



Substance Use Prevention in a Youth Development Program

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Abstract

This study assessed substance use and related factors among sixth through twelfth grade participants in a youth development program. Comparisons between participants ($N = 361$) and a national youth sample indicated that participants had lower 30-day and lifetime alcohol use, lower 30-day and lifetime prevalence of any illicit drug use, and higher drug-averse attitudes than the national sample. Comparisons between participants and new enrollees ($N = 145$) indicated higher drug knowledge among participants. The study also showed a short-term increase in self-esteem among new enrollees, no changes in substance use, and an unexpected negative effect for drug knowledge after 3 months in the program. Overall, the program had a minimal impact on participants' drug use and related factors. Recommendations for program improvements are discussed.

Substance Use Prevention in a Youth Development Program

Youth substance abuse is a critical national concern, with devastating medical, social, and economic costs (Centers for Disease Control and Prevention, 2008; Johnston, O'Malley, Bachman, & Schulenberg, 2007; Substance Abuse and Mental Health Services Administration [SAMHSA], 2008). Poor academic performance, school attrition, infectious diseases, violence, and other behavioral problems are just some of the harmful consequences of youth drug abuse and addiction, making prevention a key issue (Huizinga, Loeber, & Thornberry, 1993; National Institute on Drug Abuse [NIDA], 2006; Newcomb & Bentler, 1988).

Positive youth development programs are receiving much interest as a method for reducing the risk of youth drug abuse (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2002). These types of programs seek to promote a positive developmental pathway for youth, and prevent the occurrence of problems, by promoting social, emotional, and behavioral competence or skills, fostering resilience, self-efficacy and social norms, as well as providing drug prevention education. Youth development programs often use a combination of drug abuse prevention approaches that may include social influence and skills training, modifying risk and protective factors, and traditional education and information dissemination.

The effectiveness of youth development programs in changing drug-related behaviors, attitudes, and knowledge has varied. Several school-based programs, or programs with school-based components, have demonstrated positive behavioral effects among youth, such as decreased alcohol, cigarette, or marijuana use (Botvin, Baker, Dusenbury, Tortu, & Botvin, 1990; Ellickson, Bell, & Harrison, 1993; Perry, Williams, Veblen-Mortenson, Toomey, Komro, Anstine, et al., 1996) and lower overall drug use (LoSciuto, Freeman, Harrington, Altman, & Lanphear, 1997). Participation in less-structured prevention programs, such as regular attendance

at the Boys and Girls Clubs of America, and participation in the Big Brothers Big Sisters mentoring program, have been shown to be associated with lower drug use (Anderson-Butcher, Newsome, & Ferrari, 2003; Tierney, Grossman, & Resch, 1995). In addition to positive results, a few youth development programs have shown unanticipated negative effects such as increased drug-related attitudes (LoSciuto et al., 1997) and increased cigarette use among baseline smokers (Ellickson & Bell, 1990). In some studies that also targeted psychosocial factors related to substance use, such as self-efficacy and self-esteem, no effects were found for these factors (LoSciuto et al., 1997; Perry et al., 1996). It is difficult to draw strong conclusions about the effectiveness of youth development programs from existing research due to the variability in measures and reported findings. This study addressed the need for additional research in this area regarding the effects of a youth development program on substance use prevention.

The objectives of this study were to (1) evaluate the effectiveness of an existing youth development program on drug use by comparing self-reported drug use, drug-related attitudes, and knowledge, and positive character traits of program participants with two peer groups; and (2) assess short-term changes in drug use and related factors among program participants.

Methods

Study Design

This study consisted of two methodological approaches. The first approach was to compare self-reported drug use, attitudes, knowledge, and psychosocial characteristics among program participants with two comparison groups: a national sample of adolescents from a large, in-school survey of drug use, and children who recently enrolled in the youth development program but had not yet been exposed to the program's routine drug prevention education. The

second approach was a pretest-posttest study with new program participants to assess short-term changes in drug use, attitudes, knowledge, and positive character traits over a 3-month period.

