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**A THREE YEAR OUTCOME EVALUATION
OF A THEORY BASED DRINK DRIVING
EDUCATION PROGRAM**

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ABSTRACT

This study reports on the impact of a "drink driving education program" taught to grade ten high school students. The program which involves twelve lessons uses strategies based on the Ajzen and Madden theory of planned behavior. Students were trained to use alternatives to drink driving and passenger behaviors. One thousand seven hundred and seventy-four students who had been taught the program in randomly assigned control and intervention schools were followed up three years later. There had been a major reduction in drink driving behaviors in both interventions and control students. In addition to this cohort change there was a trend toward reduced drink driving in the intervention group and a significant reduction in passenger behavior in this group. Readiness to use alternatives suggested that the major impact of the program was on students who were experimenting with the behavior at the time the program was taught. The program seems to have optimized concurrent social attitude and behavior change.

Impaired driving due to alcohol consumption has been recognized as the single most important contributing factor to road crashes. Young people are over-represented in crash figures [1]. In a study based on a series of roadside surveys,

Simpson found that for the sixteen to nineteen year age group there is a disproportionately increased risk of a fatal crash even at low blood alcohol levels [2]. The risk increases at a faster rate than for older drivers as the blood alcohol level increases.

SCHOOL BASED DRINK DRIVING PROGRAMS¹

A number of school based education programs have been developed with the goal of reducing the incidence of drink driving by young people [3]. Many high school alcohol educational programs also include components which focus on this issue. Reviews of such educational interventions by Klitzner et al. [4] and more recently by Mann [5] have noted the heterogeneous "scatter gun" nature of the material included in most programs offered.

The lack of underlying theoretical or empirical bases to such initiatives and the consequent limitations on testability has led to the situation in which useful interpretation of measures of outcome effectiveness has been limited. This problem has been aggravated by the common inclusion of drink driving prevention materials within a more general responsible alcohol consumption education framework [6]. Research based recommendations by Klitzner et al. [7] that increasing the "perceived deviance of drink driving" should be used as a basis for developing educational models and McKnight and McPherson's [8] work on peer intervention have been exceptions rather than the rule in this area. As a result it has been difficult to determine what educational components should or should not be included in programs. Mann also has noted a continuing absence of evaluations of drink driving programs which follow the recipients beyond the period of immediate program impact [5].

By contrast, over the same period of time smoking and alcohol prevention programs have been developed and systematically evaluated. A number of these have had a measurable positive impact and there is now confidence that such programs are effective, at least in the short term [9-11]. The theoretical models which tend to underlie most of these programs draw on the work of McGuire [12] on "persuasion" and "psychological inoculation" against persuasive persons and arguments and Bandura's [13] concept of "self efficacy." Most follow or are developments of earlier smoking reduction interventions.

Three studies which have examined the effectiveness of specially designed drink driving education programs using similar educational paradigms and conducted in a school setting have had mixed results. Albert and Simpson conducted surveys immediately before and three months after a two hour skills

¹ This project was funded by the Australian Commonwealth Department of Community Services, Health and Housing through RIDAAC and by the A.R.C.

based program to reduce impaired driving was taught to grade eleven students [14]. The responses of the intervention sample of 121 students from two schools were compared with those of 93 students from two different schools who made up the non-randomized control group. Significant changes in the desired direction were found in relevant attitudes and intentions for the intervention group. Perceived seriousness of consequences did not change but the authors argue that these had reached a ceiling at the pretest. Reported drinking frequency increased in the group taught the two hour program.

In a more extended evaluation Duryea and Okwumabua evaluated an alcohol education program for grade nine students which also included a skills based segment on being the passenger of a drink driver [15]. Using a non-randomized control design the program was followed up in the school setting on three occasions—after two weeks, after six months, and after three years. Again, the effects were in the desired direction at the first two follow-up occasions but had ceased to be measurable at three years. Drinking to excess was more commonly reported by the intervention group at posttesting. Both these studies share methodological problems of small numbers, high attrition rates, and lack of random assignment to experimental and control groups. Albert and Simpson used two experimental schools and two control schools, but do not indicate the grounds for selection. The experimental school in Duryea and Okwumabua's study was particularly selected because the students were thought to have unusually high levels of alcohol related problem behavior.

