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Adolescent Drinking and Driving: A Descriptive and Intervention Study

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ADOLESCENT DRINKING AND DRIVING: A DESCRIPTIVE AND INTERVENTION STUDY

by

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Emalee M. Fields

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Given the high rates of alcohol use and abuse among adolescents in our society, it is not surprising that drinking and driving is also relatively common. This paper starts with a summary of national statistics, which is followed by a critical review of previous interventions. The purpose of this project was to attempt to find an effective drinking and driving intervention for high school students which was relatively inexpensive, less time intensive than past interventions and required little or no training for the facilitator to present. Two related intervention conditions (a video only intervention and a slightly more extensive package intervention) were compared to a no intervention control. Participants included 116 high school students (M age = 16.95 years) in three different high schools in the Southwest Michigan area. Assessment of the impact of the two intervention programs did not produce detectable decrements in drinking and driving. Various reasons for the absence of experimental effects are discussed, as well as directions for future research.

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INTRODUCTION

Examining the Problem of Drinking and Driving

Drinking and driving is a serious problem in our society. According to the National Highway Traffic Safety Administration (NHTSA), nearly 42,000 people die each year in motor vehicle accidents and 16,000 (or 38%) of these deaths are alcohol related. By their estimation, impaired driving will affect 1 in 3 Americans in their lifetime. They report that roughly 1.5 million impaired drivers are arrested each year, a large number, but only a small fraction of the 772 instances of drinking and driving that are estimated to occur for each arrest (NHTSA, 1999). During adolescence, which is often a time of increased freedom and independence from one's parents, participating in risky behaviors, such as binge drinking, drinking and driving, and other drug use tends to occur more frequently (D'Amico and Fromme, 2000).

Evidence for the high prevalence of alcohol consumption among adolescents can be gleaned from large surveys of high school students in the United States. For example, 80% of the 12^{th}-grade students in a recent survey acknowledged having tried alcohol at some point in their life; 73% admitted to using alcohol within the preceding year; 50% reported using alcohol within the previous 30 days; nearly 4% acknowledged using alcohol daily; and 30% reported that they had used alcohol for five or more days in a row within the preceding two weeks (National Institute on Drug Abuse [NIDA]. Johnson, O'Malley and Bachman, 2001). From the same

sample: 64% reported having been drunk at some point in their life; 53% acknowledged having been drunk within the preceding year; 33% admitted to having been drunk within the previous 30 days; and 1.4% reported getting drunk daily. These statistics were nearly identical to those reported from a similar survey of 12th-grade students conducted the previous year ([NIDA] Johnson, O'Malley and Bachman, 2001). Other researchers have documented similar rates of alcohol consumption and alcohol abuse among high school teens (Augstyn and Simons-Morton, 1995; Beck and Lockhart, 1992; WRP, 1983).

Given these high rates of alcohol use and abuse, it is not surprising that drinking and driving is also relatively common among adolescents. One recent study found that 37% of adolescents reported drinking and driving, and 29% reported riding with a driver who had been drinking (Augstyn and Simons-Morton, 1995). Studies have reported that as many as 27% of teens drink and drive at least once every two weeks, and nearly 15% of adolescent respondents admitted to driving after consuming five or more drinks (Klitzner, 1989; Klitzner, et al., 1988; Swisher and Bibeau, 1987; Wechsler et al., 1984; Williams et al., 1986).

Through a review of the literature, Augstyn and Simons-Morton (1995) found that although the largest increase in recent alcohol use (within the last 30 days) for both adolescent boys and girls occurs between eighth and 10th-grades, this trend continues through 12th-grade when approximately 69% of adolescent boys and 60% of adolescent girls report recent use. Twenty-seven percent of 12th-grade girls and 43% of 12th-grade boys reported having five or more drinks on one occasion.

Alarmingly, 42% of 12th-grade students reported impaired driving (drinking or using other drugs before driving), while 58% reported riding with an impaired driver.

Thombs, Dimintroff, Wolcott, Nickel and Austin (1996), administered a similar, but age-specific, anonymous questionnaire to 1,283 seventh to 12th-grade students and 930 college students (ages 18-23). The questionnaires covered alcohol use intensity, frequency of drinking and driving, frequency of riding with an impaired driver, and the "social, temporal, and motivational factors which interact to influence alcohol use in adolescents and college students" (Thombs et al., 1996, 67). Among the total middle/high school sample, 52% reported having used alcohol at least once in the preceding year, 14% of the sample acknowledged weekly use, and 24% reported having five or more drinks on a "typical" occasion. Thombs, et al. reported that while only 14% of the middle/high school sample admitted to drinking and driving on one or more occasion in the preceding year, 58% indicated that they had ridden with an alcohol-impaired driver on one or more occasion in the preceding year. The participants in this study included many students who were not yet old enough to legally drive.

The literature review by Augstyn and Simons-Morton (1995), as well as the research conducted by Thombs, et al. (1996), brings an interesting issue to light. The statistics report a significant difference in the number of adolescents who acknowledge drinking and driving as compared to the number who acknowledge riding with a drinking driver. The statistics on the number of passengers of drinking or impaired drivers may provide a more accurate estimate of the prevalence of

drinking and driving. Passengers of drinking drivers are a high-risk group that is not usually the focus of drinking and driving prevention programs (Dellinger, Bolen and Sacks, 1999).

Potential Solutions

The high prevalence of adolescent drinking and driving and the serious health and economic consequences of such behavior patterns have led to the development of systematic efforts to reduce drinking and driving. While there is a tremendous amount of research on the etiology, prevalence and predictors of alcohol use and abuse, the intervention literature is not nearly as exhaustive. Many of these intervention programs have relied on some combination of educational materials about alcohol consumption and role-playing to improve the social skills necessary for youth to resist pressure to drink or to remove themselves from dangerous situations. For example, Duryea (1985) developed an intervention program consisting of a one week alcohol education tutorial which consisted of four treatment components: (1) a film addressing the physiological effects of alcohol, (2) a question-and-answer session emphasizing the content of the film, (3) role playing situations refusing adult, sibling and peer pressure to drink and drive, and (4) a slide show which reviewed the major concepts of the previous three components. The participants included 155 ninth-grade students who were randomly assigned to one of two experimental groups (one was pretested and the other was not pretested) or to one of two control groups (one was pretested and the other was not pretested). Participants were exposed to

vignettes involving pressure to drink and drive, after which they were asked to report on their intention to engage in drinking and driving. Using anonymous questionnaires, the experimental groups reported significantly lower levels of self-reported behavioral intention to engage in risky behavior than did the participants in the control groups. While it is encouraging to see that reports of behavioral intentions can be altered, it is important to note that there was no attempt to assess the behaviors of practical significance (i.e. drinking and driving). Given the tenuous connection between verbal reports of intentions and subsequent occurrence of behaviors about which a person is reporting, these results must be interpreted with great caution (D'Amico and Fromme, 2002). There is clearly a need to replicate this intervention in the hopes of finding similar results. The study at hand used a similar intervention with the addition of measuring self-reported behaviors in place of behavioral intentions.