Program

The program evaluated in this study is a youth development program that focuses on character building, teamwork, leadership, fitness and drug prevention education. This national program is organized into local community-based programs run by adult volunteers. Participants meet with their local program once or twice per week year-round. The content of the drug prevention education focuses on problem solving and resisting peer pressure, drug facts and the effect of drugs on the body, social and media influences, drug laws, alternative activities, and being role models for other youth. However, the specific content of the lessons and its implementation is determined by the individual local programs. Common strategies used by the program for drug prevention are providing structured activities, group educational presentations, and other information dissemination.

Participants

The study participants were boys and girls in the sixth through twelfth grades who were currently enrolled in the youth development program as regular members or new enrollees at units across the United States. Regular members were participants who had completed the orientation process and were active members of the program. New enrollees were participants who had not yet completed the orientation process at the time of the survey. Hence, the new enrollee comparison group was enrolled in the program but not yet exposed to the intervention.

The national comparison group was obtained from the Monitoring the Future (MTF) study, which is an in-school survey of drug use based on probability samples of adolescents (<http://monitoringthefuture.org/>). A comparison data file of youth in eighth, tenth, and twelfth

grades was created from the publicly available MTF datasets from 2006 (Substance Abuse and Mental Health Data Archive [SAMHDA]), the most recent data available at the time of the study.

Procedures

A random sampling procedure, stratified by program size, was used to identify 90 local programs that were targeted for the study. Parents of program participants were made aware of the opportunity for their child to take part in the study via an online announcement posted on the program's Web site and flyers that were sent to the targeted local program leaders. Parents provided their written informed consent via regular mail before the survey was administered. Youth provided their assent just prior to completing the survey. The investigators administered the survey in-person to the larger programs at their regularly scheduled meetings and password-protected, online survey access was made available for all other participants with Internet access. The research staff emphasized the voluntary nature of the survey and the confidentiality of the data collection. The Flesch-Kincaid reading level of the survey was 6.9, corresponding to an approximately seventh-grade reading level; however, the research staff helped participants who experienced difficulty understanding the survey questions. The youth took approximately 30 to 45 minutes to complete the survey. For participants who completed the survey online, the opening screen of the survey reminded the parent and the youth that the survey was to be filled out by the youth in complete privacy.

Measures

The survey queried participants on demographics, drug behaviors, drug-related attitudes, drug knowledge, psychosocial characteristics, and other items. In order to facilitate comparisons

with the national sample, the alcohol, tobacco, and drug use; attitudes; and self-efficacy items mirrored those in the national MTF study (Bachman, Johnston, & O'Malley, 2008).

Demographics. Gender, race, age, and grade were assessed in the survey, as well as length of time in the program.

Alcohol and tobacco use. Cigarette smoking was assessed by asking: "Have you ever smoked cigarettes?" and "During the past 30 days, about how many cigarettes have you smoked per day?" Thirty-day use was defined as any use of cigarettes during that period and was reported among only those respondents who had ever smoked cigarettes. Alcohol use was measured similarly by querying lifetime use, as well as use within the last 30 days. Thirty-day alcohol use was reported among only those respondents who had ever had any alcoholic beverage.

Drug use. Participants were queried about their drug use levels for various drugs using a standard set of two questions: "On how many occasions (if any) have you used [specific drug]... (a) in your lifetime? and (b) during the last 30 days?" Both questions were answered using the same response scale: 0 occasions, 1–2, 3–5, 6–9, 10–19, 20–39, and 40 or more occasions. Illicit drug use was defined as the use of marijuana/hashish, LSD, hallucinogens other than LSD, cocaine, amphetamines, methamphetamine, crystal methamphetamine, sedatives, tranquilizers, narcotics other than heroin, steroids or MDMA (ecstasy). For the psychotherapeutic drugs (amphetamines, sedatives, tranquilizers, and narcotics other than heroin) and anabolic steroids, respondents were instructed to include only use "on your own—that is, without a doctor telling you to take them." Participants who answered "1–2" or more occasions of use for one or more illicit drug items for the last 30 days, regardless of missing data, were counted as current, any illicit drug users. Participants who reported "0" occasions for all drug

items were counted as non-illicit drug users; those with missing data were excluded. Missing “past 30 days” drug values for cases with lifetime use of “0” on that particular drug, were imputed to have a past 30 days value of “0.”