A third study by McKnight and McPherson evaluated the effectiveness of a training program which aimed to increase the likelihood of peer interventions in the drink driving behavior of others [8]. The program which provided role play practice in the intervention was taught to 334 students in nine groups in five high schools. Self reported behavior was compared with the reports of a similar number of students who had been randomly assigned to a regular drug safety program in the same schools. Sample attrition levels were high and had reached 33 percent in the follow-up control group at four months.

The results suggested a significant positive impact on both treatment and control groups at immediate test and the effect was maintained at four months by the treatment groups. The researchers were not able to measure reported drinking behavior. The results of these studies point to the need to monitor effects closely and over an extended period of time. The increased alcohol consumption by the experimental students in two of the studies also suggest that it is important to monitor unanticipated negative outcomes.

Very few drug education programs have been followed over more extended periods of time. Probably due to the very real problems of high attrition rates in the school setting no drink driving study has been reported which has monitored the effects of a school based program after students have left high school. The extent to which such programs can contribute to a decrease in offenses and traffic crashes is also uninvestigated.

THIS STUDY

In 1985 an intersectoral group which included representatives from the relevant government departments was established to develop and test a school based drink driving education program intended to reduce the alcohol related road accidents of young people. The public health objective of the program was to postpone the young people's involvement in alcohol related driving situations as long as possible. Two methodological constraints governed the design of the program. The first related to the need to restrict the educational content of the program to a testable model and the second was to ensure that the numbers involved in the trial were sufficiently large to enable an assessment of the outcomes of the program to be measured within a reasonable time frame.

THE EDUCATIONAL MODEL

Because the program was to be implemented in a school setting prior to the legal drinking age of eighteen years and driving age of seventeen years, a model for behavior change had to be used which was not solely dependent on a direct impact on the students' drink driving. It was, therefore, additionally concerned with related behaviors such as passenger experience with parents, other relatives and friends. Beck [16] compared the contributions of the Ajzen and Fishbein [17] theory of reasoned action with the Health Belief Model [18] variables in predicting attitudes and beliefs about drink driving in a college population. He found that the Ajzen and Fishbein model was the strongest predictor of intention, and that intention was the best predictor of later behavior. Consequently in the Queensland study the Ajzen and Fishbein theory was selected to define the content of the program. Other advantages of the Ajzen and Fishbein model for use in an educational setting included its applicability to behavior modification and its relative parsimony. The first formulation, the theory of reasoned action [17], is based on the assumptions that most actions of social relevance are under volitional control and that a person's intention to perform (or not to perform) a behavior is the immediate determinant of action. Intention, in turn, is seen as a function of two basic determinants.

1. A personal factor, attitude toward the behavior (A)_B
2. A social influence factor, subjective norm (S)_N

For a particular behavior, these two constructs can be assigned relative weights (W_1, W_2) which may vary from one person to another. Attitude and subjective norm are themselves the function of prior determinants. Attitude toward a specific behavior is proposed to be a function of the salient beliefs and outcomes of the behavior and the evaluation of these outcomes. Subjective norm is seen as a function of a person's perception of what specific significant referent individuals

or groups think the person should do and of the person's motivation to comply with these referents.

The constructs in the theory of reasoned action are motivational which led to a series of formative decisions for the educational program. The aim of the lessons was to enable students to establish intentions to use safe alternative behaviors rather than drink drive or be a passenger of a drink driver.

In its first development, the theory of reasoned action made no provision for the situation where the intention to perform a behavior is affected by uncertainty arising from beliefs about personal lack of control over behavior and events. Ajzen has described these situations as stemming from internal factors such as lack of information, skills, abilities; will power or emotional factors; and external factors—"time, opportunity and dependence on other" [17].

