

Provided for non-commercial research and education use.
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/copyright>



Contents lists available at ScienceDirect

Preventive Medicine

journal homepage: www.elsevier.com/locate/ypmed

One-year follow-up evaluation of Project Towards No Drug Abuse (TND-4)

Ping Sun*, Steve Sussman, Clyde W. Dent, Louise Ann Rohrbach

Institute for Health Promotion and Disease Prevention Research, University of Southern California, Department of Preventive Medicine, Keck School of Medicine, 100 S. Fremont Avenue, Box 8, Room 4208, Alhambra, California 91803, USA

ARTICLE INFO

Article history:

Available online 15 July 2008

Keywords:

Substance use
Trial
Behavior
Intervention
Cigarette
Smoking
Alcohol
Marijuana
Hard drug
Prevention

ABSTRACT

Objectives. This paper describes the one-year outcomes of the fourth experimental trial of Project Towards No Drug Abuse. Two theoretical content components of the program were examined to increase our understanding of the relative contribution of each to the effectiveness of the program.

Methods. High schools in Southern California ($n=18$) were randomly assigned to one of three conditions: cognitive perception information curriculum, cognitive perception information+behavioral skills curriculum, or standard care (control). The curricula were delivered to high school students ($n=2734$) by project health educators and regular classroom teachers. Program effectiveness was assessed with both dichotomous and continuous measures of 30-day substance use at baseline and one-year follow-up.

Results. Across all program schools, the two different curricula failed to significantly reduce dichotomous measures of substance use (cigarette, alcohol, marijuana, and hard drugs) at one-year follow-up. Both curricula exerted an effect only on the continuous measure of hard drug use, indicating a 42% ($p=0.02$) reduction in the number of times hard drugs were used in the last 30 days in the program groups relative to the control.

Conclusions. The lack of main effects of the program on dichotomous outcomes was contrary to previous studies. An effect on an ordinal count measure of hard drug use among both intervention conditions replicates previous work and suggests that this program effect may have been due to changes in cognitive misperception of drug use rather than behavioral skill.

© 2008 Elsevier Inc. All rights reserved.

Introduction

Substance use among youth continues to be an important public health concern. For example, nearly three-quarters (72%) of American young people report they have consumed alcohol, and nearly one half (47%) report they have tried an illicit drug by the time they finish high school (Johnston et al., 2008). Because drug use prevalence is higher during the high school years, relative to grammar school years, it is a critical time for the implementation of drug abuse prevention programming.

The research literature provides evidence for the long-term effectiveness of several school-based substance abuse prevention programs (Skara and Sussman, 2003; Sun et al., 2006). Both government and non-governmental organizations have called for schools to implement prevention programs that have proven effectiveness (e.g., Center for the Study and Prevention of Violence, 1998; U.S. Department of Education, 2004). Most current effective prevention programs represent a combination of program components. As prevention programs begin to be disseminated widely, local sites are asking program developers to identify which program components are “essential” and which, if any, are optional (Elliott and Mihalic,

2004). In order to answer these types of questions, experimental “component” studies need to be conducted, in which investigators test the components of a prevention intervention independently or in some combination, to determine the relative contribution of each to the effects of the intervention (Elliott and Mihalic, 2004).

In this paper, we report the one-year findings from a component study of Project Towards No Drug Abuse (TND), a nationally recognized evidence-based prevention program that targets high school-aged youth (Office of Juvenile Justice and Delinquency Prevention, 2005; Substance Abuse and Mental Health Services Administration, 2008; Sussman et al., 2004b). The aim of the study was to examine the relative effectiveness of two curricula comprised of different theory-based components of Project TND, compared to a standard care control. A secondary aim was to analyze moderation effects, to determine whether the effects of both curricula differed significantly across school type (alternative vs. regular, in California) and program provider (project health educator vs. classroom teacher).

Methods

Experimental design and school selection

Project TND is comprised of two theory-based thematic content components, cognitive misperception correction and behavioral skills

* Corresponding author.

E-mail address: sping@usc.edu (P. Sun).

instruction. Cognitive perception information is used to change youths' attitudes or beliefs regarding their drug use. For example, one program activity involves students examining "drug use myths," or questionable expectancies students may have regarding the effects of drugs that may serve to justify drug use. The behavioral skills material provides instruction in social skills and behavioral self-management, which can facilitate the ability of youth to bond flexibly with a variety of peer groups, seek out social support when needed, and minimize stressful, conflict-type interactions (Sussman et al., 2004a).