Newman, Anderson and Farrell (1992) reported similar positive results from a program that targeted alcohol consumption, drinking and driving, and riding with a drinking driver. They implemented an intervention that included videotapes, video exercises and role playing exercises administered over the course of 10 lessons. The approximately 3,500 ninth-grade participants were randomly assigned by classrooms to either the experimental group or control group. Using pre, post and follow-up measures of knowledge, skills and practices, the authors report a significant increase in knowledge and perceived ability to resist peer pressure to drink among members of the experimental group. Most importantly, at the follow-up there were significantly

fewer experimental participants who reported having ridden with an alcohol impaired driver during the preceding year. These results were replicated the following year when the program was presented to half of the new ninth-grade students (i.e. the students who were in eighth-grade during the first year of the program). While the program yielded positive results, it required an extensive six-hour training each year for the teachers who presented the program. In addition, although the expense was not disclosed, the teachers were paid for the training sessions. While the results are most encouraging, the extensive time and resource requirements of this intervention may limit its dissemination to cash and resource starved school districts. Again, there is a need to replicate these results and also to determine if a less resource intensive intervention can produce similar results.

Knight and Dansereau (1992) used decision worksheets to assist college students in determining feasible alternatives in alcohol usage vignettes during a two-session, four-hour study. The 42 college undergraduates were randomly assigned to a treatment group (n = 22) or a control group (n = 20). The first session was a training session in which the two groups were instructed to read through and think about one scenario and then read through and rate the alternative solutions to the second scenario. The difference between the two groups was that the treatment group was given decision worksheets to assist them in evaluating the alternatives. During the second session, the two groups were give a scenario related to alcohol abuse. The control group was asked to rate the list of alternative solutions, and then write a persuasive essay defending their selection for the top alternative solution. The

treatment group was asked to do the same, except again they were given a decision worksheet to assist them in rating the alternative solutions. The essays for each group were rated by two trained graduate students who were unfamiliar with the purpose of the study. The essays were rated on there logical flow, intensity, feasibility, cost/benefit, breadth to depth ratio, and overall "goodness". The authors found that the essays written by the treatment group were rated significantly higher on intensity, feasibility, cost/benefit factors and overall "goodness". While this research suggests an interesting component that might be added to intervention packages (e.g. the decision worksheets), there was no attempt to directly measure the impact of the intervention on socially relevant target behaviors (e.g. alcohol consumption or drinking and driving) thus limiting the clinical impact of this intervention.

D'Amico and Fromme (2000) developed a brief intervention which appears promising although there is not much research to support it. The 50-minute intervention, which they call the Risk Skills Training Program (RSTP), is presented to groups of adolescents who are assured that it will not be a lecture and who are encourage to actively participate. A short packet of questionnaires is completed by the participants prior to the program, then upon their arrival the adolescents are give a graphic presentation of their responses. In this way, the adolescents are able to compare their own response (of their thoughts and behaviors), to what they believed their peers' responses to be, and to their peers' actual responses. In addition to providing feedback on the participants overestimation of peer alcohol and drug use, the multiple component program was developed to provide the adolescents with the

skills to plan ahead for the next situation when they may be confronted with the opportunity to engage in risky behaviors (e.g. consuming alcohol, using drugs or drinking and driving). D'Amico and Fromme (2002) published a subsequent report on the results of a study using the RSTP involving 14-19 year old high school students (n = 300) who were randomly assigned to the RSTP group (n = 75), an abbreviated version of the DARE program presented by a trained DARE instructor (n = 75), or the no-intervention control (n = 150). Of the original 300 participants, approximately 84% returned for the two month posttest and 61% returned for the six month follow-up. The RSTP group resulted in a decrease in self-reported risky drinking behaviors (e.g. playing drinking games, drinking and driving, ridding with a driver who has consumed alcohol) from the pretest to the 2-month posttest, although these results were not maintained at the 6-month follow-up, when the behaviors increased back up to pre-intervention levels. While the initial results of this study were encouraging, the maintenance of the intervention effects should be addressed in subsequent replications.

Yates and Dowrick (1991) developed a school-wide intervention which was presented to a high school in Alaska. The intervention itself lasted three days and was then followed by the establishment of a Student Highway Safety Club. The first day of the intervention was used for two purposes: (1) to train the faculty to facilitate role-playing and the assertive skills training which they presented on the third day, and (2) rehearsal for the 10-12 student speakers and skit actors to prepare for the one-hour school-wide assembly held on the second day. The purpose of the Student

Highway Safety Club was to maintain the programs primary message, which is "don't drink and drive and stop anyone who tries" (Yates and Dowrick, 1991, 16). Over the course of three years, 4,000 student questionnaires were completed for the purpose of improving the project. Although it was reported that the majority of the participants acknowledged an increased willingness to stop their friends from drinking and driving, no formal data were collected on the effectiveness of the intervention.

While the previous intervention studies were conducted with students in school settings, intervention studies have been conducted in hospital settings. For example, Monti et al. (1999) compared a motivational interview (MI) to standard care (SC) for 18-19 year old patients being treated for alcohol-related injuries in a hospital emergency room. The 94 participants were randomly assigned to the 35-40 minute MI group or to the 5 minute SC group. The questionnaires used contained measures of alcohol related problems, alcohol use, and a potential mediator and moderator of outcome. The SC condition included the standard medical treatment for the participants' injuries and handouts urging them to avoid drinking and driving and a list of local treatment agencies. The MI condition included a review of the event which led to their hospital visit, exploration of their motivation, personalized feedback, imagining the future, establishing goals, and similar handouts. The participants were interviewed by telephone three months after the intervention and in person six months after the intervention. After the intervention, the MI group was found to be less likely to report drinking and driving (62%) as compared to the SC group (85%). The researchers obtained driving records from the Department of

Motor Vehicles for the majority of the participants (31 from each group), and found that the SC group was much more likely to have received a moving violation after the intervention (23%) as compared to the MI group (3%). Although the results on the percentages of participants who received moving violations are promising, the percentage of participants who admitted to drinking and driving post intervention was significant for both groups. In addition, it should be noted that this study required an extensive training for the facilitators, as well as weekly supervision meetings.

Dearing, Caston and Babin (1991) also conducted a hospital based intervention, but here groups of 6-10 adolescents (ages 14-18) were taken on a tour of a trauma unit. The program was developed to target high-risk adolescents (i.e. adolescents who have been arrested for an alcohol or drug related offense). Before the tour the participants were given an overview of the program, completed a pretest questionnaire and shown two films depicting alcohol related accidents. After the tour, which focuses on victims of alcohol-related accidents, the participants completed a posttest. The participants were also mailed posttests three, six and 12 months after their tour. Approximately 350 participants completed the program. When comparing the pretest and immediate posttest results, the percentage of participants who reported they would not drive after consuming one beer doubled from 21% to 43%. The percentage of participants who reported that they would prevent a friend from driving after consuming alcohol increased by 20%. In addition, the percentage of participants who reported that they would not ride with someone who had consumed one beer increased by 30%. All of the results tapered off slightly

with each subsequent posttest. The results of the posttest should be interpreted with caution due to the response rates for the posttests being quite low; 44% for the three month posttest, 35% for the six month posttest, and 27% for the 12 month posttest. There are design issues which should be noted for this study, including the fact that there was no control group. As with others, this study only measured the participants' self-reported intentions and not their actual behaviors. Also, the measures were not anonymous, which could lead to less than truthful responses as a result of peer or social pressure to respond with the "right" answer. Finally, the expense of such a program, which is grant funded in this case, would likely be a prohibitive factor in most communities.