Ajzen and Madden have tested an extended theoretical formulation now called the "theory of planned behavior," which adds the construct of perceived behavioral control to those in the theory of reasoned action [19]. This construct measures a person's beliefs about how easy or difficult performance of the behavior is likely to be and thus indirectly addresses factors such as the presence or absence of requisite resources and opportunities.

Positive findings were beginning to emerge in the anti-smoking literature from skills and efficacy based programs based on Bandura's theory of self efficacy [13]. The publication of Ajzen and Madden's [19] modifications to the original theory in 1986 specifically added the concept of "perceived control" to theory of reasoned action and related this directly to Bandura's concept. This provided an integrated theoretical grounding for the design of the lessons which could be tested.

The P.A.S.S. (Plan a Safe Strategy) education program has been described in detail elsewhere [3]. It is important to clarify that these theoretical concepts lead directly to the goals of the program which were to weaken students' intentions to drink and drive or to be the passenger of a drink driver and to strengthen their intentions to use alternative strategies and pre-planning to avoid drink driving and passenger situations. The program proceeds on the assumption that the intention to perform or not perform an act is the strongest predictor of future action. The outcome goal of the program was to reduce students' later involvement in drink driving related situations. This was hypothesized to result from creating and strengthening relevant intentions.

THE TARGET GROUP

A further major decision which directly influenced the teaching program concerned the appropriate target grade level for the intervention. Targeting interventions at the appropriate recipients involves complex decisions. In the present case, qualitative interviews were held with representative samples of students in all high school grades in rural and urban areas of Queensland, Australia in 1985.

These were followed by a Planning Survey of a representative sample of all grade ten students and of selected samples of students from grades eight to twelve in 1986 [3].

These studies and McGuire's work on psychological "inoculation" [12] led the researchers to believe that it was important to try to introduce the program at a time when it would precede the onset of the behavior. That is before students became involved in drink driving situations in which drinking was associated with driving. This led to the decision that grade ten (14-15 years old) was an appropriate level to target. Since compulsory attendance at school is required to age fifteen years, grade ten also represented the latest high school year with maximum numbers of students still in attendance at school. At this age, the educational program would precede the onset of drink driving in the great majority of students, yet occur at a time when the issue was relevant and of interest. It was of some concern that this was not the case with being a passenger of a drink driver. The majority of students at each high school grade level including grade eight (12-13 years old) reported previous experience as the passenger of a drink driver. A practical reality, which also influenced the decision, was that the program had to be acceptable to high school principals and parents. A proportion of these were firm believers that discussing an issue such as drink driving might encourage younger students to engage in the behavior, and that their students/children were neither drinking nor involved in drink driving.

The background research therefore indicated a strong involvement of young people in drink driving behaviors, and also that they were well aware of drink driving by the significant adults they were associated with. The universality of these behaviors at this time led to a modification of the design goal to *delaying the age of onset of drink driving behaviors*.

THE LESSON PLAN

The P.A.S.S. program included twelve lessons which were concerned with modifying students' attitudes toward drink driving behaviors; their beliefs about the outcomes of drink driving behaviors; their subjective norms or beliefs about other's attitudes toward these behaviors and finally increasing their perceived control over their own behavior in drink driving and passenger situations by training them to use alternatives [20]. Extensive use was made of role play and interactional activities. This aimed to increase the students' perceived behavioral control by giving them the experience of self-efficacy using alternative strategies. Students were given confidence in countering pressures by replying to persuasive arguments, and by planning ahead to use alternatives to avoid drink driving and passenger situations. The majority of students had been passengers of a drink driver prior to the teaching of the course and sizeable proportions were passengers during the course. A small minority also had been involved in a drink driving

which provided the opportunity for trial and error and feedback on successful and unsuccessful avoidance strategies to be reported within the class setting.