The present component study compared two curricula, one that included the cognitive misperception information component only and one that combined the cognitive misperception and behavioral skills components. We had two reasons for using a 3-group design, in which we compared these two curricula to a control. First, we were confident that cognitive misperception counteraction was being sufficiently covered in the lessons. However, we were not sure that sufficient time was being spent on behavioral skills programming because no individual practice time was being offered. Thus, we designed a test to determine whether or not the combined program would provide an incremental effect above and beyond the cognitive misperception component. We did not have a behavioral skills-only component because the cost would have been prohibitive. The combined program that we evaluated was the same as that in previous trials (Sussman et al., 2002). A detailed comparison of the content of the two curricula we compared, each of which included 12 sessions, may be found elsewhere (Skara et al., 2005).

A total of nine school districts from two counties in southern California (Los Angeles and Ventura) were recruited as a convenience sample for participation in this study. From each district a pair of high schools, one regular (RHS) and one "continuation" (CHS) was included, yielding a total sample of 18 schools (nine RHSs and nine CHSs). In California, schools in the alternative high school system are known as "continuation" high schools. These schools are relatively small and serve youth who are unable to remain in the traditional public high school system due to functional problems, such as difficulties in attendance, achieving academic credits, or substance use. Each of the school districts recruited for the study had one CHS and at least one RHS. If the district had more than one RHS, the RHS that was closest in demographic characteristics to the CHS was selected for participation in the study.

With school district as the randomization unit, schools were randomly assigned to one of three experimental conditions: cognitive perception information only curriculum (Cognitive Only), combined cognitive perception information + behavioral skills curriculum (Combined), or standard care (Control); resulting in a sample of 6 schools per condition (3 RHS and 3 CHS). Prior to assignment, schools were blocked by estimates of drug use prevalence (based on self-reports of drug use among cohorts of students in the same schools assessed three years prior to the present study), ethnic composition of the school, student enrollment, standardized achievement test scores (based on public data at the school level), school type and size (i.e., only districts that contained at least one continuation high school, and only schools that included a minimum of 50 students and a maximum of 2000 students were included). The nine RHS-CHS pairs were aligned using a linear composite of factor scores across a drug use inflate-suppress continuum (Graham et al., 1984) and randomly assigned to the three conditions.

Within each program school, project staff collaborated with the administrator to select a health teacher who was willing to participate in training and implement the program, and a second teacher in whose classrooms the program would be implemented by project health educators. It should be noted that health is a required subject for students in the participating school districts. For each teacher, a total of four classrooms of students were randomly selected to receive the program (i.e., a total of eight classrooms were instructed per

school). Thus, there was equal representation of program provider types within each program school. In each control school, four classrooms of students enrolled in health were randomly selected for participation in the project. The curriculum was delivered to all students enrolled in selected classrooms at the program schools. In the control condition, students received only the prevention activities, if any, provided directly by their school. Students in all experimental conditions were given a questionnaire assessment at baseline and one year following program implementation.

Program provider training and program delivery

Prior to program delivery, regular classroom teachers and project health educators participated in a one and one-half-day training session conducted by the program developers. Topics included a review of the theoretical underpinnings of the curriculum, detailed instruction and practice with each lesson, and classroom control techniques.

Curriculum lessons were delivered over a four-week period at each program school, with lessons taking place on Tuesday through Thursday in order to maximize attendance (Sussman et al., 1998). The curriculum was delivered at different schools throughout the year (October through June). Dates of delivery were balanced across conditions.

Subjects

All students provided informed written assent and parents provided written or verbal informed consent to participate in the study. Throughout the data collection process, students were informed that their survey participation was voluntary and they could withdraw from the study at any time without penalty.

A total of 3908 high school students were enrolled in the classrooms selected for participation in the study. Access was provided to 2734 of these students (70% of the enrollment roster), all of whom completed pretest questionnaires. Of these students who completed pretest questionnaires, 2064 (75.5% of those for whom had pretest survey) also completed the one-year follow-up questionnaires. The sample of 2064 constitutes our analysis sample. There were several reasons why we did not have access and, therefore, could not collect data from all enrolled students, including chronic absenteeism (approximately 80% of those not enrolled in the study), either the parent or the student declined participation (approximately 5% of those not enrolled in the study), and students were absent on testing days (approximately 15% of those not enrolled in the study). Generally, those absent on testing day report more problem prone characteristics (Sussman et al., 1995b); however, among populations at higher risk, those not surveyed at posttest do not differ much from the full sample (Dent et al., 1997).

