

Program Evaluation of “In the Know” Substance Abuse Prevention Curriculum

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March 31, 2003

Substance abuse in young people is associated with a wide variety of difficulties. For example, alcohol-related motor vehicle accidents are the leading cause of death among 15-24 year olds (American Academy of Pediatrics 1987). Substance abuse is also highly correlated with legal problems, promiscuity, and suicide in adolescence (Piacentini & Pataki 1990). One particularly troubling finding indicated that 53% of 133 suicides of individuals under the age of 30 had a primary diagnosis of substance abuse (Fowler, Rich, & Young, 1986).

Youthful drug use increases as youth approach young adulthood, with usage rates doubling between the 8th and 10th grades for many substances (Johnston, O’Malley, & Bachman, 2002). To address the growing problem of youth substance abuse, schools have implemented a number of prevention and intervention programs. Although such programs are widespread, their effectiveness is unclear. The present study examined the effectiveness of a widely used program called “In The Know,” which provides video and written format presentations to middle and high school students on the effects of alcohol, tobacco, marijuana, hallucinogens, and other drugs commonly used by youth.

Previous research on the effectiveness of child and adolescent drug prevention programs has been mixed, with some findings suggesting that education about the negative effects of drug use is an effective preventive measure (Young, Kersten, & Werch, 1996; Schaps, Moskowitz, Condon, & Malvin, 1982). Other findings suggest such programs are differentially effective for boys and girls (O’Rourke & Barr, 1974), and still others suggest little effect of school-based prevention programs (Cole, 2000; Roberts, Fournet, & Penland, 1995). The inconsistency in these findings may result from the fact that some programs fail to incorporate enough specific information, because knowledge of the adverse consequences of one drug may not generalize to the use of other drugs. That is, beliefs about harmful versus positive drug effects appears to be specific to particular drugs (Johnston et al., 2002).

Studies of prevention programs tend to examine only the relationship between exposure to the program and later use of substances. To understand why prevention programs do or do not have the intended effects, it may also be important to examine whether the youth who participate in such programs exhibit changes in the mechanisms related to substance abuse. The assumption underlying educational programs is that informing children and adolescents of the negative effects of drug use will lead to increased knowledge about the consequences of drug use. Increased knowledge, in turn is thought to lead to changes in what positive or negative effects youth expect drugs and alcohol to cause (referred to as drug and alcohol expectancies). Changes in knowledge and expectancies then are thought to lead to decreased risk for initiation and continuation of drug use.

Research indicates that children's knowledge about drug use grows as they mature, and that there is an association between knowledge, attitudes, and drug expectancies (Robin & Johnson, 1996). A strong body of research has demonstrated that expectancies are related to behavior, and specifically to drug and alcohol use (Stacy, Widaman, & Marlatt, 1990; Christiansen, Goldman, & Inn, 1982; Christiansen, Smith, Roehling, & Goldman, 1989; Leigh, 1989; Schafer & Brown, 1991). Positive expectancies are especially important: youth who expect many positive effects of drugs are more likely to initiate and maintain drug use. In addition to knowledge about their effects, past use of drugs and alcohol also shapes expectancies (Leigh, 1989).

Substance abuse is extremely widespread among American youth. The annual Monitoring the Future study (MTF) tracks long-term trends in drug use in American adolescents, college students, and adults through age 40 in a large, nationally representative sample (Johnston, O'Malley, & Bachman, 2002). Key findings from MTF indicate that over half of all youth have tried an illicit drug by the time they finish high school. Nearly two-thirds (61%) of American youth have tried cigarettes by the 12th grade, and 30% of 12th graders are current smokers. As early as 8th grade, almost four in every ten students (37%) have tried cigarettes and 12% are current smokers. Alcohol use is especially common; four out of every five students (80%) have consumed alcohol (more than a few sips) by the end of high school, and 50% have done so by the 8th grade. Perhaps more importantly, 50% of 12th graders and 23% of 8th graders report having gotten drunk during their lifetime and about 10% of 8th graders report having done so in the past 30 days. The most commonly used illicit drugs, marijuana and hallucinogens, are also widespread. Twenty one percent of 8th graders report having used marijuana during their lifetimes, with almost 10% reporting use in the past 30 days. These numbers escalate to half of all youth trying marijuana by the 12th grade. Although hallucinogens are used by a smaller proportion of youth, their use more than triples between the 8th and 12th grades, and nearly 20% of youth report having used hallucinogens by high school graduation (Johnston et al., 2002).

