

MEASURING THE EFFECTIVENESS OF A COMMUNITY-SPONSORED DWI INTERVENTION FOR TEENS

Alexander R. Hover, MD, FACP

Barbara A. Hover, BS

Janice Clark Young, EdD, CHES

Abstract: This study measured teen alcohol consumption, attitudes, and behaviors towards DWI. The intervention high school received the pre- and post-survey, with another high school as the control group. In the previous month, students reported that 50% drank alcohol, 37% drank heavily, 33% rode with a DWI driver, and 16% reported DWI. The intervention program had a favorable impact on attitudes but not behavior. Survey and focus group data suggested there would be no sustained behavioral change without combining the intervention with stronger DWI law enforcement, community support, and educational programs.

Teen use of alcohol is a significant community health problem. Among the leading causes of unintentional morbidity and mortality for youth in the United States, the use of alcohol ranks as one of the six major categories of risk behaviors (Kann, et al., 2000; and Meeks, Heit, & Page, 1996). When adolescents combine alcohol consumption with driving a motor vehicle or riding with an intoxicated driver, the consequences are often tragic. The principal cause of death for teens and young adults is alcohol-related motor vehicle accidents (Meeks, Heit, & Page, 1996). Results from the Youth Risk Behavior Surveillance Survey (YRBSS) in the United States for 1999 indicate that "during the 30 days preceding the survey 33.1% of students nationwide had ridden one or more times with a driver who had been drinking alcohol" (Kann, et al., 2000, p. 7). Also, in the YRBSS, 13.1% of teens nationwide admitted to having driven a vehicle one or more times under the influence of alcohol during the previous month (Kann, et al., 2000).

Drug prevention programs embrace a broad range of philosophies, from "macrolevel environmental approaches, such as national policy strategies (e.g., incentives for states to raise the legal drinking age to 21) to microlevel programs at the school or individual level (e.g., school-based prevention curriculum)" (Komro, Perry, Veblen-Mortenson, Williams, & Roei, 1999, p. 202). To be most successful, it is believed that drug and alcohol prevention efforts should combine both the macro- and microlevel approaches (Flay & Petraitis, 1998). Educational intervention programs aimed at school-aged students are the most common kinds of preventive approach in current use (Yuen & Pardeck, 1998). School-based drug prevention

programs can be divided into three categories: knowledge programs, affective programs, and social influences programs (Ringwalt, Greene, Ennett, & Lachan, 1994). The knowledge-based prevention programs when used alone do not appear to prevent substance abuse and have a limited impact on behavior change (Coombs & Ziedonis, 1995). Educational guidelines support the theory that students should have the opportunity to personalize and assimilate learning in order to understand its effect on their lives (Kolaya & Grimes-Smith, 1999). The "Every 15 Minutes" intervention program measured in this study combines knowledge, affective response, and social influence to prevent teen drinking and driving.

PURPOSE

The Greene County DWI (Driving While Intoxicated) Task Force wanted to determine the effectiveness of a teen DWI intervention program known as "Every 15 Minutes" before deciding to sponsor it for a third time in 2000. Therefore, the purpose of this study was to measure the pre- and post-intervention prevalence of alcohol consumption, student attitudes, and behaviors towards drinking alcohol and driving at Kickapoo High School in Springfield, MO. The Greene County DWI Task Force is a community-based, volunteer organization in Springfield, MO. Its members include representatives from the local school PTAs (Parent, Teacher, and Student Associations), school district administration, the Mayor's office, Springfield Police Department, Greene County Sheriff's Department, Missouri Highway Patrol, and community volunteers who meet to implement activities

Alexander R. Hover, M.D., FACP, is with the Quality Resources Department at St. John's Regional Health Center at 1235 E. Cherokee, Springfield, Missouri, 65804, ahover@sprg.smhs.com. *Barbara A. Hover, B.S.*, is the Kickapoo High School PTSA President in Springfield, Missouri. *Janice Clark Young, EdD, CHES* is an Assistant Professor in the Department of Health, Physical Education and Recreation at Southwest Missouri State University in Springfield, Missouri. Address all correspondence to Dr. Hover.

designed to reduce drinking and driving in Greene County, Missouri. The task force first piloted the "Every 15 Minutes," a teen drinking and driving intervention program at Glendale High School in May 1998, and planned to run the intervention again in May of 1999 at Kickapoo High School in Springfield.

METHODS

SUBJECTS

Springfield, Missouri is a small urban community in southwest Missouri with a population of 140,000. Kickapoo High School (KHS) is one of the five public 4-year high schools. The intervention group at KHS consisted of 1650 students in grades nine through 12. Parkview High School (PHS) is a 4-year high school in Springfield with an enrollment of 1,400 students and served as the control group for this study. Parkview High School did not receive the "Every 15 Minutes" intervention program.