IMPLEMENTATION

The program was selectively taught through 1988-1989 using a staged entry methodology to students in 164 randomly assigned experimental schools while 264 schools acted as controls. One school principal in a school selected in the control group refused to participate. All teachers involved in the experimental program were given in-service training by trained regional alcohol and drug educators. Special attention was paid to developing role play teaching skills. A separate educational video was designed for use by principals, parents and school support groups [21].

An intense program of process evaluation was undertaken throughout the development of the program to ensure that the lessons were consistent with the concepts and strategies defined by the theoretical model. In addition, three behavioral outcome assessment studies were designed:

1. A *short term evaluation* of the immediate (3 months) impact of the program on the relevant measures [3]. This used pre and posttest surveys of students in four selected schools randomly assigned to the experimental and control groups in 1988;
2. A comparative study of *official outcomes* obtained by monitoring the traffic records of the 1988 and 1989 grade ten cohorts. This involves approximately 30,000 students who were taught the package and 30,000 who acted as controls;
3. The present study which is a *longitudinal pre and post-test survey* follow up in 1991 of 4,545 students in forty-one schools randomly selected from those schools assigned to control and experimental groups in 1988.

The short term evaluation was undertaken in 1988 [3]. It involved pre and post instruction surveys of the same students in the four randomly assigned experimental ($n = 348$ students) and control ($n = 325$ students) schools. The study [3] found strong trends in the desired direction in reduced drink driving and passenger behaviors. Attitudes toward drink driving and being a passenger, and myths about safety in these situations, changed significantly in the desired direction. Students from the intervention group were also significantly more likely to be prepared to use alternatives in target situations. Knowledge also changed significantly in the desired direction. Intervention students were significantly more likely to intend to avoid drink driving after licensing and to avoid being a passenger.

This article reports on the findings of the three year follow-up of students taught the package in 1988. Two major relevant community interventions took place during the period between the intervention and the follow-up. Random Breath Testing (RBT) was introduced in the State in 1988. Under this police initiative

drivers are required to stop at randomly determined police check points and to undertake a breath analysis for breath alcohol content. In 1991 a further national drink driving prevention initiative was introduced with legal requirements that all drivers under twenty-one years of age, or during the first three years of licensed driving, should have a zero blood alcohol level and zero breath alcohol level.

Both these initiatives which were intended to impact on the young driver were introduced with considerable publicity.

METHODS

In the pretest baseline study, 4,545 students were surveyed from randomly assigned control ($n = 21$) and intervention ($n = 20$) schools at the end of first semester 1988 before the P.A.S.S. Program was introduced into the schools. The majority of these respondents were surveyed in a classroom setting by the research team. Two follow-up reminders were sent to this group in 1990 and they were asked to provide contact names and information about close family members or friends who could help with the later location of the respondents. In February 1991, a random sample of 2,833 (62%) of the original respondents was drawn and they were surveyed during the first half of the year. At the time of sampling for the posttest survey in one-in-five (20.6%) had been out of school for at least one and a half years.

The posttest survey was mailed in March. Two reminder mailings were undertaken. The first was a follow-up letter sent within a week of the first drop in numbers of returned surveys; the second follow-up, which was sent approximately one month later, included a second letter and a second questionnaire sent by certified mail [22]. All mailings included pre-paid return envelopes.

Measurements

The two survey instruments used in 1988 and 1991 were similar in presentation and included the same items as core behavior measures. These core items measured the target drink driving and passenger behaviors, intentions toward these behaviors and responses to pressures to be involved in passenger situations. They also included measures of contributing behaviors including drinking frequency and driving frequency. The 1988 survey included a standardized delinquency scale [23] and items measuring the Ajzen and Fishbein model as potential predictors of later drink driving and/or traffic clashes and injury [17]. These were not used in the follow-up survey. However, the second survey included additional measures of contact with R.B.T., and reports of drink driving convictions.