The most effective prevention programs are those that target individuals most at risk for any particular outcome. Middle and high school students have sufficient cognitive development to benefit from a prevention program that is knowledge based. Early adolescents are in the process of attitude formation and prevention programs that target knowledge, attitudes, and expectancies may be particularly effective with this age group. In short, targeting students during ages of attitude and knowledge formation and prior to and during the time when substance use rather dramatically escalates appears to be particularly important.

Based on these findings, the current investigation examined the effectiveness of the "In the Know" preventive intervention in increasing knowledge about drugs and alcohol, and in changing the expectancies about their effects in youth participating in the program. Specifically, the investigation examined one primary and two secondary outcomes. The primary outcome was effectiveness of the intervention in increasing knowledge about drug and alcohol effects, as this is what the intervention is designed to do. Secondarily, we examined its effectiveness in reducing positive and increasing negative expectancies related to use of those substances with high prevalence of use by youth - alcohol, tobacco, marijuana, and hallucinogens (Johnston et al., 2002). Positive expectancies appear to be particularly important as past research indicates increased positive expectancies are the more strongly related of the two to patterns of substance use. It should be noted that research on tobacco expectancies suggests little or no effect on

tobacco use. Given their limited value and in order to maintain a manageable length survey, tobacco expectancies were not examined.

Consequently, the program's effectiveness will be assessed by the extent to which it changes the participants' knowledge of the effects of alcohol, tobacco, marijuana, and hallucinogens and secondarily, changes in positive and negative expectancies related to the use of alcohol, marijuana, and hallucinogens.

Participants

Participants were 385 6th-12th-grade students from several public middle and high schools in a large southern city. There were 143 middle school participants (6th – 8th grades) and 239 high school participants (9th – 12th grades), with 123 participants in the alcohol, tobacco, marijuana (ATM) intervention group and 62 participants in the ATM control group, 136 participants in the hallucinogen intervention group and, 64 participants in the hallucinogen control group. The participants were 29% male and 68% female, 34% African-American, 32% Caucasian, 17% Hispanic, 6% Asian, 4% Bi-Racial, and 2% Native American with an average age of 14.6 (S.D. = 2.1). 5% of participants did not report gender and 5% did not report race or ethnicity.

The "In the Know" curriculum is implemented voluntarily by the Jefferson Parish School District in southeastern Louisiana as part of their "Safe and Drug Free Schools" program. Participating schools volunteered to participate in research on the effectiveness of the curriculum. Each participating school received a copy of the "In The Know" videotape and informational library for continued use in their program.

All students in the target grades participate in substance abuse preventive education program as part of their health class. All students in those grades were given letters inviting parents to consent to their youth's participation in research on drug and alcohol prevention. The students were offered a "gel pen" for returning the completed consent forms to their homeroom teachers. These pens were given to students for return of the consent form regardless of whether the student's parent(s) or the student consented to participation in the research. The letters and consent forms clearly state that participation is voluntary, that the prevention curriculum is a regularly scheduled classroom activity, and that participation in the research is not required for the student to participate in the prevention activities. The consent forms also clearly note that the research surveys are anonymous and that no individual youth, their attitudes, or their past or current substance use can be identified (pre- and post-test were linked with coded numbers).

Students with parental consent were given assent forms asking for their participation in the research arm of the prevention curriculum. The youth assent forms also clearly state that participation is voluntary, that the prevention curriculum is a regularly scheduled classroom activity, and that participation in the research is not required for the student to participate in the prevention activities. The assent forms also clearly note that the research surveys are anonymous and that no individual youth, their attitudes, or their past or current substance use can be identified. The assent forms were gone over verbally and students had the opportunity to read them before agreeing to participate.