STUDY DESIGN

This study was a pre-test/post-test design with the intervention program presented at KHS, and PHS used as a control group. The study was based to a large extent, on information provided by a CDC publication on measuring the effectiveness of intervention programs (Thompson & McClintock, 1998). Permission to conduct this study was granted from the school board of the Springfield Public School District. The pre-intervention survey was conducted at KHS in March 1999. The teen alcohol intervention, "Every 15 Minutes," was presented within 14 days, and the post-intervention survey was administered 30 days later. The control survey was conducted at PHS within 10 days of the post-survey at KHS. It should be noted that the KHS post-survey and PHS survey were administered after each high school's prom.

SURVEY INSTRUMENT

The pre-survey and control survey instrument consisted of the same 15 questions. The post-survey contained nine questions from the pre-survey. Survey questions included demographic information (age, and gender), previous school drug education programs, as well as attitudes and behaviors regarding drinking and driving. Seven of the survey questions were taken directly from the 1997 CDC Youth Risk Behavior Surveillance Survey (1999). This was done to both confirm the validity of the responses and to allow some generalization of the data to other high schools within the community (see Table 1). The seven questions from the CDC survey dealing with attitudes and behaviors toward drinking and driving were the same in the KHS pre-survey, KHS post-survey, and PHS control survey. Significance testing for the effect of the intervention is based on five of these questions and reported as significant only if the KHS pre-survey results are different than both the KHS post-survey and PHS control. A panel of physicians, health educators, teachers, and social workers developed the pre-survey questions not taken from the YRBSS and the additional post-survey

items. A pilot study was conducted to improve the format and item clarity of the pre-survey/control survey questions. The students in the pilot study were similar to the participants in this investigation. Students' suggestions were used to re-word survey questions for comprehension and to allow additional responses. The post-survey contained 20 questions: nine that matched the control and pre-survey, three concerning the "Every 15 Minutes" docudrama and assembly, and eight questions regarding the effect of the intervention on friends and discussions about DWI with friends after the intervention.

PROCEDURE

The prevalence of alcohol consumption, student attitudes and behaviors towards drinking alcohol and driving were measured by self-report. In order to ensure the validity of self-reported data, methods recommended by Rouse, Kozel, and Richards (1985) were followed to gather data through anonymous inquiry, using brief, easily understood directions to complete the survey. The use of self-report provided estimates of the students' most current behaviors and attitudes.

Preparation for administration of the pre- and post-survey at KHS included parental notification, teacher education regarding the rationale for the surveys, and teacher instructions for administration details. In addition, pre- and post-survey instructions were given to students to ensure that their participation was strictly voluntary.

The surveys were answered on scan cards that could be read by a Response Technology scan card reader. Statistical analysis was done using Minitab version 12.2, and all statistical tests were performed using 0.05 as the minimum level of significance. Descriptive statistics were reported for questions dealing with prevalence of drinking behavior and program effectiveness. Comparison of teen attitudes and self-reported behavior from the pre- and post-intervention surveys, and the PHS control survey was completed using Chi-square analysis.

INTERVENTION

The "Every 15 Minutes" teen alcohol intervention program originated in Chico, California and consisted of a staged drunk-driving accident scene (docudrama) viewed by students on the first day, an overnight retreat for selected students, and an assembly for the whole school on the following morning. At the assembly the selected students share the emotional impact of the retreat with the student body. Operational details, video, and written materials describing the program and survey instruments are available from the author on request. Additionally, the Missouri Department of Transportation distributes the video produced by the Kickapoo High School Media department to interested schools. This video describes the "Every 15 Minutes" program and how to produce this drinking and driving intervention.

DATA ANALYSIS

The data was examined for difference in responses based on gender, age groups, and self-reported use of

alcohol. Comparison questions that allowed four or more categories of responses were evaluated by combining classes of responses into favorable versus unfavorable to avoid finding statistically significant but unimportant difference by Chi-square tests. For example, the question "If a friend has been drinking and is going to drive..." allowed four responses. Responses of "I would still ride in a motor vehicle with him/her" and "I would ride with my friend unless he/she was really drunk" were combined into the unfavorable category. Responses of "I would not ride in a motor vehicle with him/her" and "I would take the keys from him/her" were combined into a favorable category. Where analysis demonstrated statistically significant results, the proportional change is reported to allow assessment of the magnitude of the effect.