Student subjects varied from 13 to 19 years of age (mean age = 15.3 years, SD = 1.2 years). The sample was 52.1% male; 18.2% white, 62.1% Hispanic, 8.4% Asian, 8.1% African American, and 3.2% other ethnicity. Only 16.4% of the sample reported mostly speaking a language other than English at home; 61.9% lived with both parents; and approximately 50% of youths' fathers and 56% of youths' mothers completed high school.

Data collection and measures

Pretest and one-year follow-up measures were collected from students using a standardized, self-report, close-ended response, written questionnaire which were administered over one class period. Those absent from the classroom on testing days were left absentee packets containing the questionnaire and instructions. At the one-year follow-up, students who failed to return the absentee survey were contacted by telephone for survey administration.

Demographic items included age (in years), gender, and ethnicity (White, Hispanic, African American, Asian, and “others”), current living situation (coded as living with both parents or guardians or not), language-based acculturation (speaking another language more than English, adapted from Marin et al., 1987; four-item index; coefficient alpha=0.89); and socioeconomic status (mean response across male and female parents' or guardians' education and occupation levels based on categories derived from Hollingshead and Redlich, 1958; four-item index; coefficient alpha=0.68).

Substance use items included 30-day use of cigarettes, alcohol, marijuana, and a “hard drug use” score. The hard drug use score consisted of the sum of 30-day use across cocaine, hallucinogens, inhalants, stimulants, ecstasy, and “other” drugs (an item that included depressants, PCP, steroids, heroin, or “other”; alpha=0.84). The drug use questionnaire items are the type used in the Monitoring the Future studies (Johnston et al., 2004) and our previous work, all of which have shown supporting evidence of adequate test-retest reliability and/or internal consistency (Graham et al., 1984; Needle et al., 1983; Stacy et al., 1990; Sussman et al., 1995a). Specifically, the subjects were asked “In the last 30 days, how many times have you used each of the drugs below?” with 8-level response options of “0”, “1–10”, “11–30”, “31–50”, “51–70”, “71–90”, “91–100”, and “100+” times.

Data analysis

To assess the program's effect on reducing drug use, two different models were conducted by treating each drug use outcome as either a dichotomous or ordinal count measure. The dichotomous outcome was defined as ‘true’ if a specific drug was used one or more times in the past 30 days. The 8-level ordinal count measure from “0” to “100+ times” assessed the frequency of drug use in the past 30 days. Because the study is a group randomized trial where district is the randomization unit, subject is the observation unit, and school class is the intervention unit, two level random coefficients modeling was conducted. Program effects were considered fixed, as they were fixed at desired experimental levels (school district). School district was considered as a random factor, as it is the unit of randomized assignment (Murray, 1998). The outcome analysis was completed by using a generalized mixed-linear model (Murray and Hannan, 1990). The analysis with dichotomous outcomes was converted to linear models with Logit link function. The analysis with ordinal count measures was completed by using a zero-inflated negative binomial distribution modeling procedure (Lee, 2006). This specification allows for the statistical accounting of the intra-class correlation within clustered units (school district) on computed significance levels. For each substance, the status of use of the specific drug at baseline was included in the model. Other variables adjusted for in the analyses included age, gender, ethnicity, school type, and a propensity score for attrition (to be described later). School type (CHS vs. RHS) and program provider (classroom teacher vs. project health educator) were tested as potential effect modifiers.