A series of measures of attitudes toward using alternative strategies were developed. The main scale examining likelihood of using alternatives had been developed during the short term evaluation. The test-retest reliability measured with the control group in 1988 had been .74. It comprised of four items which

asked respondents to indicate on a scale from 1 (certainly wouldn't) to 10 (certainly would) how likely they would be "to take a taxi," "stay overnight," "plan ahead that the driver will not drink"; "not drink if driving." The scale retained satisfactory reliability in 1991 with a Cronbach's alpha of .77 ($n = 1699$).

Sample

One thousand seven hundred and seventy-four (62%) respondents returned a questionnaire in 1991. The majority of the respondents were female (59%), aged seventeen years (58%). The remaining respondents were eighteen years or older. Eighty-six percent ($n = 1527$) held a learner's permit or license. There were no significant differences between respondents from the control and experimental groups on these variables nor in their response rates. Comparisons of the 1991 respondents and the non-respondents on their personal data from the earlier 1988 survey indicate that the non-respondents were significantly more likely to be male; and in 1988 had been more frequent drinkers; more likely to report drink driving or riding a bicycle after drinking; being a passenger of a drink driver and to have had higher scores on the delinquency scale.

RESULTS

This article reports on the findings of the 1991 longitudinal follow-up survey of persons who completed the baseline survey in 1988. The results report the main outcome findings three years after the educational program. Changes between 1988 and 1991 in self reported drink driving and passenger behavior in the past month are used for the two main outcome measures. In the first analysis, changes over time and between the control and intervention groups in the contributing behaviors of drinking and of driving are examined.

Drinking

A comparison of the reported drinking frequency of the intervention and control groups indicated that in 1991 approximately one-third of both the intervention (36%) and control (34%) groups were drinking at least weekly. This difference approached significance ($\chi^2 = 6.54, = 3, p = .09$). There is a considerable increase in the frequency of this behavior by both groups since they were surveyed at high school in 1988 (10% and 13% respectively) when there was no significant difference between them ($\chi^2 = 5.46, df = 3, p = .14$).

Driving Frequency

As expected, there was a major increase in driving and 90% ($n = 1593$) reported in 1991 that they had driven a motor vehicle in the past year. There was no difference between the intervention and control groups at either time. In 1988

30 percent of the intervention group had driven at some time compared with 31.5 percent of the control group ($\chi^2 = .269$, $df = 1$, $p = .6$). In 1991 driving frequency had increased markedly and 44.9 percent of the intervention and 44.3 percent of the control groups respectively were driving daily ($\chi^2 = 3.82$, $df = 4$, $p = .4$).

Drink Driving Behavior

In 1991 7 percent of the intervention students and 9 percent of the control students reported drink driving in the past month. This is only a very small increase on the proportions reporting this behavior three years earlier (3% and 5% respectively). In order to measure the extent to which the program had an impact on this behavior, respondents were classified according to changes in their drink driving behavior during the period 1988-1991. Respondents were stratified according to their self reported drink driving behavior in 1988, with desirable behavior defined as "no reported incidents of drink driving in the past month" while undesirable behavior was defined as "one or more reported drink driving experiences during the same time period." The comparison between the groups was expressed as the odds ratio for undesirable behaviors in 1992 with 95 percent confidence intervals for each category of the 1988 behavior. Statistical significance was determined by aggregating across categories using the Mantel Haenszel test. The findings are presented in Table 1.

It should be noted that the numbers involved here are very small. The differences are not significant though the results are in the predicted direction. Fifty-six (6.9%) of respondents in the intervention group who did not report drink driving in 1988 reported it in 1991, compared with seventy (7.74%) of the control group respondents. Five (12%) of the twenty-six students in the intervention group who reported drink driving in 1988 also reported the behavior in 1991 compared with

Table 1. Changes in Drink Driving in Experimental and Control Groups between 1988-1991

1991	1988							
	Desirable				Undesirable			
	Exper	Control	Total	Odds Ratio (95% CI)	Exper	Control	Total	Odds Ratio (95% CI)
Desirable	745	834	1,579	(0.90)	21	32	53	(0.59)
Undesirable	56	70	155	(0.61-1.31)	5	13	18	(0.15-2.1)
Total	801	904	1,705		26	45	71	

Aggregated OR: 0.86; 95% CI: 0.60-1.24
Mantel Haenszel χ^2 (1 df): 0.57 $p = 0.45$

thirteen (28.9%) of the forty-five students in the control sample who had been drink driving at the time of the earlier survey.