Drug-related attitudes. Attitudes and aspects of the immediate social environment that may have affected a participant’s use of drugs were measured including the extent of exposure to friends’ use, personal disapproval of drug use, perceived risk of harmfulness of various drugs, and perceived availability of drugs. Exposure to friends’ use was measured with the item, “How many of your friends would you estimate?...” followed by “...smoke cigarettes,” for example. Response categories were, “None,” “A few,” “Some,” “Most,” and “All.” Five items that asked about the use of cigarettes, marijuana, cocaine, drinking alcohol, and getting drunk were used to create an overall friends’ drug use scale. The scale’s coefficient alpha for the present regular participant sample was 0.88. Personal disapproval of substance use was measured by the question, “Do you disapprove of people doing each of the following?” followed by “trying marijuana once or twice,” for example. Response categories were, “Don’t disapprove,” “Disapprove,” and “Strongly disapprove.” Six items that asked about the use of cigarettes, marijuana, cocaine powder, “crack” cocaine, drinking alcohol nearly every day, and binge drinking were used to create an overall personal disapproval of drug use scale. The scale’s coefficient alpha for the present regular participant sample was 0.85. Perceived harmfulness was measured by the item, “How much do you think people risk harming themselves (physically or in other ways), if they...” followed by “...smoke one or more packs of cigarettes per day,” for example. The response categories were, “No risk,” “Slight risk,” “Moderate risk,” “Great risk,” and “Can’t say, drug unfamiliar.” Seven items that asked about the use of cigarettes, marijuana, cocaine powder, “crack” cocaine, drinking alcohol nearly every day, binge drinking, and heroin

use were used to form an overall risk of harm of drug use scale. The resulting coefficient alpha for this 7-item scale was 0.90. Perceived availability, or access to drugs, was measured by the question, “How difficult do you think it would be for you to get alcohol, marijuana (each asked separately), if you wanted some?” Response categories were: “Probably impossible,” “Very difficult,” “Fairly difficult,” “Fairly easy,” and “Very easy.” The two items were used to create an access-to-drugs scale, with a resulting coefficient alpha of 0.80.

Drug knowledge. Drug knowledge was assessed with 15 multiple-choice items about the dangers and consequences of drug use, drug classifications, and common forms of drug substances. The content was derived from the organization’s guide books for the youth. The group of questions included 3 tobacco-related items, 4 alcohol-related items, 3 marijuana-related items, and 5 items on other drugs. Overall drug knowledge was calculated as the number of correctly answered items.

Psychosocial characteristics. Psychosocial factors included self-esteem and self-efficacy/personal responsibility. Self-esteem was measured using 12 questions that were modified from the Rosenberg Self-Esteem Scale (Rosenberg, 1965). The items included statements such as, “I have a positive attitude toward myself,” “On the whole, I’m satisfied with myself,” and “I enjoy life as much as anyone.” Response categories were: “Disagree,” “Mostly Disagree,” “Neither,” “Mostly Agree,” and “Agree.” Self-efficacy/personal responsibility was measured using the investigator-developed 10-item scale that asked, “How much do you agree or disagree with the following statements?” Items included statements such as, “I’m confident I can avoid drinking alcohol,” “I’m confident I can set goals and achieve them,” and “I have a responsibility to make the world a better place.” Response categories were: “Strongly Agree,”

“Agree,” “Disagree,” and “Strongly Disagree.” The coefficient alpha for this 10-item scale was 0.85.