Results

Assessment of attrition bias

To assess the potential sample bias introduced by attrition at the one-year follow-up, a comparison was made of the current analysis sample (n=2064) to the lost-to-follow-up sample (n=670) on 12 key baseline measures. The measures included: age; gender; ethnicity (Asian, African American, Non-latino White, Latino, or other); living with both parents or not; language-based acculturation; socioeconomic status; 30-day cigarette, alcohol, marijuana, and hard drug use; violence victimization; and weapon carrying. The comparisons utilized chi square or t-test models to investigate statistically

significant differences between the two groups of students (p value at the 0.05 level). Among the twelve comparisons, five statistically significant differences were detected. Compared to the lost-to-follow-up sample, the retained sample was slightly younger (15.7 versus 15.9 years of age), less likely to smoke cigarettes (21.9% versus 26.4%), less likely to be male (52.9% vs. 61.0%), less likely to be African American (7.2% vs. 10.4%) and more likely to be Latino (65.7% vs. 61.9%), and more likely to live with both parents (59.4% versus 49.3%). Although the retention rate was found to be significantly lower among CHS (64.6%) vs. RHS (80.4%) students, it did not differ across program conditions (73.0% in Control, 73.5% in Cognitive Only, and 71.1% in Combined).

To statistically adjust for possible bias induced by non-random attrition at one-year follow-up, a ‘propensity to attrition’ score was calculated for each subjects retained at the one-year follow-up, and adjusted for in the analysis. This score was calculated among the entire baseline sample by associating the difference in selected baseline measures to the actual attrition status in a multiple regression analysis, and then assuming the association is also maintained among the subjects retained at the one-year follow-up (Rosenbaum, 1983).

Baseline comparability across program conditions

Table 1 presents a summary of the variables of interest at baseline, by program condition. The data show that cross-condition comparability was achieved for age, gender, program provider, attrition rate, and the four drug use outcomes. However, there was a lower

Table 1
Within program condition summary of variables of interest at baseline for Project Towards No Drug Abuse component study, conducted among 2064 students with one-year follow-up data from 18 high schools in Southern California, 2001–2006

	Program condition						p ^a
	Cognitive only (n=767)		Combined (n=688)		Control (n=609)		
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	
Age (yrs.)	15.17	1.25	15.43	1.24	15.18	1.03	0.52
Gender (% male)	0.53	0.50	0.50	0.50	0.49	0.50	0.21
Ethnicity (%)							
White	22.2		6.3		23.1		<0.0001
Latino	47.5		81.0		62.9		
Black	11.0		4.7		4.8		
Asian	14.6		6.0		5.1		
Other	4.7		2.0		4.1		
Program provider (% project health educator)	49.7		50.1		n/a		0.8
School type ^b (% in CHS)		29.5		28.9		18.9	<0.0001
Propensity score ^c	0.24	0.10	0.24	0.10	0.22	0.08	0.95
Cigarette use in last 30 days							
Status (% used)	19.92		12.24		13.29		0.92
No. times used ^d	0.62	1.64	0.25	0.91	0.28	1.00	0.92
Alcohol use in last 30 days							
Status (% used)	38.74		37.41		38.60		0.9
No. times used ^d	0.51	0.85	0.51	0.90	0.56	0.96	0.73
Marijuana use in last 30 days							
Status (% used)	23.28		21.33		16.83		0.92
No. times used ^d	0.61	1.51	0.45	1.20	0.34	1.04	0.87
Hard drug use in last 30 days							
Status (% used)	11.14		6.77		6.30		0.53
No. times used ^d	0.22	0.81	0.14	0.70	0.17	0.88	0.71

^a Significance for difference across program conditions.
^b CHS refers to continuation high school. See text for more information for CHS.
^c Propensity for attrition at 1-year follow-up survey, predicted by factors assessed at baseline survey.
^d Response categories were 0=0, 1=1–10, 2=11–30, 3=31–50, 4=51–70, 5=71–90, 6=91–100, and 7=100+ times.

proportion of White subjects and a greater proportion of Latino subjects in schools assigned to the Combined condition, and higher proportions of African American and Asian students in the Cognitive Only condition. In addition, the control condition included a lower proportion of CHS students relative to the other conditions. To adjust for possible confounding induced by the incomparability across program conditions, subjects' ethnicity and school type were included as covariates in the program effects evaluation.

Program effects at one year

Two types of analyses were conducted to test for program effects at one-year follow-up. The first was a test of the effects of the program in reducing 30-day substance use prevalence, and the second tested program effects in reducing the frequency (number of times) of use of each substance in the past 30 days. Table 2 summarizes the results of both types of program effects evaluation. The data indicate that, when compared with control group, the program failed to significantly reduce the prevalence of all four substance use outcomes. As for the effects of the program on frequency of 30-day substance use, although the results for all four outcomes were in an encouraging direction (negative sign for reduction in number of times used), for both curricula statistical significance was achieved for reductions in hard drug use only. Subjects in the Cognitive Only group reported an average times of hard drug use 0.57 fold ($p=0.04$) that for the control subjects. Likewise, subjects in the Combined group reported an average times of hard drug use 0.55 fold that for the control subjects.