Method

The study used a randomized design and selected alternating health classes for intervention and control groups to optimize evaluation of the effectiveness of the “In the Know” preventive intervention (with more students assigned to the intervention conditions for increased statistical power in data analysis). The “In the Know” series consists of units that use the same format to present information on individual drugs or groups of drugs. The current study targeted those units presenting information on substances that have the highest usage rates among adolescents (an alcohol, tobacco, and marijuana unit, and a hallucinogen unit).

The intervention was randomized within the six schools, so that participating students in intervention and control groups came from all six schools. Randomization of classes within schools minimized the possibility of differences among groups related to different student characteristics in different neighborhoods and schools. Classrooms were assigned to receive an alcohol, tobacco, and marijuana unit, or a hallucinogen unit, or to serve as a survey only control classroom. The control classrooms later participated in either an alcohol, tobacco, and marijuana unit or a hallucinogen unit.

Following verification of parental consent forms and completion of youth assent forms, all classrooms in the intervention groups completed pre-test and post-test survey questionnaires. The survey examines two domains. The survey asked questions about (1) Knowledge of the effects of drugs and alcohol (either alcohol, tobacco, and marijuana – 25 items or hallucinogens – 20 items), (2) Drug and alcohol expectancies, this is, expectations of positive and negative consequences in their social and cognitive functioning, how much fun they will have, and several other domains, if they drink alcohol or use the specific drugs targeted in the intervention. The hallucinogen, alcohol, and marijuana expectancy questionnaires each contained 34 items. Those youth who do not drink or use drugs are asked to respond to the expectancy questions according to what they think would happen if they did drink alcohol or use marijuana or hallucinogens.

Following the pre-test survey, intervention classrooms viewed either a 15 minute videotape that discusses and illustrates the effects of hallucinogens, or a 25 minute videotape that discusses and illustrates the effects of alcohol, tobacco, and marijuana. After the videotape is completed, the youth participated in a discussion period led by their health teacher. The teacher received printed materials to guide this discussion. These materials referred to both the videotape and the accompanying pamphlets. Although the pamphlets are intended to accompany discussion, they were not used during the evaluation because they contained answers to the survey questions.

At the end of the intervention period, consenting students in the intervention classrooms completed the post-test survey of the sets of questions examining their knowledge of drug and alcohol effects and expectancies. These sets of questions are identical to those they completed in the initial survey.

Return of parental consent forms varied from classroom to classroom. Some classes achieved 95%-100% return rates and others were considerably lower, with the lowest at approximately 33%. One large middle school received volunteers only from female health classes (which in this school are segregated by gender as they are combined with physical education, contributing to

the imbalance of gender in the sample. Return rates of consent forms were higher in classes conducted by female teachers in most schools.

Results

Comparisons of the intervention and control groups showed no statistically significant pre-test differences on age, grade, gender, ethnicity, drug and alcohol knowledge scores or drug and alcohol expectancy scores. The selection procedure appears to have formed comparable groups.

Knowledge of Drug and Alcohol Effects

Alcohol, Tobacco, and Marijuana. The intervention group had a significantly higher mean post-test score than the control group on the knowledge items, $F(1, 183) = 42.9, p < .0001$. The effect size for this analysis is $d = 1.04$. Effect sizes computed as Cohen's d indicate the difference in standard deviation units. In this case, the intervention group had scores at post-test about one standard deviation higher than the control group. Additionally, the intervention group had a significant increase in their knowledge scores from pre-test to post-test, $F(1, 122) = 139.7, p < .0001$. The average score in the intervention group increased from pre- to post-test by 50%.

Hallucinogens. The intervention group had a significantly higher mean post-test score than the control group on the knowledge items, $F(1, 198) = 378.9, p < .0001, d = 2.9$. Additionally, the intervention group had a significant increase in their knowledge scores from pre-test to post-test, $F(1, 135) = 240.41, p < .0001$. The average knowledge score in the intervention group doubled from pre- to post-test.