Statistical Analyses

It was important for the regular program participants to be representative of the general youth population in order to facilitate the comparison with the national sample of adolescents. Consequently, we standardized the regular participant sample to reflect the grade, gender, and race distribution of the national sample by applying poststratification survey weights. To increase robustness and overall power of the national database comparison, we used all of the available 2006 MTF survey data (i.e., all available cases without missing data for grade, gender, and race). (However, because the national study used multiple questionnaire forms for each grade level, and because not all of the same questions were contained on all forms, the number of cases reported for a particular item in our comparison varies. In addition, a number of survey items were given only to twelfth graders in the national study. For the comparison of these variables, the analyses were conducted between eleventh- and twelfth grade-only regular program participants [weighted only on gender and race] and the MTF twelfth graders.)

Descriptive statistics, including frequency and percentage distributions, means, and standard deviations, were computed to examine the survey data. Independent *t* tests for means and chi-square tests for proportions were conducted to examine differences in key variables in the weighted regular participant sample and the national sample, as well as the regular participants and new enrollees. Fisher’s exact value tests were used in comparisons where the expected value of any cell was less than 5. McNemar tests and paired *t* tests were performed to examine the pre- and posttest data. Statistical analyses were performed using SPSS software, Rel. 17.0.0, 2008 (SPSS, Inc., Chicago, IL).

Results

Comparison Study

Initial survey response rate. A total of 54 of the 90 targeted programs participated, for an overall 60.0% program response rate. Regarding individual participants, we collected 514 surveys from 657 program members whose parents had signed a consent form, resulting in a 78.2% individual response rate. Eight surveys had missing data for the item that indicated whether the participant was a regular program participant or a new enrollee and therefore were not included in the analyses. Therefore, the final sample size was $N = 506$. This group of respondents included 361 regular program participants and 145 new enrollees.

The MTF national survey reported an overall individual response rate that ranged from 82% to 89% (Bachman, Johnston, O'Malley, & Schulenberg, 2006). The MTF comparison sample constructed for the present study contained 46,466 respondents from the 2006 survey.

Background characteristics. The program participants ranged in age from 10 to 18 years. Table 1 shows that the mean age of regular program participants was 13.9 years. The majority of regular and new enrollee participants were male. The national sample had a smaller percentage of males than the regular participant sample ($p < .001$). The majority of participants were in the sixth, seventh, and eighth grades. However, a larger percentage of the new enrollees were in these lower grades ($p < .01$), and a smaller percentage of the national sample was represented by these lower grades ($p < .05$) when compared with the regular participants in the program. In addition, there were a larger percentage of twelfth graders in the national sample than in the regular participant sample ($p < .001$). Sixty-six percent of the regular program participants were White, 23.1% were Hispanic, 7.9% were Black, and 2.8% were of other races. The new enrollees

had a racial distribution similar to that of the regular program participants. Similarly, the largest majority of respondents in the national sample was White (71%); however, the racial distribution of the national sample was different from the regular participant sample. The national sample was more likely to be White ($p < .05$), Black ($p < .01$), and of other races ($p < .001$), and less likely to be Hispanic ($p < .001$) compared to the regular participants. As previously noted, the regular participant sample was then standardized to reflect the grade, gender, and racial distribution of the national sample for subsequent comparisons.

 Insert Table 1 here

Comparison of Regular Participants and National Sample

Table 2 shows that the weighted regular participants were significantly less likely than the national sample to use alcohol in the last 30 days among those respondents who had ever drunk alcohol ($X^2 = 7.18, p < .01$) and less likely to report ever having an alcoholic beverage ($X^2 = 28.9, p < .001$). There were no significant differences in cigarette smoking among the groups. Regular participants were about half as likely to report any illicit drug use for the last 30 days ($X^2 = 27.3, p < .001$), and were less likely to report lifetime use of any illicit drug compared with the national sample ($X^2 = 40.9, p < .001$) (Table 2).