The intervention studies discussed here, as well as many of the descriptive studies, included data collected through self-report. In addition, the study to be described here also includes self-reported data. The honesty and consistency of self-report data is at times brought into question. Smith-Donals and Klitzner (1985), investigated the accuracy of self-reported data related to adolescent drinking and driving. They examined data collected from 2,771 high school students, which they compared to external sources of information. Not surprisingly, they found that a higher percentage of responses to the sensitive questions, such as drinking and driving questions were missing, as compared to the nonsensitive demographic data. Despite this fact, the data were found to be psychometrically reliable, externally and internally valid, and not subject to any unusual response biases (Smith-Donals and Klitzner, 1985). Thus it appears that self-report data, especially if collected in an

anonymous fashion, are an acceptable although not perfect means of assessing drinking and driving.

Research Predictions

Many previous intervention studies have involved intensive, multi-session strategies. Some of the drawbacks to these more extensive interventions include a major financial investment on the part of the party providing the intervention (e.g. multiple videotapes, workbooks, facilitator training), and the length of the intervention which leads to the possibility that participants will miss or actively avoid some or all of the intervention. Thus there is the need to test less expensive and less intensive interventions, which require little or no training to present. Here we are comparing a control group to a video only intervention and a slightly more extensive package intervention. Although we utilized a multiple component package intervention similar to those presented in previous studies, it was much less intensive (only three sessions) and required no facilitator training.

We predict that presenting our drinking and driving video and discussion to a number of high school students will decrease their self-reported incidences of risky behaviors such as consuming alcohol, drinking when assuming the "designated driver" role, and drinking and driving, as compared to their pretest measures and as compared to a no intervention control group. Further, we predict that our multiple component drinking and driving prevention package, which includes the drinking and driving video and discussion and role playing skills development, will be still more

effective in decreasing these risky behaviors, as compared to the control group or the group presented with only the video.

METHOD

Participants

Participants included 116 high school students from three different high schools in the Southwest Michigan area. Direct personal contact was made with each teacher or by a referral from the principal. After a detailed explanation of and discussion about the study each of the teachers were asked to participate. The teachers each volunteered two of their classes to participate. The classes were selected by the teachers to maximize the numbers of students in each class of sufficient age to be licensed drivers; the selection was not in any way based on class content. The classes included a parenting class, a nutrition class, two consumer education classes, and two family sociology classes. The students ranged in age from 15 to 19 years old (M age = 16.95 years).

Measures

Anonymous Drinking and Driving Questionnaire (ADDQ)

The participants completed the Anonymous Drinking and Driving Questionnaire (Appendix A), which was developed for this study. The ADDQ is an

anonymous questionnaire that requires the respondent to report some demographic information and to report on personal behaviors and knowledge pertaining to consuming alcohol and drinking and driving. Two versions of the ADDQ were used. The pretest version contained 39 items and the posttest version contained the same 39 items as the pretest plus two additional items to check on the integrity of the Independent Variable. The two additional questions asked: 1) if the respondents have completed the questionnaire before, and 2) which, if any, of the intervention tasks have they completed.

The ADDQ also included an anonymous consent statement which explained that by completing the questionnaire the participants were giving their consent for their responses to be used in the research study, and that if they chose not to participate they may turn the questionnaire in blank. The questionnaire was completely anonymous. Participants did not place their name or any other identifying information directly on the questionnaire. Instead, identifying information was placed on an identification sheet that was separated from the questionnaire upon completion. This personal information, which included the participant's name, address and phone number, was used solely to notify raffle winners.

Procedures

Recruiting Participants

Students in the participating classes of each school were recruited to participate in this study. A graduate student researcher presented the project to each

class using a prepared recruitment speech, which explained what their participation would entail (Appendix B). At the end of the speech, the graduate student researcher answered the students' questions and provided them with a letter describing their portion of the research project to assist them in discussing the study with an adult (Appendix C). Consistent with the 1995 Guidelines for Adolescent Health Research that clarify existing Federal protections for children (45CFR Part 46, Subpart D), participants were encouraged, although not required, to consult with a parent or an adult prior to participating in the research project. Furthermore, participants were informed of the availability of confidential assistance. The letters also included phone numbers for contact people that the students were encouraged to contact in case of any questions. Those students who chose to participate completed the ADDQ.

Administration of the Questionnaire

The Anonymous Drinking and Driving Questionnaire was administered three times over the course of the study: the pretest was administered prior to the intervention, the posttest was administered one month after the pretest administration, and the follow-up was administered two months after the posttest administration. The questionnaire administrations took place during the normal class periods at the participating high schools. The duration of the study, including follow-up questionnaire administration, was approximately four months.

At the beginning of each ADDQ administration, the graduate student researcher reminded the participants that their participation was voluntary and that the questionnaire was completely anonymous, so that no one, not even their parents, could find out their responses. They were also reminded not to place their name or other identifying information directly on the questionnaire, only on the identification sheet if they chose to be entered into the raffle. In addition, the participants were provided with manila envelopes that could be used to cover their responses as they completed the questionnaire to prevent other students from seeing their responses. Participants were instructed to tear the identification sheet off of the questionnaire, place the questionnaire in the manila envelope and deposit the questionnaire (now devoid of any identifying information) in a separate box from the identification sheet. Each questionnaire administration including instructions lasted approximately 15-20 minutes.

The participants' identification sheets were used as entries in a raffle which was held following each questionnaire administration at each school. Each student, therefore, had three opportunities over the course of the study to win a gift certificate. The participants were informed of the raffle and gift certificates in advance.

In one classroom at the control school there were two to three students who required assistance in reading the questionnaire. This additional assistance was provided by their normal classroom aide. As the aide read the questions and potential responses to the small group, the students followed along on their own copy of the questionnaire and marked their responses independently.

At the video only school, two different types of classes were participating in the study (i.e. the nutrition class and the parenting class). There were three students that were enrolled in both of the classes. While they were allowed to participate in watching and discussing the video during both class periods, they only completed the ADDQ during one class period. Therefore, they did not repeat the questionnaire and their data were not duplicated.

Intervention Procedures

One high school was randomly selected to be the no intervention control condition, where students simply completed the pretest, posttest and follow-up administrations of the ADDQ. With the introduction of the project, the control classes participated in four sessions, all of which lasted less than one class period.

A second high school was randomly selected to be the video only intervention condition in which students completed the ADDQ, as well as viewed and discussed a seven minute video dramatizing the consequences of drinking and driving. In the video an adolescent boy and girl go to a party and drink alcohol, then on the drive home they are in a fatal accident; the adolescent girl dies at the scene and the boy dies at the hospital. The video shows a police officer notifying the adolescent boy's parents, who then go to the hospital to view his body. The adolescent boy's funeral is shown at the end of the video. The video was shown to the class by the teacher and the graduate student researcher. Following the completion of the video, the graduate student researcher asked the class the following discussion questions: (1) "What are

your initial reactions to the video?", (2) "What were the different perspectives of the characters in the video? What roles did they play?", (3) "Do you think that the teenagers in the video thought that they were in danger by driving after they had been drinking alcohol?", (4) "What do you think they were thinking?", (5) "How do you think the teenage boy made the decision to drive after drinking alcohol?", (6) "What about the teenage girl making the decision to ride with him?", (7) "Do you think the situation would have been different if the driver had been alone?", (8) "What if he had lived? What would things be like for him (legally, emotionally, etc.)?", (9) "Now what? Whose lives were impacted by these events (parents, siblings, friends, etc.)? What happens now that the teenagers are both dead, both immediately and in the long run? Do you think his parents feel guilty?", and (10) "Do you think the video is realistic?".