Participation in the KHS pre- and post-survey was 98% and 92% respectively of students attending school on the day the survey was administered. Participation at PHS was a 69% of students attending school during the first hour when this survey was administered. Although the survey was distributed to all PHS first hour classes, a number of teachers did not administer the surveys. There is no material reason to think that the students not surveyed were different than those surveyed. The fact that the PHS data was virtually the same as the KHS pre-survey suggests that using PHS as a control is still valid. Less than 1% of all the scan cards were unusable. Usable data was available for 1,386 students for the KHS pre-intervention survey, 739 students for the PHS case controls, and 1,152 students for the KHS post-intervention survey.

After the intervention and post-survey were administered at KHS, two focus group discussions were conducted in June 1999. The purpose of these discussions was to evaluate the validity of the survey results, evaluate possible student interpretation of the responses, and to identify the most effective components of the "Every 15 Minutes" intervention program.

RESULTS

DEMOGRAPHICS OF RESPONDENTS

The students at both high schools were 9th through 12th grade. The age distribution by year was similar for both schools. Less than 4% were under age 15 and less than 2% were 19 years or older for both schools. The

populations of both schools were 98% Caucasian. Kickapoo students were 47.1% male and 52.9% female. Parkview students were 44.5% male and 55.5% female.

PRE-INTERVENTION RESULTS

The baseline prevalence of drinking behavior was similar at both high schools. The KHS pre-survey and PHS control survey showed similar responses in all categories except that PHS students reported drinking at a slightly younger age. Other differences did not reach statistical significance in terms of prevalence of recent alcohol use, riding with students who have been drinking, or actual drinking and driving behavior. More than 90% of students both at KHS and PHS had previously participated in the D.A.R.E. program or similar substance abuse programs. The response to questions about attitudes and behaviors toward drinking and driving was the same at KHS and PHS, and was similar to the 1999 Centers for Disease Control Youth Risk Behavior Surveillance Survey (YRBSS) (CDC, 2000) for both U.S. and State of Missouri (Table 1).

Approximately one-half of the students at both high schools were actively drinking in the thirty days prior to the survey. One-third of the students at both high schools reported heavy drinking (five drinks or more in one evening) at least once in the prior thirty days of the survey. One-third of students had ridden with someone who had been drinking during the previous thirty days. One in six students reported drinking and driving within the thirty days preceding the survey (Table 1).

PRE-INTERVENTION GENDER DIFFERENCES

Gender differences were similar to that reported in the YRBSS nationally and for CDC data specific to Missouri. In the pre-survey, 51% of both genders reported drinking in the past 30 days. More males reported drinking before age 13 (25.5%) compared to females (17.4%), $X^2 = 23.7$, $p < .000$. Females and males were equally likely to have reported drinking in the prior 30 days (47.8% versus 49.5%). Females were less likely to have drunk heavily (5 or more drinks on one evening on at least one or more occasions), 34% versus males at 40%, ($X^2 = 8.0$, $p < .005$). Both were likely to have ridden in a car with someone drinking and driving in the prior 30 days (32.3% versus 32.8%). Females, however, were much less likely to have been drinking and driving in the prior 30

Table 1. Baseline Pre-Survey Results Compared To 1999 CDC YRBSS

Questions	US*	MO*	KHS	PHS
Drank alcohol (ever) other than a few sips (yes)	81.0%	79.4%	68.4%	73.4%
Drank alcohol before age 13 (yes)	32.2%	33.5%	18.4%	26.4%
Drank alcohol in the prior 30 days (yes)	50.0%	49.9%	48.5%	48.7%
Heavy (=> 5 drinks at one time) in the past month	31.5%	32.0%	37.0%	37.3%
Ridden with a driver who had been drinking & driving in past month (yes)	33.1%	35.1%	31.8%	34.0%
Been drinking and driving in past month (yes)	13.1%	15.9%	16.7%	16.7%

*Comparative data for US and MO derived from CDC YRBSS 1999

days 13.5%) versus 21.4%, ($X^2 = 17.7, p < .000$). This is similar to the 1999 YRBSS CDC data for Missouri. Females were more likely to respond that drinking and driving was dangerous 77.6% versus 72.7%, ($X^2 = 13.5, p < .000$) and were more likely to try to stop a friend from drinking and driving 93% versus 87.1%, ($X^2 = 21.1, p < .000$). This gender difference was mirrored in the post-intervention survey.