Because the weighting procedure affected the drug use estimates, an exploratory analysis was conducted using the unweighted regular participant data to examine how this might affect the primary drug use outcomes. Regular participants in the unweighted group were still significantly less likely to use any illicit drug in the past 30 days and in their lifetime than the national sample respondents ($p < .01$ for 30-day and lifetime). In addition, due to the large

difference in sample size among the comparison groups, which could potentially artificially increase precision, an exploratory analysis on the drug use variables was conducted using a smaller matched comparison group from the national database. We selected a matched control group of 2 controls per case using frequency matching on the proportions of gender, race, and grade from the national database ($N = 636$). Results from these comparisons indicated that the regular program participants had significantly lower past 30 days and lifetime any illicit drug use ($p < .001$ for both outcomes). While constructing a matched data set for all outcomes was not deemed feasible, the results of this exploratory analysis on the main drug use variables using a smaller matched comparison group were consistent with the findings using the full national sample.

Table 2 shows that regular participants in the youth development program had more drug-averse attitudes than the national sample. These attitudes include higher personal disapproval of drug use, $t(3,946) = 5.30, p < .001$; greater perception of the risk of harm from drug use, $t(26,244) = 9.90, p < .001$; lower estimate of the number of friends who use drugs, $t(26,685) = -5.50, p < .001$; and greater difficulty in accessing drugs, $t(30,811) = -6.19, p < .001$ compared with the national sample.

Regular program participants scored higher on the self-esteem scale than respondents in the national sample, $t(16,099) = 5.3, p < .01$, indicating that program participants were more likely to respond positively to the self-confidence and self-worth items (Table 2).

 Insert Table 2 here

Comparison of Regular Participants and New Enrollees

Similar comparisons showed that the only measure on which regular program participants significantly differed from new enrollees in the program was drug knowledge. Regular participants in the program achieved a higher score on the drug knowledge test than did the new enrollees to the program ($M (SD) = 11.0 (2.32)$ for regular participants and $M (SD) = 10.4 (2.45)$ for new enrollees; $t(491) = 2.53, p < .05$). There were no significant differences in 30-day or lifetime use of alcohol, cigarettes, and any illicit drug use among regular participants and new enrollees. Similarly, there were no differences found in any of the drug-related attitudes among the two groups. Additionally, regular participants and new enrollees had comparable scores for self-esteem and self-efficacy ($p > .05$ for all outcomes).

Pretest-Posttest Study

Response rate and analysis of nonresponders. A total of 145 follow-up survey invitations were sent to new enrollees who participated in the initial survey. Three targeted follow-up participants were unavailable due to insufficient or outdated contact information; therefore, the final number of targeted follow-up participants was 142. A total of 59 posttest surveys were completed and returned, resulting in a 41.5% overall posttest response rate. Of the 59 completed posttests returned, 3 surveys contained information that was not useable, and therefore were not included in the final follow-up analysis.

To determine whether the final follow-up participant group ($n = 56$) and the nonresponder group ($n = 93$) differed on key baseline characteristics, Pearson chi-square correlation analyses and independent sample t tests were conducted on several demographic and drug use variables. Follow-up study participants and follow-up nonresponders did not significantly differ in age, gender, race, grade level, or past 30-day drug use; however, follow-up

participants were far less likely to have reported lifetime use of any illicit drug ($p < .01$) when compared with nonresponders.

Findings. Overall self-esteem increased significantly among new participants during the first 3 months of the program, $t(44) = -2.03, p < .05$ (Table 3). However, there were no significant differences observed in substance use behavior, drug-related attitudes, or self-efficacy during the study period. The assessment of drug knowledge unexpectedly indicated a decrease in average knowledge scores over time ($t(55) = 4.74, p < .001$). On average, participants incorrectly answered two additional items at posttest compared with pretest.

