THE LONGITUDINAL EVALUATION OF A DRINK DRIVING EDUCATION PROGRAM

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1. Introduction
Drink driving has been recognised during the last 20 years as a major community problem and a number of school based education programs have been developed with the prevention goal of reducing its incidence. Reviews of such educational interventions by Klitzner et al\(^1\) and more recently by Mann\(^2\) have noted the heterogenous "scatter gun" nature of the material included in most programs offered. The lack of underlying theoretical or empirical bases and the consequent limitations on testability has lead to the situation in which the opportunity for useful interpretation of measures of outcome effectiveness has been limited. Recent research based recommendations by Klitzner\(^3\) that increasing the 'perceived deviance of drink driving' should be used as a basis for developing educational models and McKnight and McPherson's\(^4\) 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. In the more recent review Mann also noted a continuing absence of evaluations of drink driving programs which follow the recipients beyond the period of immediate program impact\(^5\).

2. The Study
In 1983 an intersectoral committee, including representatives from the State Departments of Transport and Education and the Department of Social and Preventive Medicine at the University of Queensland was established to try to answer some of these questions. The group aimed to develop and test a school based drink driving education program to reduce the alcohol related road accidents of young people. It was to be trialled state wide and because of the comprehensive nature of the program it was important to ensure that provisions for effective and useful evaluation were included in its development. Consequently two methodological constraints governed the design of the program. The first related to the need to

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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 P.A.S.S. (Plan a Safe Strategy) has been described in detail elsewhere however it is important to identify that these theoretical concepts lead directly to the goals of the program. These 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 goals accept the Ajzen and Fishbein theory, that the intention to perform or not perform an act is the strongest predictor of future action. The outcome goal was to reduce students' later involvement in drink driving related situations as a result of creating and strengthening the relevant intentions.

A further major decision which directly influenced the teaching program concerned the appropriate target 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 from all high school grades in rural and urban areas in 1985. These were followed by a Planning Survey of a representative sample of grade 10 students and of selected samples of students from grades 8 to 12 in 1986.

These studies and McGuire's work on 'inoculation' 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 behaviour. This led to the decision that year 10 (14-15 years old) was an appropriate level to target. At this age, the educational program would precede the on-set of drink driving in the great majority of students, yet occur at a time when the issue was relevant and of interest.

The P.A.S.S. program in its final form included 12 lessons which were concerned with modifying students' attitudes towards drink driving behaviours; their beliefs about the outcomes of drink driving behaviours; their subjective norms or beliefs about other's attitudes towards these behaviours and finally increasing their perceived control over their own behaviour in drink driving and passenger situations by training in the use of alternatives. Extensive use was made of role play and interactional activities to increase the students' experience of self efficacy and confidence in using
alternatives to avoid drink driving pressures and passenger situations. The majority of students had been passengers of a drink driver prior to the teaching of the course and a sizeable proportion were passengers during the course. A small minority had been involved in drink driving so there was potential for trial and error and feedback on successful and unsuccessful avoidance strategies available within the class setting.

The program was selectively taught through 1988 - 1989 using a staged entry methodology to students in 164 randomly assigned experimental school while 264 schools acted as controls. 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. 

This paper reports on the findings of the three year follow up of a random sample of the students taught the package in 1988. Two major relevant community interventions took place during this period. RBT was introduced in Queensland in 1988 and zero BAC for young drivers at the beginning of 1991.

3. Method
Four thousand, five hundred and forty-five (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. The majority of these respondents were surveyed in a classroom setting by the research team. This Baseline survey was designed to monitor the outcome of the program and to provide data for a longitudinal prediction study of later drink driving. 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 this stage one in five (20.6%) had been out of school for at least one and a half years.

3.1 Instruments
The two survey instruments used in 1988 and 1991 were similar in design. They included items which measured the target drink driving and passenger behaviours, intentions towards these behaviours and responses to pressures to be involved in passenger situations. They also included measures of contributing behaviours
including drinking frequency and driving frequency. The 1988 Baseline Survey included a standardised delinquency scale and measures of the Ajzen and Fishbein model. The 1991 follow-up survey also included measures of contact with R.B.T., drink driving convictions, a series of measures of attitudes towards using alternative strategies, knowledge of the effects of alcohol on driving and a scale measuring the perceived deviance of drink driving.

3.2 Sample
One thousand seven hundred and seventy-four (62%) returned a questionnaire. The majority of the respondents were female (59%), aged 17 years (58%). The remaining respondents were 18 years or older. Eighty-six percent (n = 1527) held a learner's permit or licence, 90% (n = 1593) had driven a motor vehicle in the past year. There were no significant differences between the control and experimental groups on these variables nor in response rates. Comparisons of the 1991 respondents and non-respondents on their data from the 1988 Baseline survey indicate that non-respondents were significantly more likely to be male; 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.

4. Results
This paper 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 3 years after the program. Changes between 1988 and 1991 in self reported drink driving and passenger behaviour in the past month are used for the two main outcome measures.

4.1 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 (\( \chi^2 = 6.54, df = 3, p = .09 \)). There is a considerable increase in the frequency of this behaviour by both groups since they were surveyed in 1988 (10% and 13% respectively) when there was no difference between them (\( \chi^2 = 5.46, df = 3, p = .14 \)).
4.2 Driving frequency
There was no difference in driving frequency between the two groups at either pre and post test.