The data was also examined to determine if any patterns existed for those students ages 16-19 who reported frequent (more than three drinking episodes in the prior 12 months) versus infrequent drinkers (0-2 such episodes). Frequent drinkers were significantly more likely to have responded that "drinking and driving was dangerous but that they could handle it" 31% versus 1.7%, ($X^2 = 215.1, p < .000$). These points were also supported by student responses in the focus groups. Both frequent and infrequent drinkers reported similar exposure to the D.A.R.E. or other substance abuse programs (92.3% versus 91.6%).

POST-INTERVENTION RESULTS

Uncontrolled intervention effectiveness questions for the "Every 15 Minutes" program are displayed in Table 2. The proportion of teens responding that the program favorably affected them was typically three to one. This uncontrolled data suggests a favorable affective response of the students to the program, but the controlled data (Table 3) demonstrates much less impact. The intervention significantly affected students' attitude toward drinking and driving as measured by questions asking if the students believed that drinking and driving is dangerous and if they would try to stop a friend from drinking and driving. The change in responses was significant for the KHS pre-survey results compared to the post-survey and the PHS control survey (Table 3). However, the magnitude of the change was not large. The proportional change (80.1% to 84.1%) in favorable response to the question asking teens if they believe it is dangerous to drink and drive reflects an absolute change in attitude of 4%. Simi-

larly, the favorable proportional change (90.7% to 94.2%) for teens that would try to stop a friend from drinking and driving after the intervention demonstrates an absolute change of only 3.5%. The relatively small magnitude of proportional change is due to a high baseline favorable response in the pre-surveys. Questions dealing with teen behavior for drinking and driving do not show a statistically significant change in behavior. The KHS pre-survey data for behavior changes does not reach statistical significance in comparison to KHS post-intervention nor with the PHS control for the same time frame (Table 3).

POST-INTERVENTION AGE AND GENDER DIFFERENCES

Questions on each of the three surveys (KHS pre-and post-surveys, and PHS control survey) were divided into age sets and analyzed for attitudes towards drinking, and driving and behaviors for drinking and driving. The age sets chosen were ages 14 and 15 (non-driving), and ages 16 and above (driving age). As would be logically expected, the non-driving ages showed no improvement in the answers related to drinking and driving, since there were so few who actually reported drinking and driving. Analyzing the data for ages 18-19 showed that older students were less likely to view drinking and driving as dangerous: 73.8% versus 81.3% for ages 14-17 ($X^2 = 10.4, p < .001$). The pattern of gender-specific differences in responses from the pre-survey was also found in the post-survey. Consistent with the pre-survey results, females reported significantly less drinking and driving behavior than males: 12.7% versus 21.1%, ($X^2 = 16.3, p < .000$).

FOCUS GROUP RESULTS

Two separate focus groups were conducted in June of 1999 consisting of eight students each selected from each of the four grade levels at KHS. The purpose of the focus groups was threefold: to evaluate the validity of the responses in the survey; to evaluate the potential interpretation problems with responses to questions; and determine what parts of the program were most effective. The focus group students uniformly indicated that their peers

Table 2. Post-Survey Results.

Did the program affect your attitude toward drinking & driving?	Yes (81.6%0				
After seeing the program, are you more or less likely to:	More Likely	Did not Change Mind	Less Likely		
Ride with a friend who has been drinking?	2.6%	22.3%	75.0%		
Drive after drinking?	3.6%	20.0%	76.4%		
Try to stop a friend from driving who has been drinking?	71.1%	16.3%	12.6%		
I think my friends who saw the program will be less likely to drive while intoxicated.	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
The program has further convinced me not to drink & drive.	4.9%	7.3%	28.8%	42.6%	16.5%
I had not really talked with my friends about their decisions to drink & drive before the program.	5.1%	2.9%	19.1%	36.2%	36.7%
It is more likely that I will talk with my friends about drinking & driving as a result of the program.	9.7%	21.0%	30.5%	29.0%	9.8%
	6.2%	9.0%	33.4%	36.0%	15.3%

Table 3. Pre and Post-Intervention Comparison of Attitude and Behavior Questions.

	KHS		<i>p</i> value	PHS control	<i>p</i> value
	Pre	Post			
Ridden with someone drinking & driving in the past month (yes).	31.8%	31.0%	.660 X ² =.194	34.0%	.197 X ² =1.81
Been drinking & driving in past 30 days (yes).	16.7%	16.6%	.913 X ² =.012	16.7%	.944 X ² =.005
Believe it is dangerous to drink & drive (yes).	80.1%	84.1%	0.01* X ² =6.66	80.2%	.0311* X ² =4.62
Would not ride with someone drinking & driving or would take keys (yes).	67.3%	74.4%	.074 X ² =3.19	72.6%	.152 X ² =2.05
Would try to stop a friend from drinking & driving (yes)	90.7%	94.2%	0.001* X ² =10.77	89.8%	<.001* X ² =12.41

*Significant at less than or equal to 0.05

had completed their scan cards responses honestly. The students believed that the survey responses might actually underestimate the drinking behavior. Students indicated that DWI enforcement with exposure of students who had lost the privilege of driving for a year would do more to deter drinking and driving than any other program.