 Insert Table 3 here

Discussion

The purpose of this evaluation was to determine the effect of a youth development program on youth substance use. The results indicated that program participants use substances somewhat less and have more drug-averse attitudes than a national sample of comparable youth, suggesting that the program successfully promotes a drug-free lifestyle among its members. Alternatively, it is possible that these associations may indicate a self-selection bias into the program. The program may attract youth who already have lower substance use and drug-averse attitudes than the youth in the national sample. When program participants were compared with a group of peers just joining the program, there were no differences observed in substance use behavior and attitudes; however, the participants did demonstrate higher drug knowledge compared with the new program enrollees. The difference in the pattern of results of the two series of comparisons illustrates that there may have been fundamental differences between the

youth drawn to this program and average youth in the nation. The small difference in drug knowledge scores among the more-similar participant and new enrollee samples suggests that regular membership in the program does contribute to increased learning of drug facts.

Three-month posttest results revealed an increase in self-esteem among new participants. This increase in self-esteem, which may be the result of how the program teaches members about respect for self and a positive self-image, is an important outcome for a broad youth development program. An increase in self-esteem has significance in drug use prevention because it has been shown to be associated with lower drug use (Emery, McDermott, Holcomb, & Marty, 1993; Newcomb, Maddahian, & Bentler, 1986). Furthermore, previous research has shown that youth with consistently low or steadily declining self-esteem are more susceptible to alcohol use and misuse (Zimmerman, Copeland, Shope, & Dielman, 1997).

The decrease in overall knowledge scores during the first 3 months of the program is an unexpected result. This decrease may be the consequence of a weakened ability to recall drug education information. The theory of context-dependent memory posits that items may be easier to recall in the same context in which they were learned (Murnane, Phelps, & Malmberg, 1999). Likewise, information may be more difficult to recall when in a different setting from that which the information was learned. It is possible that since all of the posttests were completed in home settings, or settings other than the regular classroom environment where the drug information was taught, recall may have been challenging during the posttest. Nonetheless, this finding supports the recommendation to intensify drug use prevention training during the first quarter for new members. It also points to the need for more aggressive and interactive methods of teaching drug abuse prevention lessons.

The lack of significant changes in drug use behavior during the short study period suggests that the program was not sufficient to produce short-term behavioral improvements. However, it is important to consider that health behavioral change is often difficult to achieve, even with the most comprehensive of interventions. It is likely that the 3-month study period was not sufficiently long enough for behavioral and attitudinal change to occur, or for adequate detection of those changes. Furthermore, the present study did not measure all of the possible positive outcomes that may have been affected by the program, such as resilience, emotional competence, or school retention.

Several limitations of the present study should be noted. The comparison data are cross-sectional and were used to examine associations rather than causation. The cross-sectional approach cannot provide any direct insight into changes in drug use and related factors that may have occurred over time. However, to provide a context within which to evaluate the cross-sectional data, we compared our assessment with a national sample, as well as new program enrollees. The use of a one-group pretest-posttest design for another component of the study is another limitation due to the threats to validity associated with this design. However, no viable control group was available and random assignment to groups was not feasible for evaluating an existing program. Furthermore, the consistency of program implementation and its intensity during the study period were not assessed. As previously noted, the nonresponder analysis for the pretest-posttest study indicated that follow-up participants were less likely than dropouts to have reported lifetime use of any illicit drug. This indicates that generalization of the study results to youth with higher lifetime drug use may be limited. Also, the follow-up sample size was small, which can make it more difficult to identify statistical trends (Kish, 1965; Last, 1988; Sackett, 1979); however, our follow-up participation rate of 41% was comparable to average response

rates achieved in other Web-based and mailed surveys (Shih & Fan, 2008). It should also be noted that while most of the survey measures were validated and used extensively in previous research, they were all self-reported, therefore bias may have been introduced during data collection. To reduce subjective influence or pressure to respond in a socially desirable manner, adult leaders and parents were not permitted in the room during survey administration, and researchers reminded participants about the confidentiality of their data.