Also presented in Table 2 are the significance levels for interaction tests between program condition (either curriculum vs. Control) and two possible program effect modifiers. As shown, there were no significant interaction effects between program condition and school type (regular vs. continuation), or between program condition and program provider (classroom teacher vs. project health educator).

Discussion

The lack of main effects on reducing the prevalence of 30-day substance use is contrary to what we have consistently found in our previous evaluations of Project TND (Sussman, Dent, and Stacy, 2003). We speculate that there are at least four factors that may account for

this different pattern of program outcomes. First, the intervention in this trial was implemented by both project health educators and classroom teachers, whereas in previous trials the program was delivered by project health educators only. However, implementation data indicated comparable program fidelity among these two types of implementers (Rohrbach et al., 2007; Skara et al., 2005). Second, the general environment regarding substance use prevention programming is not the same as when the previous trials were conducted ten years ago. Various substance use prevention programs are being delivered to students in elementary, middle, and high schools throughout California (e.g., McCarthy et al., 2005), and we speculate that this mix of interventions has induced a reduction in substance use overall. Indeed, baseline substance use prevalence was lower among the current sample than in previous studies (Sussman, Dent, and Stacy, 2003). Alternatively, it is possible that the organizational climate in senior high schools has changed such that students and staff are less receptive to school-based prevention programming. In California, for example, schools now are required to administer a high school exit exam to students. Exam preparation worries may make schools less receptive to consideration of other types of programming. Third, although the student outcome data indicate that program-specific knowledge scores were significantly increased through delivery of both versions of the Project TND curriculum (Skara et al., 2005), there remains concern regarding the relatively low knowledge scores at posttest (i.e., an average score of 55% correct across all 18 schools). These lackluster results suggest that the items we used to assess program-specific knowledge may have been too difficult for students, these items may have lacked validity, or the instruction might have been deficient. Future research is needed to examine each of these potential issues. Fourth, there is a lack of statistical power to detect the main effect. Both the lower than expected prevalence of substance use at baseline, and the much higher than expected intra-class correlation (0.1 to 0.5) for the four types of substance use demand more subjects than what calculated in the original design.

Limitations and future directions

Our results should be interpreted in the context of at least two potential limitations of the study. First, data in this study were

Table 2
One-year program effects on 30-day substance use for Project Towards No Drug Abuse component study, conducted among 2064 students with one-year follow-up data from 18 high schools in Southern California, 2001–2006

	Cognitive only vs. Control		Combined vs. Control		Program ^a vs. Control		Combined vs. Cognitive only		p^b for interaction with	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	School type	Program provider
Prevalence of 30-day substance use ^{c,d}										
Cigarette use	1.35	(0.93–1.95)	0.91	(0.6–1.37)	1.16	(0.76–1.75)	0.68	(0.46–0.98)	0.35	0.08
Alcohol use	0.98	(0.63–1.5)	1.03	(0.66–1.58)	1.00	(0.71–1.39)	1.05	(0.71–1.55)	0.41	0.74
Marijuana use	1.01	(0.5–2)	1.23	(0.62–2.44)	1.22	(0.61–2.42)	1.12	(0.63–1.97)	0.92	0.09
Hard drug use	1.05	(0.44–2.49)	1.20	(0.5–2.83)	1.15	(0.49–2.67)	1.13	(0.56–2.23)	0.86	0.19
Frequency (no. of times) of substance use in last 30 days ^{c,e}										
	RR ^f	(95% CI)	RR	(95% CI)	RR	(95% CI)	RR	(95% CI)	School type	Program provider
Cigarette use	1.34	(0.9–1.97)	0.88	(0.58–1.32)	0.91	(0.59–1.4)	0.66	(0.44–0.97)	0.58	0.23
Alcohol use	0.92	(0.7–1.21)	0.84	(0.64–1.11)	0.89	(0.7–1.12)	0.91	(0.69–1.2)	0.64	0.82
Marijuana use	0.99	(0.59–1.64)	0.81	(0.48–1.34)	0.90	(0.57–1.42)	0.82	(0.5–1.33)	0.50	0.61
Hard drug use	0.57	(0.36–0.89)	0.55	(0.34–0.88)	0.56	(0.37–0.84)	0.95	(0.58–1.55)	0.74	0.21

^a Cognitive Only or Combined (received either type of intervention).