In particular, the focus group students noted that the survey data may have underestimated the actual drinking and driving behavior, as they felt that the students would interpret the question to mean drinking and driving only when obviously impaired. This point is important because the post-survey indicated that even after the intervention, 12.5% of the students at KHS indicated that they knew drinking and driving was dangerous, but that they could "handle it." Students believed that the intervention was a catalyst for initiating discussions about alcohol behavior, particularly in terms of behaviors towards drinking and driving. The students noted that this was not an open topic previously and that the intervention gave them permission to discuss this freely. Students thought this discussion was beneficial in setting the stage for allowing them to openly resist drinking and driving behaviors. In addition, the focus groups felt that intervention programs should be aimed at eighth graders when drinking attitudes and behaviors are often initiated. This recommendation makes sense in that 44.3% of KHS students and 54.2% of PHS students reported having their first drink prior to age 15.

CONCLUSIONS

The prevalence of drinking, and drinking and driving behaviors in this study is similar to that reported in the 1999 CDC YRBSS (CDC, 2000). The focus group data and comparison to the CDC YRBSS corroborates the survey data. The survey data and focus groups questions specifically dealing with the effectiveness of the interven-

tion demonstrate positive changes in student attitudes toward drinking and driving. Analysis of the data does demonstrate a statistically significant improvement in attitudes towards drinking and driving, but the incremental change is not large due to a high baseline favorable response. The data does not show a measurable improvement in self-reported behavior toward drinking and driving. The survey and the focus group data suggest that the intervention would not make a substantial impact on behavior unless combined with additional school and community-based interventions.

The Greene County DWI Task Force used the data from this study to modify the 2000 presentation of "Every 15 Minutes" intervention, and to strengthen the community awareness of the need for rigorous law enforcement of DWI laws. The study results were reported in the local media along with statements by the city and county prosecutors reflecting their commitment for more stringent enforcement and penalties for drinking and driving. The study was also presented to the Missouri Governor's State Highway Safety Commission to reinforce the need for enforcing zero tolerance for teens, to reduce the legal blood alcohol concentration from 0.10 to 0.08, and to advocate community support for vigorous, visible DWI law enforcement.

The National Highway Traffic Safety Administration (Department of Transportation, 1997, p. 25) plan noted that "some of the most profound and dramatic advances in traffic safety have resulted from innovative programs that have resulted in significant media attention and public awareness" (Department of Transportation, 1997, p. 15). The consensus of the Greene County DWI Task Force was that the public discussion of the study results along with media attention for the "Every 15 Minutes" program did increase public awareness of the teen DWI problem.

Although these findings have direct implications for the primary prevention of students drinking alcohol and driving, the limitations of the study must be acknowledged. First, the data is based on self-reported behavior of high school students. The pre- and post- survey, however, closely follow the nationally administered 1999 YRBSS, which also examines student self-reported alco-

hol consumption and driving while intoxicated. A second limitation is the scope of the study. The intervention results are based on short-term data from one high school. Future research is recommended and should investigate the long-term effect of this type of intervention on students' drinking and driving behavior, the effects of targeting this intervention to younger students, and effects of a coordinated community/school effort to decrease DWI among high school students.