The first video only class spent approximately 55 minutes watching and discussing the video, while the second class participated for approximately 45 minutes. With the introduction of the project, the video only classes participated in five sessions, all of which lasted less than one class period.

A third high school was randomly selected to be the package intervention condition, where students completed the ADDQ and viewed the video used in the video only school. They were also asked to address the above mentioned questions. Both package intervention classes spent approximately 20 minutes watching and discussing the video. In addition to the video, the package intervention school participated in additional intervention components. These additional intervention

components included: making a public commitment not to drink and drive; role-playing various scenarios, including refusing peer pressure to drink alcohol or ride with a person who has been drinking; and listening to a speech and participating in a discussion with an individual who had been involved in an alcohol related automobile accident. With the introduction of the project, the package intervention classes participated in seven sessions, all of which lasted less than one class period.

The public commitment component was a fictional "contract" between the package intervention students and their parents or another adult, which was obtained through the Students Against Destructive Decisions (SADD) organization. For the student's portion of the "contract", it states that the student will wear their seatbelt, that they will not drive if they have been drinking alcohol, and that they will make safe, healthy, responsible decisions. For the parent's or adult's portion of the "contract", it states that the parent or adult will wear their seatbelt, that they will be available to drive the student home when the student has been drinking, and that they too will make safe, healthy, responsible decisions. The contract was provided to the students in an attempt to assist them in initiating a discussion about alcohol with their parents or an adult of their choice. It was not required for them to complete the contract, nor was the contract collected from them.

The role playing scenarios used with the package intervention students were written for six groups of two to three students (Appendix D). The students were instructed to work as a group to develop a script for their scenario and were given fifteen minutes to do so. Each group then performed their scenario in front of the

class. Many of the student groups adapted their scenarios to their group (e.g. adding characters so that each group member could be involved). The fictional contract was presented during the same class period as the role playing scenarios, and both activities took approximately 35 minutes.

The speaker who conducted the discussion with the students is a member of the Mothers Against Drunk Driving (MADD) organization and frequently speaks for victim impact panels. The date on which she spoke to the package intervention students was the two year anniversary of her accident. She went into detail telling the students of her own injuries, her friend's injuries and her mother's injuries. The speaker's mother was killed in the accident, and she brought the obituary and a picture of her mother to show the classes. In addition, she showed pictures of herself after the accident, as well as pictures of her car and the other driver's car after the accident. She informed them of the physical, emotional and financial costs that she and her friend have endured because of the accident. Finally, she spoke about the drunk driver who had caused the accident, how his diver's license had previously been revoked, how this was his fourth drunk diving offense, and how he pled guilty and was given a 15-30 year sentence. The speech and discussion lasted approximately 45 minutes.

All activities were presented to the classes by the graduate student researcher with the teacher's assistance when necessary. Participation in the intervention activities was not voluntary and was presented as a portion of the class' curriculum. The completion of the ADDQ was voluntary.

RESULTS

Procedure Results

Participation varied by questionnaire administration and by school, depending on how many students were in attendance and how many chose to participate on the day that the ADDQ was administered. At the control school 40 students completed the pretest of the ADDQ, 35 completed the posttest, and 43 completed the follow-up. Refusal rate ranged from 4 to 6 non-participants across administrations at the control school. At the video only school 41 students completed the pretest ADDQ, 42 students completed the posttest, and 39 students completed the follow-up. There were no non-participants during any of the questionnaire administrations at the video only school. Finally, at the package intervention school, 34 students completed each of the pretest, posttest and follow-up of the ADDQ, with up to one non-participant (Figure 1). Differences in the number of participants across ADDQ administrations are accounted for by variable attendance and by variable numbers of students who chose not to complete the ADDQ.

In total, across all three schools, 115 participants completed the pretest version of the ADDQ, 111 participants completed the posttest questionnaire, and 116 participants completed the follow-up questionnaire. The sex ratios for the participants at each of the questionnaire administrations at each of the schools were as follows: the control classes were approximately 50% female and 50% male; the

video only classes were approximately 75% female and 25% male; and the package intervention classes were approximately 45% female and 55% male.

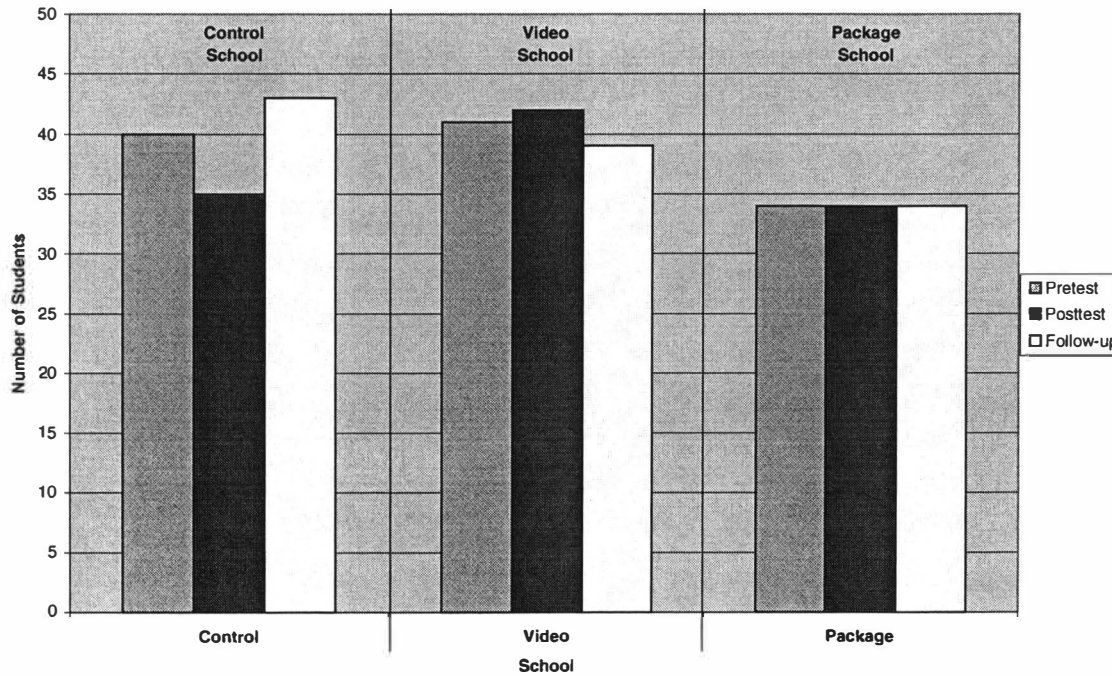

Figure 1. Number of Participants Who Completed Each Questionnaire Administration

Pretest Results

During the pretest at the control school 95% of the participants reported trying alcohol at some point in their lives; at the video only school 90% participants reported trying alcohol; and at the package intervention school 85% of the participants reported trying alcohol (Figure 2).