This study compared drug use and related factors of participants in a youth development program with two peer groups and examined short-term changes among new participants. The results of this study indicate some differences in drug use and related factors among participants and a national sample, and a small difference in drug knowledge among participants and new enrollees. The study also showed that the program may contribute toward the positive development of participants' self-esteem. Other results and a lack of significant findings highlight areas where improvements can be made to strengthen the program. The short-term decrease in drug knowledge found in this study indicates that there is a need for stronger efforts to help new participants acquire and maintain drug prevention knowledge early in their participation in the program. These efforts might include the use of incentives for participants to pass drug knowledge tests and improve individual scores, brief booster sessions, and interactive methods to reinforce basic drug knowledge. Additionally, because this study found only minimal effects and no changes in drug use behavior over time, it is recommended that the program adopt a standardized drug prevention educational curriculum to increase the efficacy and consistency of the program. The use of a standardized curriculum is a consistent feature of effective youth development programs (Catalano et al., 2002) and would likely lead to more substantial improvements in drug-related behaviors and attitudes among participants. While the present

program provides positive influences through a variety of activities and direct interaction with the leaders, adherence to structured lessons plans will likely provide consistent opportunities for the practice of the program's drug use prevention strategies and, in turn, advancements in drug use prevention among participants.

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Table 1.

Demographic Characteristics of Youth Development Program Regular Participants and Comparison Groups

Variable	Regular participants	Comparison groups	
		National sample ^a	New enrollee participants
Age in years, <i>M</i> (<i>SD</i>)	13.9 (1.9)	-- ^b	13.4 (1.6)
<i>n</i>	360	--	144
Gender (% male)	77.3 ^{***}	48.4	83.3
<i>n</i>	361	46,466	144
Grade (%)			
6th-8th	54.5 ^{*†}	35.2	74.6
9th-10th	30.0	34.9	18.3
11th-12th	15.6 ^{***}	29.9	7.0
<i>n</i>	347	45,466	142
Race (%)			
Black	7.9 ^{**}	13.7	11.9
Hispanic	23.1 ^{***}	15.3	26.3
White	66.2 [*]	71.0	58.5
Other ^c	2.8 ^{***}	12.5	3.4
<i>n</i>	355	46,466	118

Note: *M* = mean; *SD* = standard deviation.

*Differs from national sample, $p < .05$.

**Differs from national sample, $p < .01$.

***Differs from national sample, $p < .001$.

†Differs from new enrollee participants, $p < .01$.

^aMonitoring the Future (MTF) series, 2006 data, Substance Abuse and Mental Health Data Archive.

^bA continuous age variable was not included in the publicly available MTF data.

^cOther race includes Asian, American Indian or Alaska Native, or Native Hawaiian or Other Pacific Islander.

Table 2.

Comparison of Youth Development Program Regular Participants With a National Sample on Substance Use, Drug-Related Attitudes, and Self-Esteem

Variable	Weighted regular participants ^a		National sample ^b	
	<i>M(SD)</i> or %	<i>n</i>	<i>M(SD)</i> or %	<i>n</i>
Substance use				
Alcohol (%)				
30-day use ^c	38.6 [*]	130	50.4	15,652
Lifetime use	37.1 ^{**}	373	51.1	42,297
Cigarette smoking (%)				
30-day use ^d	35.6	107	41.6	15,188
Lifetime use	28.8	374	35.4	45,663
Any illicit drug use (%)				
30-day use	10.0 ^{**}	346	21.6	34,204
Lifetime use	26.7 ^{**}	359	43.5	38,038
Drug-related attitudes, <i>M (SD)</i>				
Personal disapproval ^e	2.57 (0.41) ^{**}	54 ^f	2.15 (0.58)	3,894 ^g
Risk of harm of drug use ^h	3.47 (0.69) ^{**}	362	3.10 (0.70)	25,884
Friends' drug use ⁱ	1.87 (0.82) ^{**}	371	2.12 (0.87)	26,316
Access to drugs ^j	3.42 (1.43) ^{**}	361	3.85 (1.31)	30,452
Self-esteem, <i>M (SD)</i> ^k	4.2 (0.8) [*]	349	4.0 (0.7)	15,752

Note: M = mean; SD = standard deviation.

^{*} $p < .01$.

^{**} $p < .001$.