Passenger Behavior

The trend away from undesirable behaviors by both experimental and control respondents is also apparent in reported passenger behaviors in the previous month. Only 22 percent of intervention and 27 percent of control respondents reported passenger behavior in the previous month in 1991. In 1988 more than half (57% and 56% respectively) of both groups reported being passengers over the same time period.

While the movement over time from passenger to driver status as they get older is partially reflected here the reduction is considerably more marked than would have been predicted from age and driving experience. It is also considerably less than that reported by same age students answering the Planning Survey in 1986.

To measure the direction of change, the control and experimental respondents were again classified according to their behavior change over the three year period. The results are given in Table 2.

Of the students in the intervention group who had not been a passenger in 1988, sixty-five (15.1%) reported being passengers in the past month in 1991 compared with ninety (17.1%) of the controls. Of those students in the intervention group who reported that they had been a passenger in 1988, one hundred and eleven (29.2%) reported in 1991 that they had been a passenger in the past month. This compares with one hundred and sixty-four (37.4%) of the control group. The Mantel Haenszel ($\chi^2 = 7.82, df = 1, p = .005$) indicated that there was significant decrease in undesirable passenger behavior in those students who had been taught the P.A.S.S. Program in 1988.

Table 2. Changes in Passenger Behavior in Experimental and Control Groups between 1988-1991

1991	1988							
	Desirable				Undesirable			
	Exper	Control	Total	Odds Ratio (95% CI)	Exper	Control	Total	Odds Ratio (95% CI)
Desirable	367	419	786	(0.82)	283	275	558	(0.66)
Undesirable	65	90	155	(0.57-1.19)	111	164	275	(0.49-0.89)
Total	432	509	941		394	439	833	

Aggregated OR: 0.72; 95% CI: 0.57-0.82
 Mantel Haenszel χ^2 (1 df): 7.82 $p = 0.005$

Use of Alternative Strategies

One of the main goals of the education package had been to reduce drink driving and passenger behaviors by increasing students' use of alternative strategies. In order to determine whether drink driving and passenger behaviors reflected differences in the use of alternative strategies the experimental and control respondents were again classified into groups on the basis of changes in their drink driving and passenger behavior. Comparisons of their scores on the use of alternative strategies scale were undertaken using ANOVA.

A 2×4 factorial ANOVA of cohort (intervention/control) and drink driving behavior change was used to test the use of alternative strategies. The results are summarized in Table 3. There was no significant main effect in the use of strategies by the cohorts as a whole. There was a significant difference between the four behavior change groups. That is, between those who had ceased drink driving at the second survey in the two cohorts and those who reported drink driving in 1991 but had not reported it in 1988. There was also a significant interaction effect. A simple main effects analysis indicated that there were significant differences in the use of alternative strategies by those persons who changed their drink driving in both the experimental and control groups ($F = 6.44$, $p < .001$; $F = 4.85$, $p = .002$ respectively).

These differences were examined using the Least Square Differences (LSD) procedure (.05) to test which groups varied significantly from each other. This procedure indicated that respondents in the intervention group who reported drink driving in both 1988 and 1991 were the least likely to use alternate strategies ($m = 4.3$). In the intervention cohort those who did not drink and drive in 1988 nor did in 1991 reported significantly higher likelihoods of using alternative strategies ($m = 8.7$) than those who had not reported drink driving in 1988 but did so in 1991 ($m = 7.8$). This pattern of findings was similar for the control respondents except that an examination of the data for those who were drink driving in 1991 showed no significant differences in the use of alternative strategies between those who had been drink driving in 1988 ($m = 7.3$) and those who had not been drink driving at the earlier date ($m = 8.1$).

