Survey

1. Do you drink alcohol? If your answer is NO, go to Question #11

2. Where do you get your alcoholic drinks?

3. How often do you drink?

4. Where do you drink?

5. Do you drink alone?

6. What type of alcoholic beverages do you drink?

7. Have you ever been drunk?

8. Have you ever participated in binge drinking? If your answer is NO, skip to Question # 11

9. How many times have you participated in binge drinking?

10. Have you ever been arrested for being drunk?

11. Does anyone in your family drink alcohol?

12. Do you think alcohol drinking is bad for your health?

13. Have you ever taken any drugs? If your answer is NO, go to Question #15

14. What types of drugs do you take?

15. Do you smoke cigarettes?

16. Are you involved in any sports?

17. What is your GPA?

18. What is your gender?

19. What is your race/ethnic background?

20. Which DARE prevention program were you enrolled in?

## Survey

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