REFERENCES

- CDC Youth Risk Behavior Surveillance System 1997. (1998). Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 47(SS-3), 1-89.
- CDC Youth Risk Behavior Surveillance System 1999. (2000). Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 47(SS-3), 1-96.
- Coombs, R. H., & Ziedonis, D. (Eds.). (1995). *Handbook on drug abuse prevention: A comprehensive strategy to prevent the abuse of alcohol and other drugs*. Needham Heights, MA: Allyn and Bacon.
- Department of Transportation, National Highway Traffic Safety Administration, Traffic Safety Program Office of Research and Traffic Records. (1997). Strategic plan for behavioral research in traffic safety. *NHSTA Docket # 97-062-No 1*.
- Flay, B. R., & Petraitis, J. (1994). The theory of triadic influence: A new theory of health behavior with implications for preventive interventions. *Advances in Medical Sociology*, 4, 19-44.
- Kann, L., Kinchen, S. A., Williams, B. I., Ross, J. G., Lowry, R., Grunbaum, J. A., & Kolbe, L. J. (2000). Youth Risk Behavior Surveillance-United States, 1999. *Morbidity and Mortality Weekly Report*, 49(SS05), 1-6.
- Kolaya, L., & Grimes-Smith, B. (1999). From experimenting to dependency in 43 seconds: Teaching junior high and high school students about the progression of alcoholism. *Journal of Health Education*, 30(3), 185,189.
- Komro, K. A., Perry, C. L., Veblen-Mortenson, S., Williams, C. L., & Roel, J. P. (1999). Peer leadership in school and community alcohol use prevention activities. *Journal of Health Education*, 30(4), 202-208.
- Meeks, L., Heit, P., & Page, R. (1996). *Comprehensive School Health Education*, 2nd ed. (pp. 258-259). Blacklick, OH: Meeks Heit Publishing Company.
- Ringwalt, C., Greene, J., Ennett, S., & Iachan, R. (1994). *Past and future directions of the D.A.R.E. program: An evaluation review*. Research Triangle Park, NC: Research Triangle Institute.
- Rouse, B. A., Kozel, N. J., & Richards, L. G. (Eds.). (1985). Validation of self-report: The research record. *NIDA Research Monograph No. 57*, DHHS Publication NO. ADM 85-1402 (pp.12-21). Rockville, MD: National Institute on Drug Abuse.
- Thompson, N. J., & McClintock, H. O. (1998). Demonstrating your program's worth: A primer on evaluation for programs to prevent unintentional injury. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control.
- Yuen, F. K., & Pardeck, J. T. (1998). Effective strategies for preventing substance abuse among children and adolescents. *Early Child Development and Care*, 145, 119-131.

Every 15 Minutes: A Preliminary Evaluation of a School Based Drinking/Driving Prevention Program

Judy Bordin, Matthew Bumpus, & Shane Hunt

California State University, Chico

Abstract

This study focused on evaluating the effectiveness of "Every 15 Minutes," a popular drinking/driving prevention program. Participants were 1651 students in 81 California high schools. Pretest/post-tests comparisons revealed that student participating in the program as the "living dead" characters reported drinking less, being more likely to talk to their friends about drinking and driving, and being less likely to drive after drinking or ride with someone who had been drinking.

© 2003 Californian Journal of Health Promotion. All rights reserved.

Keywords: school based health, teenager drinking and driving, Every 15 Minutes, school based substance abuse

Introduction

Drinking and driving continues to be a major adolescent health and safety issue (O'Malley & Johnston, 1999). Despite declines in rates of adolescent drinking and driving, youth are still over-represented in alcohol-related traffic fatalities (NHTSA, 1998).

Numerous school and community based drinking and driving prevention programs have been instituted in response to the problems associated with adolescent drinking, with mixed results (Hansen, 1993). Kolaya and Grimes-Smith (1999) have stated that programs that rely on knowledge only may be limited. They insist that students must personalize learning to enable them to understand the effect of a behavior on their lives.

The "Every 15 Minutes" (E15M) program combined both school and community involvement during a two day program focused on high school students' alcohol related behaviors. E15M programs have been presented at over 250 high schools in California since 1996. The program challenges high school students to think about their drinking, driving, personal safety, and the responsibilities of making mature decisions. E15M requires extensive involvement and cooperation among

students, school officials, and community professionals (i.e., fire, police, emergency workers, health personnel).

Hover, Hover, and Young (2000) evaluated this program when it was presented in Springfield Missouri. Using a nearby comparison school, they found that the program did change student's attitudes about drinking and driving but not behaviors. Although, a small focus group taken from the larger study, indicated that the E15M program was catalyst for conversations about alcohol behavior and may allow students to resist drinking and driving pressures.

This study focused on three aspects of adolescents' behaviors that reflect the goals of the program: self-management (frequency/amount of consumption), relations with peers in alcohol-related situations, and driving practices.

Methods

Sixteen hundred and fifty one students from 81 California high schools who participated in E15M as "living dead" completed pretests and post tests. They ranged in age from 14-20 years (mean: 16.8 years). The majority were upper class students: 53.1% seniors and 35.2% juniors. The group also included 6.5% sophomores and

4.8% freshman. In addition, 774 parents completed pretests and post tests.

Materials

A total of 29 questions were used to assess student behavior and attitudes before, immediately after and six months later their participation in the E15M program (see Appendix A). Many of the questions appear on the California Healthy Kids Survey (CHKS, 2003) (see California Substance Use Survey Questionnaire). In this study, Subscale I examined self regulation of alcohol use and included questions about the amount and circumstances under which alcohol was consumed by the participant. Sample items were "How many times have you drunk alcohol in the last six weeks?"; "How many times have you become ill after drinking?"; and, "How many times have you talked to teachers or other adults about drinking?".