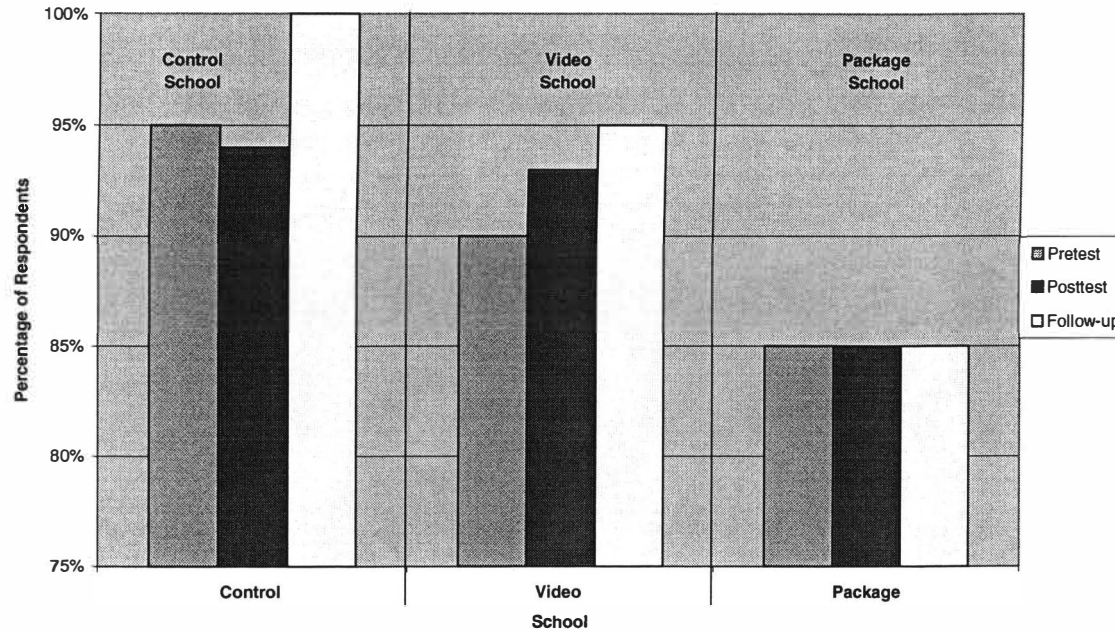

Figure 2. Participants Who Have Tried Alcohol

The majority of the participants in this study reported that they had consumed alcohol on three or fewer occasions within the month preceding the pretest questionnaire administration; up to 70% of the participants. Alternatively, as many as 18% of the participants acknowledged consuming alcohol more than eight times in the month preceding the pretest (Figure 3). These percentages were fairly consistent across schools.

In total, approximately 20% of the participants reported drinking and driving within the month preceding the pretest questionnaire administration; 10% with passengers and 10% without passengers (Figure 4).

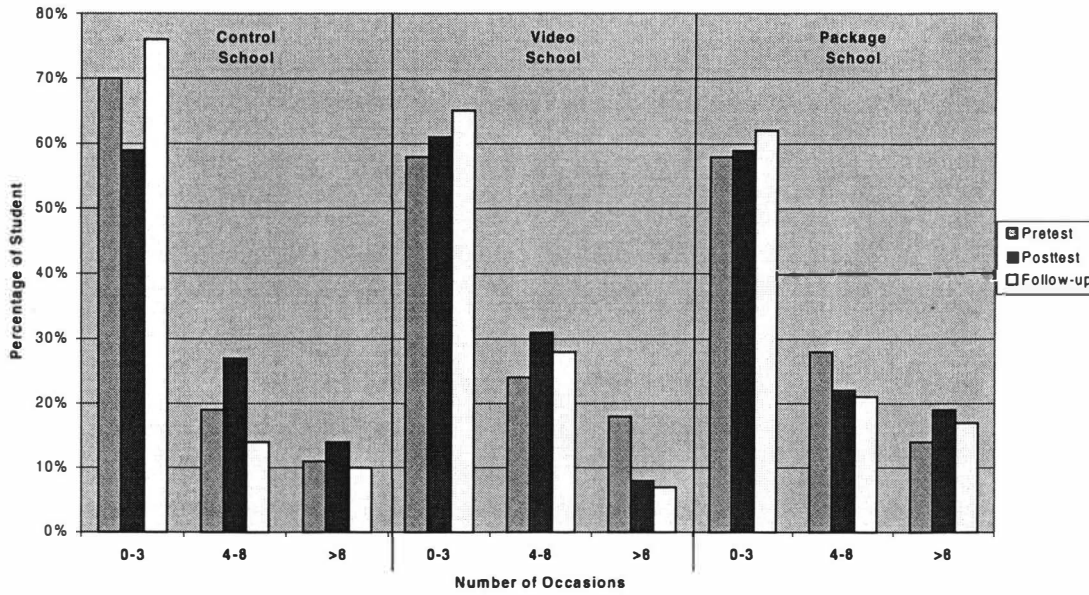

Figure 3. Number of Times Consumed Alcohol in the Past Month

Of the participants who acknowledged drinking and driving within the month preceding the pretest questionnaire administration, surprisingly, as many as 40% of these students reported that they had consumed four or more alcoholic drinks before their most recent instance of drinking and driving. Notably, during the pretest, none of the students at the package intervention school reported consuming four or more drinks before driving. Between 10% and 20% of the participants reported consuming only one alcoholic drink before their most recent instance of drinking and driving (Figure 5).