Drug and Alcohol Expectancies

Alcohol, Tobacco, and Marijuana. The intervention group showed a statistically significant decrease in positive expectancies for alcohol use from pre- to post-test, $F(1, 94) = 4.47, p < .05$, and for marijuana use, $F(1, 67) = 6.56, p < .05$. Negative expectancies for both alcohol and marijuana increased from pre- to post-test, although the changes were just outside the range conventionally considered statistically significant ($p < .06, p < .07$). Expectancies in the intervention group at post-test were not significantly different from the control group.

Hallucinogens. The intervention group showed a significant decrease in positive expectancies for hallucinogen use from pre- to post-test, $F(1, 96) = 6.32, p < .05$, and a significant increase in negative expectancies from pre- to post-test, $F(1, 96) = 5.53, p < .05$. Expectancies in the intervention group at post-test were not significantly different from the control group.

It should be noted that various younger students (6th – 9th- grades) reported a lack of understanding of the concept of drug and alcohol expectancies or had difficulty imagining the effects of substances with which they were unfamiliar. As a result, data were missing from some expectancy questionnaires. These questionnaires were omitted from analyses. As one approach to testing the validity of the overall results, analyses on the expectancies were re-run with only high school students and the pattern of results was mostly unchanged with the exception of a significant difference between groups on negative hallucinogen expectancies, $F(1, 92) = 9.89, p$

< .01. Nevertheless, results on the expectancies should be interpreted with caution because of missing data.

Additional Analyses

To examine hypotheses that outcomes may differ by age, grade, race, and gender, the above reported within and between groups analyses were run with these age, grade, race, and gender as covariates. Although two statistically significant differences were found, neither is considered to alter the overall pattern of results. 14-year-old students showed larger decreases than both younger and older students in some positive expectancies for hallucinogens, and middle school students showed larger decreases in some positive expectancies for alcohol than did high school students. Development of expectancies is not specific to particular ages and the difference is probably due to sampling variability. Although a difference between middle and high school students on changes in expectancies is potentially interesting and important, the relatively small sample of middle school students and degree of missing data on expectancy items precludes drawing firm conclusions from this difference.

Discussion

Results of this study suggest that the “In the Know” substance abuse prevention curriculum was effective in changing middle and high school students knowledge of the effects of drugs and alcohol, at decreasing expectancies for positive effects, and increasing expectancies of negative effects of substance use. Stronger effects were observed in the unit targeting only one class of drugs (hallucinogens). Overall knowledge was doubled in the hallucinogen unit and increased by 50% in the alcohol, tobacco, and marijuana unit (ATM). Some changes in expectancies were observed, although the expectancy effects were somewhat smaller in magnitude and breadth. Effects may have been somewhat smaller in the ATM unit because of the larger range of information presented. It should also be noted that the questionnaires were longer for the ATM unit and required more time. The somewhat smaller effects may have also been a result of a higher response burden on the young participants. A higher response burden can reduce research participants’ motivation to respond accurately and may reduce intervention effects (Shadish, Cook, & Campbell, 2002).

Substance abuse prevention programs that include factual information on drug and alcohol effects vary in terms of whether youth, adults, or both youth and adults present the information. Such programs also vary as to whether the messages are specific to particular substances or provide more general information. Additionally, educational approaches to substance abuse prevention differ by length, format, and amount of information.

Effective educational approaches to drug and alcohol prevention for youth emphasize knowledge specific to particular substances (Johnston et al., 2002) and use peers to deliver information. The “In the Know” program comprises numerous units, each of which delivers specific information about a class of drugs (e.g., hallucinogens). The “In the Know” series uses videotaped sequences, which frequently involve youth providing information and discussion about substances, and discussion of their negative effects. The specific videotaped information is intended for use with written information (i.e., colorful pamphlets) and classroom discussion led by teachers. The “In

the Know” format of approximately twenty-minute videotapes combined with classroom discussion appears to be very effective in increasing knowledge of drug and alcohol effects. This approach also appears to have smaller secondary effects in decreasing expectations of positive experiences and increasing expectations of negative experiences associated with substance use. Effects may be even stronger when accompanying pamphlets are used, as they should serve to reinforce information provided in the videotapes and discussion.

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