Table 3. Results of ANOVA of Use of Alternatives by Drink Driving

Source	df	ms	F	p
Cohort	1	.494		
DD change	3	49.026	16.459	< .001
Cohort \times DD change	3	12.114	4.067	.007
Total	1753			

A similar 2×4 ANOVA was undertaken looking at the relationship between passenger status, cohort, and the use of alternative strategies. There was no effect for cohort but a significant effect was found for passenger behavior change. There was no interaction effect. The LSD procedure (.05) indicated that the groups who were not passengers in 1991 were significantly more likely to report using alternatives than the groups who were passengers regardless of their passenger behavior in 1988. This was not significantly related to cohort status.

CONCLUSION

The present three year follow-up evaluation of the effectiveness of the P.A.S.S. Program takes place within the context of a major community change in drink driving [24] and passenger behavior. That this change had an impact on the research cohorts is indicated by the finding that in both the intervention and control groups there was only a minimal increase in the proportions who reported drink driving. This extremely small increase occurred in a context of increasing age; experience out-of-school; and driver licensing which had led to the proportions drinking and the proportions driving increasing threefold.

In 1991 over a third of both the intervention and control cohorts were drinking alcohol at least weekly and the overwhelming majority were driving. At the same time only a very small minority (7%) reported being engaged in drink driving.

Similarly the proportion of these seventeen- to eighteen-year-olds who reported being a passenger of a drink driver in the past month had halved since they were fourteen years in 1988. In the 1988 data the strongest predictors of drink driving behaviors (explaining about 40% of variance) had been frequency of drinking and frequency of driving [25]. The fact that both these increased significantly and meaningfully, but there was minimal increase in drink driving supports the evidence from other sources that there had been a major community change away from drink driving and that both groups in the cohort reported this behavior change.

Table 4. Results of ANOVA of Use of Alternatives by Passengers of a Drink Driver

Source	<i>df</i>	<i>ms</i>	<i>F</i>	<i>p</i>
Cohort	4	1.239		
PDD change	3	85.594	29.249	.001
Cohort \times PDD change	3	4.029		
Total	1784			

The reasons for the cohort change are many and while the introduction of Random Breath Testing (RBT) and zero blood alcohol content (BAC) for young drivers would have been key influences, they are probably not sufficient to explain the full magnitude or rapidity of the change. The majority of these students are under legal drinking age, but this does not appear to have had a particularly restrictive effect on their weekly drinking activity. The evidence from this longitudinal comparison of the same young people over a three year period suggests that the package may have been taught to students at the peak of a wave of community attitude and behavior change.

The key issue then to be addressed in evaluating the prevention program is the extent to which a program effect as such could reasonably be discernible over and above the change which is attributable to cohort change. In the 1991 context of major community change it could be predicted that there would be ceiling effects, particularly on attitudinal measures and only small outcome effects are likely to be measurable. This is what appears to have happened. Within that context, the results provide support for the effectiveness of P.A.S.S. and for other programs of this kind. No significant effect was found for drink driving behavior though a trend in the desired direction was evident. The change in passenger status is highly significant and within a public health context, meaningful. The major attitude change in the cohort probably protected those students who were not already engaged in drink driving or passenger behavior in 1988 from taking up these activities by 1991. The program's effect seems to be more apparent in moving the early (1988) experimenters away from the behavior and toward resisting pressures to drink drive and using alternative strategies.

This interpretation is supported by the findings related to the use of alternatives by drink driving respondents. There is a significant interaction effect which indicates that those intervention students who continued to drink drive reported a much lower likelihood of using alternative strategies than the similar group in the control sample. This suggests that the respondents in the intervention group who continued to drink drive were students who were confirmed in both drink driving and resisting pressures to use alternatives. Those who continued to drink drive in the control sample were no different to the non-drink drivers in their knowledge or use of these strategies. The experimenters in the control group in 1988 were not taught the program and not helped to use alternatives by the learning activities of the program.