Subscale II investigated student observation and intervention of their peers in alcohol-related environments. Questions included: "How frequently do you worry about a friend's drinking?"; and "How many times have you talked to your friends about their drinking?".

Subscale III inspected driving practices of participating students. They were asked to disclose information about behaviors as drivers or passengers in alcohol-related environments. Items included: "How many times have you driven when you were or had been drinking 1-2 drinks? 3-4 drinks? 5 or more drinks?", "Have you taken the keys from a friend who was drinking?"; and, "How often have you been the designated driver?"

Parents were asked question before and after their son or daughter were involved in the program. Questions included information about their communication and expectations of alcohol use with their children.

Procedure

The E15M program is a scripted program outlined at the National Organization for Every 15 Minutes (2003). Other resources include Chico Police Department (2003) or the

California Alcohol Beverage Control Board (2003).

During the first day of the program, an adult playing "Grim Reaper" calls students who have been pre-selected from a cross-section of the entire student body out of their class. These are the "living dead" designees. One student is removed from class every 15 minutes. A police officer enters the classroom to read an obituary written by the "dead" students' parent(s). Near noontime, a simulated traffic collision is viewable on the school grounds. Actual rescue workers treat the injured student victims as if it was a real scene. The corner handles the fatalities while injured students are extricated by the jaws of life. Officers arrest and book the student drunk driver. The most critically injured student may be picked up by helicopter and taken to the hospital.

At the end of day 1, the 'dead' students and accident victims are transported to an off-campus site for an overnight student retreat. This simulates the separation from friends and family. Counselors and other professionals facilitate the retreat discussing the reality of impulsive decisions and risky behavior. Each student writes a letter to their parent that begins:

"Dear Mom and Dad: Every fifteen minutes someone in the US dies from an alcohol related traffic collision. Today I died. I never had the chance to tell you..."

The following day, a mock funeral service is held at the high school. A video of typical activities at the school with the victims is shown followed by the crash scene staged the day before. Speakers include community members affected by drinking and driving accidents. Students and parents read their letters to all. The focus of the assembly is that the decision to drink and drive affects many others than just the one who drinks.

Results

The results of all three subscales showed significant differences between pre and post test results (see Table 1). Students were less likely to practice dangerous and risky behaviors,

including drive practices, after their participation in the E15M program. They were also more likely to observe and intervene when their peers were in risky alcohol related situations.

Subsequent analysis of additional data collected approximately seven months later also showed significant differences as seen in Table 2. The positive effects of the E15M program continued to be evident among students who completed the survey.

Parents (N=295) whose children participated as E15M “living dead” completed pre- and post-surveys. There were significant differences in their attitudes and behaviors about alcohol use among their children. See Table 3. Following their participation in the program, parents also reported being more likely to discuss drinking and driving, more prepared to control or prevent alcohol problems, and more confident that their teenager would not drink and drive.

Table 1
Results of Pre-Test / Post-Test (57-Day Average Interval)

	PreTest	Post	<i>t</i>	<i>p</i>
Self Management (N=356)	26.99	29.02	10.02	.000*
Peers (N=1006)	13.96	16.72	25.06	.000*
Driving Practices (N=359)	52.33	64.57	28.65	.000*

* *p* < .001

Table 2
Results of Pre-Post-Post Tests (218-Day Interval)

	PreTest	Post 1	Post 2	<i>F</i>	<i>p</i>
Self Management (N=46)	27.39	29.74	30.85	28.51	.000***
Peers (N=197)	14.46	17.78	16.26	6.39	.015*
Driving Practices (N=48)	54.47	66.13	71.10	288.76	.000***

* *p* < .05; ****p* < .001

Table 3
Attitudes About Alcohol Among the Parents (N=295)

Items	Pre	Post	<i>t</i>	<i>p</i>
Discuss drinking with teen	2.82	2.78	2.29	.022*
Permission for teen to attend a party	2.35	2.49	2.44	.015*
Disapproval of teens’ friends drinking	3.95	4.03	2.28	.022*
Disapproval of teens’ friends binge drinking	4.61	4.66	2.55	.011*
Prepared to deal with alcohol problems	1.74	1.61	4.08	.001**

***p* < .01; * *p* < .05

Discussion

Results suggest lasting program effects on all three subscales for students and on certain items for parents. Strongest effects are evident in initial pre-test / post-test comparisons which is congruent with other prevention program research data. However, one of the goals of the program is to prevent alcohol related driving

mishaps during prom and graduation months, so short term intervention may be successful.