^aRegular program participants were weighted on gender, grade, and race to represent the distribution of the national sample.

^bMonitoring the Future (MTF) series, 2006 data, Substance Abuse and Mental Health Data Archive.

^c30-day alcohol use was reported among only those participants who had ever drunk alcohol.

^d30-day cigarette use was reported among only those participants who had ever smoked cigarettes.

^e6-item scale; response options: 1 = Don't disapprove, 3 = Strongly disapprove.

^fThe personal disapproval scale was computed for only 11th and 12th graders in the weighted regular participant sample to be comparable to the national sample data.

^gPersonal disapproval scale items were included only for a subset of the 12th grade version of the 2006 MTF survey.

^h6-item scale; response options: 1 = No risk, 4 = Great risk.

ⁱ5-item scale; response options: 1 = None, 5 = All.

^j2-item scale; response options: 1 = Probably impossible, 5 = Very easy.

^k12-item scale; response options: 1 = Disagree, 5 = Agree.

Table 3.

Substance Use, Drug-Related Attitudes, Knowledge, and Psychosocial Characteristics at Pretest and Posttest Among Youth Development Program New Enrollee Participants

Variable	<i>n</i>	Pretest	Posttest
		<i>M (SD) or %</i>	<i>M (SD) or %</i>
Substance use (%)			
30-day alcohol use ^a	7	57.1	42.9
30-day cigarette smoking ^b	10	50.0	40.0
30-day any illicit drug use	50	8.0	8.0
Drug-related attitudes, <i>M (SD)</i>			
Personal disapproval ^c	48	2.61 (0.49)	2.67 (0.44)
Risk of harm of drug use ^d	45	3.48 (0.43)	3.60 (0.60)
Friends' drug use ^e	47	1.61 (0.88)	1.76 (0.77)
Access to drugs ^f	49	2.70 (1.51)	2.53 (1.60)
Drug knowledge, <i>M (SD)</i> ^g	56	10.71 (1.92)	8.21 (3.22)**
Psychosocial characteristics, <i>M (SD)</i>			
Self-esteem ^h	45	4.2 (0.8)	4.4 (0.8)*
Self-efficacy ⁱ	45	3.6 (0.5)	3.6 (0.4)

Note: M = mean; SD = standard deviation.

* $p < .05$.

** $p < .001$.

^a30-day alcohol use was reported among only those participants who had ever drunk alcohol.

^b30-day cigarette use was reported among only those participants who had ever smoked cigarettes.

^c6-item scale; response options: 1 = Don't disapprove, 3 = Strongly disapprove.

^d7-item scale; response options: 1 = No risk, 4 = Great risk.

^e5-item scale; response options: 1 = None, 5 = All.

^f2-item scale; response options: 1 = Probably impossible, 5 = Very easy.

^gNumber of correctly answered drug knowledge items; possible maximum score of 15.

^h12-item scale; response options: 1 = Disagree, 5 = Agree.

ⁱ10-item scale; response options: 1 = Strongly agree, 4 = Strongly disagree.

REPORT DOCUMENTATION PAGE

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13. SUPPLEMENTARY NOTES

14. ABSTRACT (maximum 200 words)

This study assessed substance use and related factors among sixth through twelfth grade participants in a youth development program. Comparisons between participants ($N = 361$) and a national youth sample indicated that participants had lower 30-day and lifetime alcohol use, lower 30-day and lifetime prevalence of any illicit drug use, and higher drug-averse attitudes than the national sample. Comparisons between participants and new enrollees ($N = 145$) indicated higher drug knowledge among participants. The study also showed a short-term increase in self-esteem among new enrollees, no changes in substance use, and an unexpected negative effect for drug knowledge after 3 months in the program. Overall, the program had a minimal impact on participants' drug use and related factors. Recommendations for program improvements are discussed.

14. SUBJECT TERMS
 youth, youth development program, drug education, illicit drug use, alcohol, tobacco, marijuana, drug knowledge, attitudes, prevention

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