^b p value for two tailed hypothesis test generated from chi square test for evaluation on reduction in frequency (no. of times) of substance use (by comparing the change in model-fit between the model with and without the interaction term), and F test for evaluation on reduction in prevalence of substance use.

^c Two-level random coefficients models included the program effect as fixed and school district as random, and adjusted for age, gender, ethnicity, school type, propensity score, and use of the specific substance at baseline.

^d Binary outcomes for substance use were linked to the linear combinations of predictors with a logit link function.

^e A zero-inflated negative binomial (ZINB) distribution was applied to model the frequency of substance use. The mean for the ZINB distribution was linked to the linear combinations of predictors with a log link function.

^f RR is the relative risk for the increase in the number of times of substance use.

generated from self-report surveys, the accuracy of which could not be independently verified. Thus, it is impossible to assess the extent to which such data may be biased. However, past studies have supported the validity and reliability of self-report measures of adolescent substance use (Graham et al., 1984; Needle et al., 1983; Sussman et al., 1995a). Second, these results are limited to only those students who remain in the school system, and do not apply to those who drop out of the system or for whom we did not have access.

In summary, the one-year effects of Project TND on hard drug use that have been shown in previous trials were replicated in the present study. The lack of main effects on the use of cigarettes, alcohol, and marijuana is contrary to previous findings. This pattern of results did not distinguish the relative effectiveness of the cognitive misperception information component alone versus the cognitive misperception component combined with behavioral skills instruction. However, replication of the program effect on hard drug use suggests that this effect may have been due to changes in cognitive misperception of drug use rather than behavioral skill. Future component studies are needed to increase our understanding of the key components that account for the effects of the program. For example, future work might examine the effects of an extended behavioral skills-only program on drug abuse prevention in this population.

Finally, the results suggest that the Project TND curriculum can be implemented effectively with youth in a regular high school, as well as with high risk youth in a more specialized environment, such as a continuation high school, as has been demonstrated in few previous trials (Dent et al., 2001; Sussman et al., 1998, 2003). While some of these results are promising, the fact that most effects found in earlier work were not replicated underscores the need for additional types of research. For example, we have a newly funded project that will examine the classroom component of the TND combined program versus the program plus use of motivational interviewing-type telephone booster calls provided to youth up to two years post-classroom program. Maybe the use of booster programming will enhance effects of the classroom program (Skara and Sussman, 2003). By the end of the current TND-plus-booster trial, we hope to be able to better discern the utility of Project TND in the current climate of high schools.

Conflict of interest statement

The authors have no conflicts of interest to declare.

Acknowledgments

This study was funded by grants from the National Institute on Drug Abuse (Grant numbers R01-DA13814, R01-DA-16090, and R01-DA020138). We wish to thank Jason McCuller for his project management.