The package had a significant positive effect on the likelihood that those who had been in the intervention group would avoid being a passenger. This again primarily seems to reflect modifications of their earlier passenger behavior by the intervention students. The loss of a measurable "conversion" effect here is most likely due to the fact that the "alternative scale" is weighted with items that potentially are more related to drink driving experiences than to decisions about avoiding being a passenger. The validity of the scale as a measure of use of alternative strategies for passenger behavior is limited.

The program changed students' attitudes and intentions at the time it was taught [3]. At this three year follow-up it had changed students' passenger behavior, moderated drink driving, and strengthened their use of alternatives. Because of differential response rates, the sample under-represents the most "at risk" group. It is likely that it also over-represents conforming students who would be the most responsive to the broader community attitude and behavior changes. The third stage of the evaluation, which involves monitoring the traffic records of all participants, should provide more objective measurements of the program's effects for the "at risk" group.

One important implication from the findings of this evaluation is that efforts to target drink driving and passenger interventions prior to the onset of the behaviors may not be necessary. In this study almost half the students had been passengers prior to being taught the education package, yet there was a significant reduction in passenger behavior in the intervention group in 1991. This behavior modification appeared to occur in students who were already engaged in the behavior in 1988 at the time of teaching. It may be that the opportunity the program provided for students to trial and test alternative strategies occurred at a time when there was a major social movement condemning the behavior. If so, this provided an optimal setting for an educational impact, which was intended to postpone involvement in the activities.

The present study gives support to the use of the Ajzen and Madden model of behavior prediction as a basis for drug education programs. The model was previously shown to be effective in changing students' intentions at the short term evaluation undertaken three months after they had been taught the program. The continued efficacy of the program in modifying behavior three years later when the students were being confronted with the targeted situations provides support for the theory.

The program involved twelve lessons which is a relatively large commitment of time in a high school curriculum. Prior to this study, decisions about the length of programs or the contributions of different program elements to outcome have been difficult if not impossible to make. Further research is needed now to determine whether particular components can be weighted and others reduced and still produce "intention" change. The present findings which support the use of "intention" as a short term evaluation indicator of potential effectiveness in modifying behavior can assist with research on the components of effective programs.

Some further implications of these findings can be related to the work of Johnson et al. on community based drug education [11]. In their three year follow-up of a comprehensive skills based program they found that students who were engaged in problem behavior were reached by the intervention. The P.A.S.S. Program also appears to have modified "experimenters" in the group but the evaluation suggests that it failed to influence the small proportion of young people who were already engaged in very high risk behavior. This subgroup was not reached by either the education program or by major social attitudinal change and

legal controls. These findings suggest that school based educational programs for drink driving or similar behaviors may be most effective with student "experimenters." Other, possibly more intensive programs, may need to be developed for confirmed problem behavior students. Further analysis of the 1988 data examining the predictors of membership in these confirmed sub groups will provide more information about the characteristics of these students and may assist in developing more focused initiatives.

It is interesting that there also is a trend in this study toward more frequent alcohol consumption by the intervention group. This replication of both Duryea and Okwumabua [15] and Albert and Simpson's [14] findings suggests that this outcome may not be a chance effect. The P.A.S.S. program specifically targeted the separation of drinking and driving and explicitly made no attempt to teach students to control their alcohol intake. The model used in the other two studies is not known but it may well have been similar. In a later study of a somewhat younger age group, which examined young people's "binge" drinking, students indicated that the most socially acceptable reason for limiting their alcohol intake was the need to drive a car [26]. It may well be that training in alternatives to drink driving provided students in the intervention cohort with a variety of strategies which enabled them to separate drinking and driving and this meant that they could drink more frequently. Control students may not have had such strategies available and consequently may have needed to monitor their alcohol consumption more closely. Again further analyses of the data available from the longitudinal surveys may help to answer this question.

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