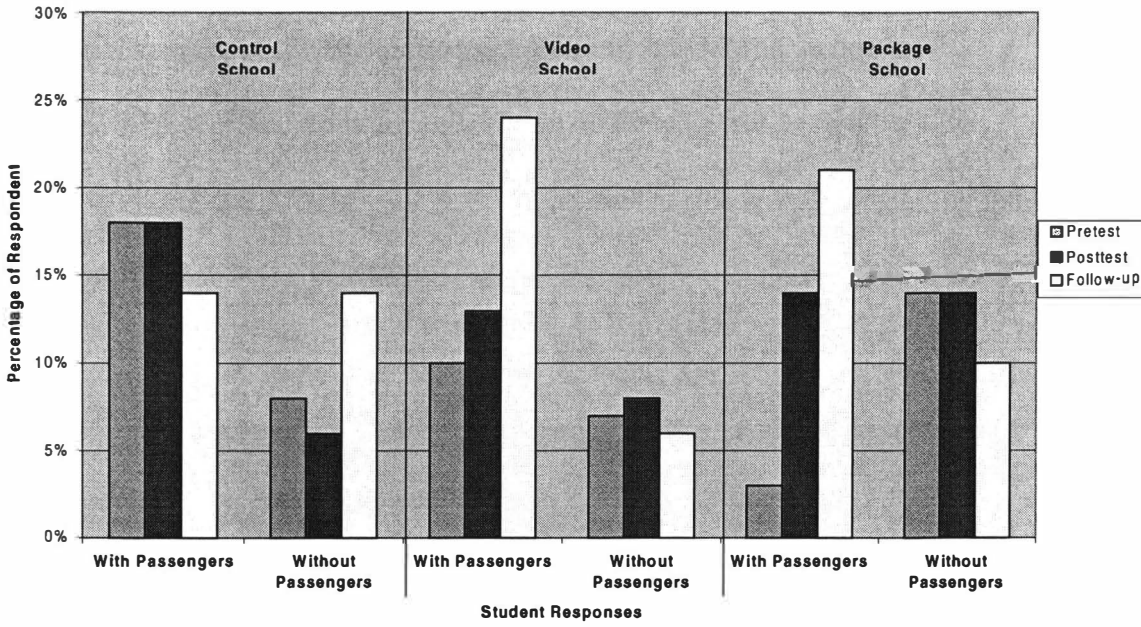

Figure 4. Drinking and Driving in the Past Month – With and Without Passengers

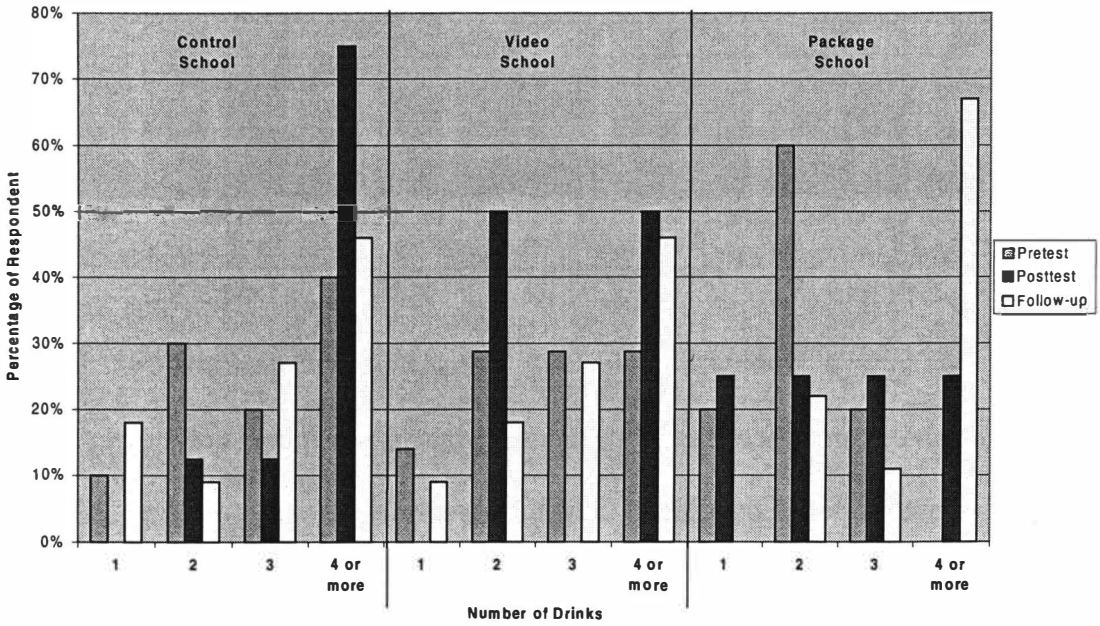

Figure 5. Number of Drinks Before Driving on the Most Recent Occasion

Participants were asked to estimate the total number of times which they have driven after drinking alcohol during their lifetime. During the pretest, responses included an average of 27% who reported drinking and driving on one to two occasions, 29% reported drinking and driving on three to four occasions, 17% reported drinking and driving on five to six occasions, and 27% reported drinking and driving on seven or more occasions (Figure 6).

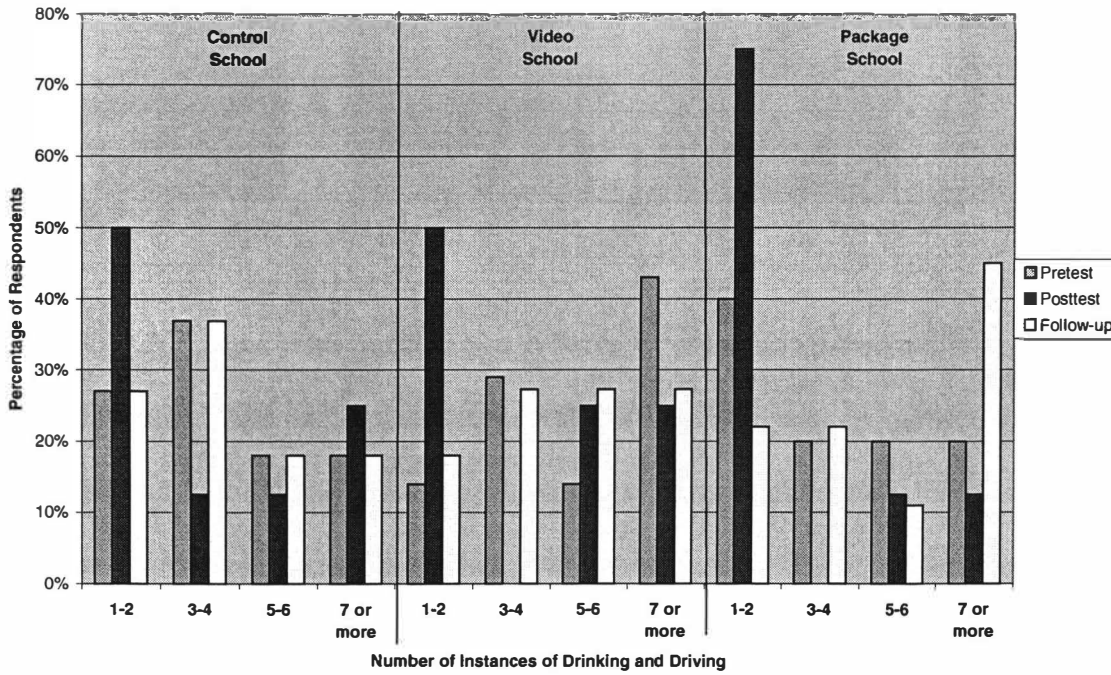

Figure 6. Drinking and Driving History

A relatively high percentage of participants at each school reported that they had decided not to drink and drive at some point. During the pretest an average of 84% of the participants reported having decided not to drive after consuming alcohol (Figure 7). These percentages were reasonably consistent across questionnaire

administrations.