Recent research has suggested that peers often estimate the amount and occurrence of alcohol consumption among their friends. Efforts to make the reality of actual alcohol use has been labeled “norm breaking” intervention. These

data suggest that the E15M program may contribute to this by encouraging peers to observe and intervene in their friends alcohol use. This research also may indicate that students may talk more with their friends, parents and teachers about drinking behaviors. This may have the effect of “uncovering” actual behavior.

The activities in this program send a clear message to students that community professionals, school personnel and family members are concerned about the teen alcohol use. This may provide a reason for some teens to think carefully about their own alcohol use and be alert to community expectations.

All research has flaws. These data were collected by agencies in each community that presented the program. As a result, data were often incomplete and attrition rates were high. Further evaluation of E15M will focus on two areas. We are interested in forming control groups at similar high schools in the nearby regions to make comparisons with participations in E15M. We would also like to investigate the extent to which the E15M program has an impact on students who participate less extensively (e.g., students who view the crash scene and attend the assembly but do not participate as living dead).

References

- California Alcohol Beverage Control Board. (2003). Home page. Retrieved August 5, 2003, from <http://www.abc.ca.gov/>
- California Healthy Kids Survey. (CHKS, 2003). AOD use & safety high school survey. Retrieved August 5, 2003, from http://www.wested.org/hks/hrcode_c.pdf
- Chico Police Department (2003). Home page. Retrieved August 5, 2003, from http://www.ci.chico.ca.us/Police/Home_Page.asp
- California Healthy Kids Survey. (CHKS, 2003). Home page. Retrieved August 5, 2003, from <http://www.WestEd.org/hks/>
- Every 15 Minutes. (2003). Home page. Retrieved August 5, 2003, from <http://www.every15minutes.com/>
- Hansen, W. B. (1993). School-based prevention programs. *Alcohol Health & Research World*, 17, 54-60.
- Hover, A. R., Hover, B. A., & Young, J. C. (2000). Measuring the effectiveness of a community-sponsored DWI intervention for teens. *American Journal of Health Studies*, 16(4), 171- 177.
- Kolaya, L., & Grimes-Simth, B. (1999). From experimenting to dependency in 43 seconds: Teaching junior high and high school students about the progression of alcoholism. *Journal of Health Education*, 30(3), 185-189.
- O'Malley, P. & Johnston, L. D. (1999). Drinking and driving among US high school seniors, 1984-1997. *American Journal of Health*, 89, 678-684.
- U. S. Department of Transportation, NHTSA. (1998). *Traffic Safety Facts*. National Center for Statistics & Analysis, 400 Seventh Street, S.W. Washington, D.C. 20590.

Author Information

Judy Bordin, Ph.D.
Professor of Child Development &
Coordinator of the Social Sciences Program
California State University, Chico

Matthew Bumpus, Ph.D.
Assistant Professor of Child Development

Shane Hunt, Graduate Student
Department of Psychology

Appendix A

Item Content for Three Subscales

Self Management

In the last six weeks, how many times have you drank alcohol?
During the last six weeks, on how many days did you have five or more drinks in an hour?
Talk to my teachers or other adults about drinking?
Set a limit on your own alcohol consumption?
Become ill after drinking?
Choose not to drink with your friends?
Do “binge” drinking (five or more drinks / one time)?
Participate in drinking games / consumption?
Establish / use a “no questions asked” contract with an adult / parent?

Peer

How do you feel about another student your age trying one or two drinks of alcohol?
How do you feel about another student your age drinking five or more drinks in an hour?
How do you think your best friends would feel if you got drunk?
Watch out for my friends who were drinking?
Talk to my friends about their dangerous drinking?

Driving Practices

During the last six weeks, have you driven a car when you were or had been drinking?
During the last six weeks, have you been in a car with friends who were drinking?
Would you drive in a car after you have drank:
 One or two drinks?
 Three or four drinks?
 Five or more drinks?
Would you ride with a driver who has drank:
 One or two drinks?
 Three or four drinks?
 Five or more drinks?
Would you prevent someone from driving who has drank:
 One or two drinks?
 Three or four drinks?
 Five or more drinks?
How frequently do you worry about friend’s drinking and driving?
Try to prevent a friend from drinking and driving?
Talk to my parent(s) about drinking and driving?
Be the designated driver?
Buckle your seat belt?
Call someone for a ride home instead of driving?
Give up your car keys because you had been drinking?
Walk home instead of driving?
Designate a sober driver?
Get a ride with a designated driver?