References

- Center for the Study and Prevention of Violence, 1998. Blueprints for violence prevention. Available at <http://www.colorado.edu/cspv/blueprints/index.html>. Accessed on January 31, 2008.
- Dent, C.W., Hennesy, M., Sussman, S., Stacy, A.W., 1997. The impact of a written parental consent policy on estimates from a school-based drug use survey. *Eval. Rev.* 21, 698–712.
- Dent, C.W., Sussman, S., McCullar, W.J., Stacy, A.W., 2001. Project Towards No Drug Abuse: generalizability to a general high school sample. *Prev. Med.* 32, 514–520.
- Elliott, D.S., Mihalic, S., 2004. Issues in disseminating and replicating effective prevention programs. *Prev. Sci.* 5 (1), 47–53.
- Graham, J.W., Flay, B.R., Johnson, C.A., Hansen, W.B., Grossman, L.M., Sobel, J.L., 1984. Reliability of self-report measures of drug use in prevention research: evaluation of the Project SMART questionnaire via the test–retest reliability matrix. *J. Drug Educ.* 14, 175–193.
- Hollingshead, A.B., Redlich, F.C., 1958. *Social Class and Mental Illness*. Wiley, New York.
- Johnston, L.D., O'Malley, P.M., Bachman, J.G., Schulenberg, J.E., 2004. Monitoring the Future National Survey Results on Drug Use, 1975–2003. Secondary School Students, Volume I. National Institute on Drug Abuse (NIH Publication No. 04-5507), Bethesda, MD.
- Johnston, L.D., O'Malley, P.M., Bachman, J.G., Schulenberg, J.E., 2008. Monitoring the Future National Results on Adolescent Drug Use: Overview of Key Findings, 2007 (NIH Publication No. 08-6418). National Institute on Drug Abuse, Bethesda, MD.
- Marin, G., Sabogal, F., Marin, B., Otero-Sabogal, R., Perez-Stable, E.J., 1987. Development of a short acculturation scale for Hispanics. *Hisp. J. Behav. Sci.* 9 (2), 183–205.
- McCarthy, W.J., Dietsch, B., Hanson, T.L., Hong Zheng, C., and Aboelata, M. (2005). Evaluation of the in-school tobacco use prevention education program, 2001–2002. Sacramento, CA: California Department of Health Services. (available at <http://www.cdph.ca.gov/programs/Tobacco/documents/CTCPTupeReport01-02.pdf>).
- Murray, D.M., 1998. Design and Analysis of Group-Randomized Trials, Vol. 27. Oxford University Press, New York Oxford, pp. 104–107.
- Murray, D.M., Hannan, P.J., 1990. Planning for the appropriate analysis in school-based drug abuse prevention studies. *J. Consult. Clin. Psychol.* 58, 458–468.
- Needle, R., McCubbin, H., Lorence, J., Hochhauser, M., 1983. Reliability and validity of adolescent self-reported drug use in a family-based study: a methodological report. *Int. J. Addict.* 18, 901–912.
- Rohrbach, L.A., Dent, C.W., Skara, S., Sun, P., Sussman, S., 2007. Fidelity of implementation in Project Towards No Drug Abuse (TND): a comparison of classroom teachers and program specialists. *Prevention Science* 8, 125–132.
- Skara, S., Sussman, S., 2003. A review of 25 long-term adolescent tobacco and other drug use prevention program evaluations. *Prev. Med.* 37, 451–474.
- Skara, S., Rohrbach, L.A., Sun, P., Sussman, S., 2005. An Evaluation of the Fidelity of Implementation of a School-Based Drug Abuse Prevention Program: Project Toward No Drug Abuse (TND). *J. Drug Educ.* 35 (4), 305–329.
- Stacy, A.W., Flay, B.R., Sussman, S., Brown, K.S., Santi, S., Best, J.A., 1990. Validity of alternative self-report indices of smoking among adolescents. *Psychosocial Assessment: J. Consult. Clin. Psychol.* 2, 442–446.
- Sussman, S., Dent, C.W., Burton, D., Stacy, A.W., Flay, B.R., 1995a. Developing school-based tobacco use prevention and cessation programs. Sage Publications, Inc., Thousand Oaks.
- Sussman, S., Dent, C.W., Simon, T.R., et al., 1995b. Immediate impact of social influence-oriented substance abuse prevention curricula in traditional and continuation high schools. *Drugs and Society* 8, 65–81.
- Sussman, S., Dent, C.W., Stacy, A., Craig, S., 1998. One-year outcomes of Project Towards No Drug Abuse. *Prev. Med.* 27, 632–642. (Erratum: 27(5, Pt.1), 766, 1998).
- Sussman, S., Dent, C.W., Craig, S., Ritt-Olsen, A., McCuller, W.J., 2002. Development and immediate impact of a self-instruction curriculum for an adolescent indicated drug abuse prevention trial. *J. Drug Educ.* 32 (2), 121–137.
- Sussman, S., Sun, P., McCuller, W.J., Dent, C.W., 2003. Project Towards No Drug Abuse: two-year outcomes of a trial that compares health educator delivery to self-instruction. *Prev. Med.* 37, 155–162.
- Sussman, S., Earleywine, M., Wills, T., et al., 2004a. The motivation, skills, and decision-making model of “drug abuse” prevention. *Subst. Use Misuse* 39 (10–12), 1971–2016.
- Sussman, S., Rohrbach, L.A., Mihalic, S., 2004b. Blueprints for violence prevention. Book Twelve. Project Towards No Drug Abuse. Center for the Study and Prevention of Violence, Institute of Behavioral Science. University of Colorado, Boulder, Colorado.