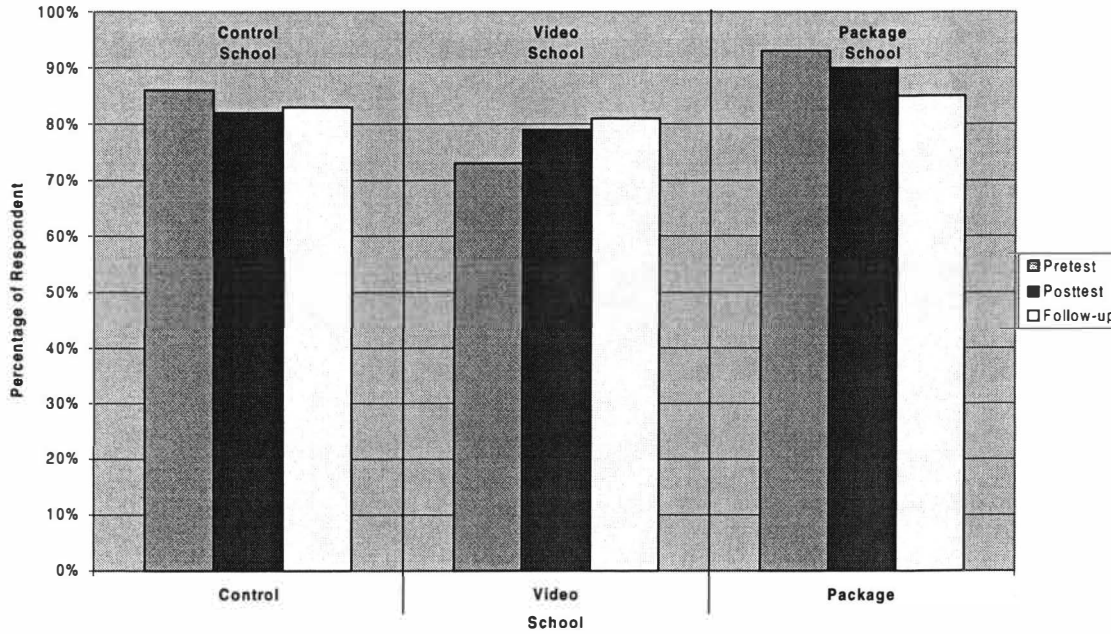

Figure 7. Participants Who Decided Not to Drive After Drinking Alcohol

In addition, the participants were asked if a friend had ever encouraged them not to drive after drinking alcohol and, alternatively, if they had ever encouraged a friend not to drive after drinking alcohol. During the pretest, 63% of the participants reported that at some point a friend had encouraged them not to drive after drinking alcohol (Figure 8).

Even more hopeful are the percentages of participants who have at some point encouraged a friend not to drive after consuming alcohol. An average of 85% of the students reported during the pretest that they had encouraged a friend not to drink and drive (Figure 9). These percentages were also quite consistent across questionnaire administrations.

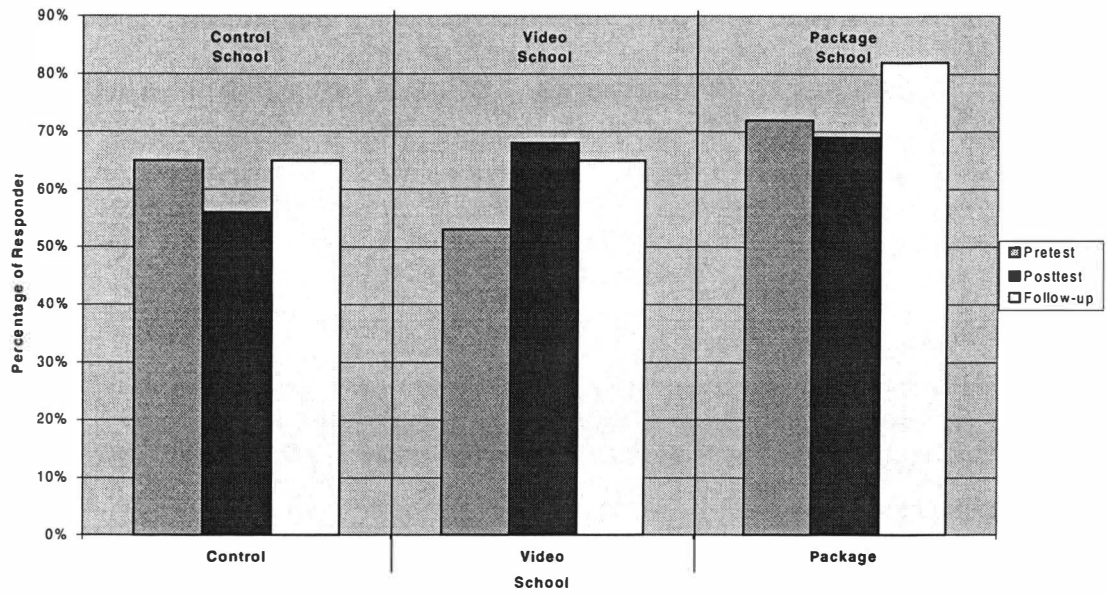

Figure 8. Participants Who Have Been Encouraged by a Friend Not to Drive After Drinking

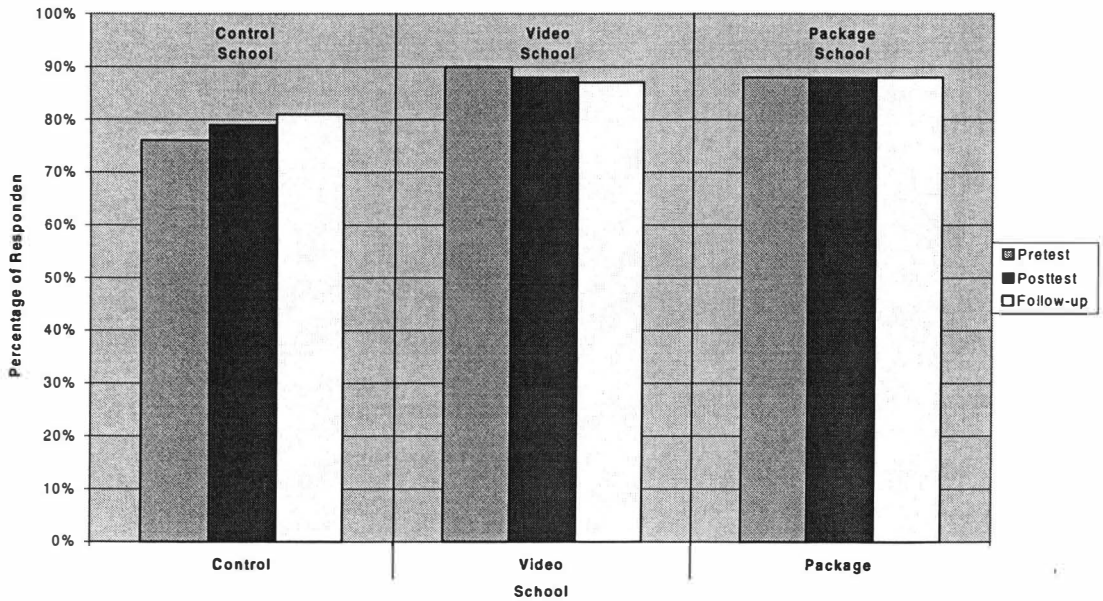

Figure 9. Participants Who Have Encouraged a Friend Not to Drive After Drinking

On the ADDQ participants were asked if they had ever been selected to be the "designated driver". On the pretest questionnaire an average of 49% of the participants reported that they had been a designated driver (Figure 10).