4.3 Drink driving behaviour
In 1991 seven percent of the intervention students and 9% of the control students reported drink driving in the past month. This is only a relatively small increase on the proportions reporting this behaviour three years earlier (3% and 5% respectively). In order to measure the extent to which the program had an impact on this behaviour respondents were classified according to changes in their drink driving behaviour during the period 1988-1991. Respondents were stratified according to their self reported drink driving behaviour in 1988 with desirable behaviour defined as no reported incidents of drink driving in the past month whilst undesirable behaviour 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 behaviours in 1992 with 95% confidence intervals for each category of the 1988 behaviour. Statistical significance was determined by aggregating across categories using the Mantel Haenszel test. The findings are presented in Table 1.


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<th>1988</th>
<th>1991</th>
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<td>Desirable</td>
<td>Undesirable</td>
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<tr>
<td>Exper</td>
<td>Control</td>
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<tr>
<td></td>
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<tr>
<td>Desirable</td>
<td>745</td>
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<tr>
<td></td>
<td>(0.61-1.31)</td>
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<tr>
<td>Undesirable</td>
<td>56</td>
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<td></td>
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<td>Total</td>
<td>801</td>
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Mantel Haenszel $\chi^2$ (1 d.f): 0.57 p = 0.45
It should be noted that the numbers involved here are very small. The differences are not significant though the results are in the desired direction. Seven percent (6.9%) of respondents in the intervention group who did not report drink driving in 1988 reported it in 1991, compared with 7.74% of the control group respondents. Nineteen percent (19%) of those in the intervention group who reported drink driving in 1988 also reported the behaviour in 1991 compared with 28.8% of the control sample.

4.4 Passenger behaviour
The trend away from the relevant behaviours by both experimental and control respondents is more apparent in reported passenger behaviours in the previous month. Only 22% of intervention and 27% of control students reported passenger behaviour 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. In order to measure the direction of change control and experimental respondents were again classified according to their behaviour change over the three year period using a similar classification to that used in the analysis of drink driving behaviour. The results are given in Table 2.


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<td>Desirable</td>
<td>Undesirable</td>
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<td></td>
<td>Total</td>
<td>Total</td>
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<tr>
<td></td>
<td>Exper</td>
<td>Control</td>
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<tr>
<td>Desirable</td>
<td>367</td>
<td>419</td>
</tr>
<tr>
<td>Undesirable</td>
<td>65</td>
<td>90</td>
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<tr>
<td>Total</td>
<td>432</td>
<td>509</td>
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Aggregated OR : 0.72; 95% CI: 0.57-0.91

Mantel Haenszel $\chi^2$ (1 d.f): 7.82 p = 0.005
Of those students in the intervention group who had been passengers in 1988, 71.8% reported no passenger behaviour in the past month. This compares with 62.6% of the control group. Of students in the intervention group who reported no passenger behaviour in 1988, 84.9% were still not passengers in 1991 compared with 82.3% of the controls. The Mantel Haenszel ($\chi^2 = 7.82, df = 1, p = .005$) indicated that there was significant decrease in passenger behaviour in those students who had been taught the P.A.S.S. Program in 1988.

5. Discussion
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 cohort change in drink driving and passenger behaviour. This cohort change is indicated by the finding that there was only a very small increase in the proportions who reported drink driving in spite of very marked increases in both their drinking and driving experiences at follow up. In 1991 over a third of both groups were drinking alcohol at least weekly and the overwhelming majority were driving. At the same time only a very small minority (7%) were engaged in drink driving and the proportions in both groups who reported being passengers of drink drivers had halved since the earlier survey.

The reasons for this cohort change are many and whilst the introduction of RBT and zero BAC for young drivers would have been key social control influences they are probably not sufficient to explain the full magnitude or rapidity of the change. The majority of these students are still 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 suggests that the package may have been taught to students at the peak moment in a wave of community attitude and behaviour change.

The key issue then to be addressed in examining the prevention program is the extent to which a program effect could reasonably be discernible over and above the change which is attributable to cohort change. In the present context of major community change only small effects are likely to be measurable and this is what appears to have happened. The results are interesting and provide support for the effectiveness of this package and of programs of this kind. No significant effect was found for drink driving behaviour though a trend in the desired direction was evident. This trend is most clearly apparent as a move in the desirable direction by those students who had been drink driving in 1988 prior to the introduction of the P.A.S.S. Program. The
change in passenger status is highly significant but the effects are small. If one assumes that the cohort effect protected those students who were not already engaged in drink driving or passenger behaviour from participating in these activities the program appears to have moved early experimenters towards resisting pressures and using alternative strategies.

Finally, the present study gives strong support to the use of the Ajzen and Madden model of behaviour prediction as a basis for drug education programs. This revised model of the original theory provides the approach used in the present program design. The model was shown to be effective in changing students' intentions in the right direction at the first short term evaluation. These later findings add further support to the theory that intentional change leads to later behavioural change in the direction of intention. It remains to be tested whether such changes will in the long term lead to the desirable outcome of reducing traffic accidents and injuries among this cohort of young people.

REFERENCES


8. Queensland Drink Driving Project (1990) op. cit.