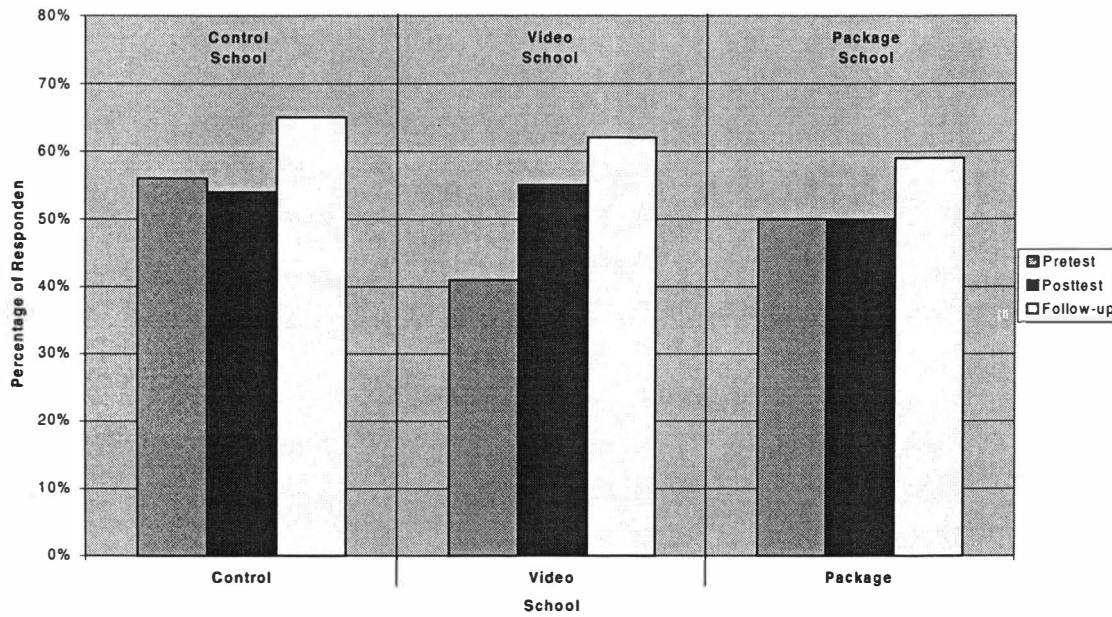

Figure 10. Participants Who Have Been the Designated Driver

During the pretest an average of approximately 12% of the participants reported that they had consumed alcohol despite being the designated driver (Figure 11).

An average of 80% of the participants acknowledged during the pretest that they had ridden with a driver who had been drinking alcohol (Figure 12). These percentages were fairly consistent across questionnaire administrations.

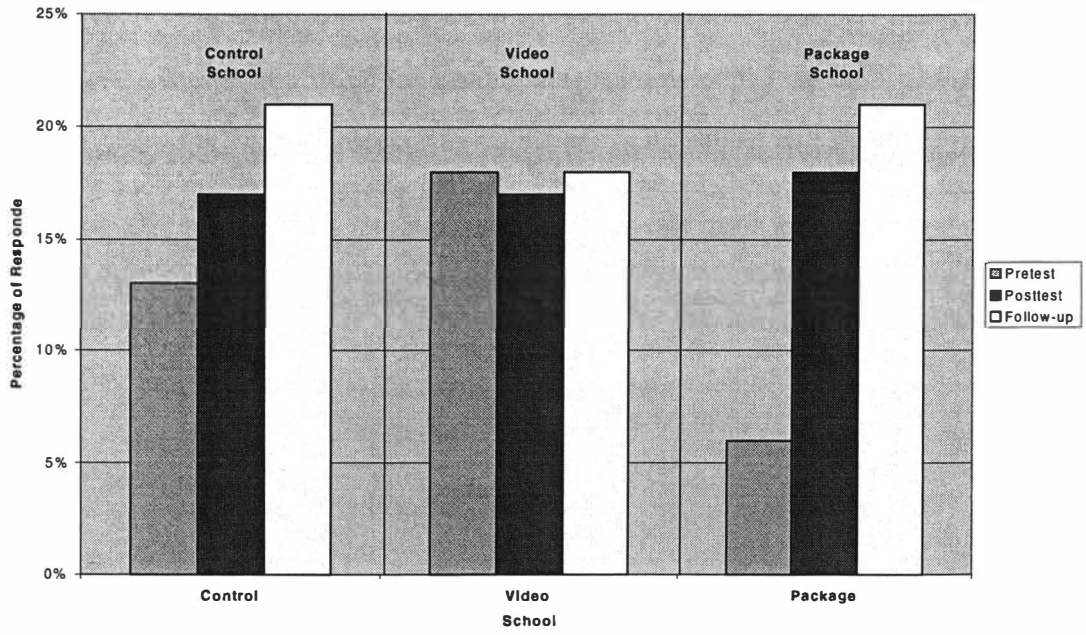

Figure 11. Participants Who Have Consumed Alcohol Despite Being the Designated Driver

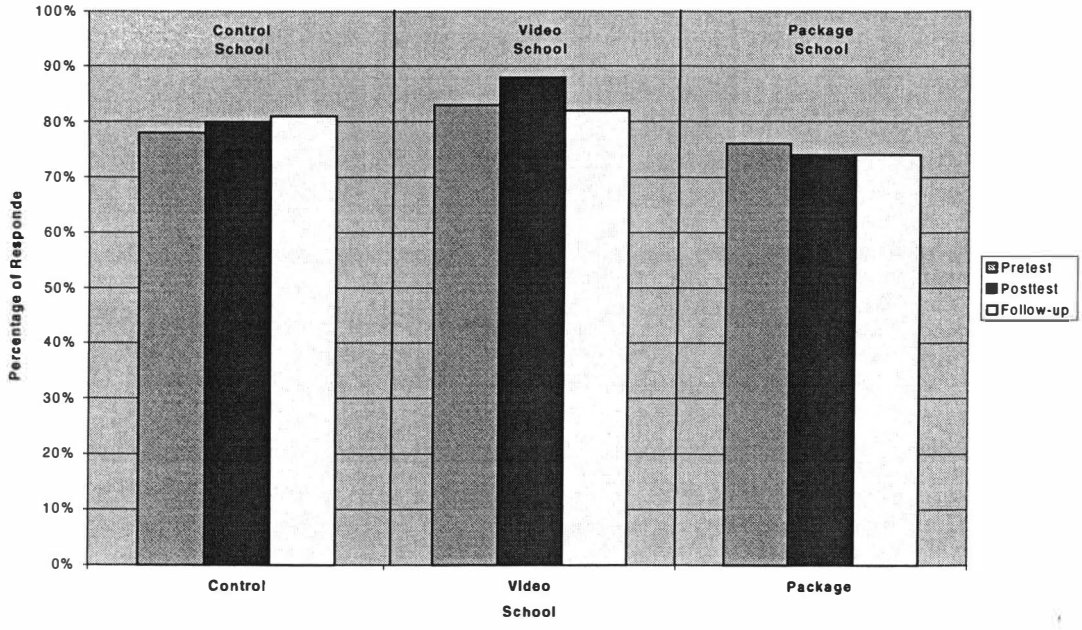

Figure 12. Participants Who Have Ridden With a Driver Who Has Consumed Alcohol

When asked what was the most alcohol they had personally consumed on one occasion, an average of 55% of the participants acknowledged on the pretest that they had consumed more than six drinks on one occasion, while an average of only 18% of the participants reported this amount to be less than one drink (Figure 13).

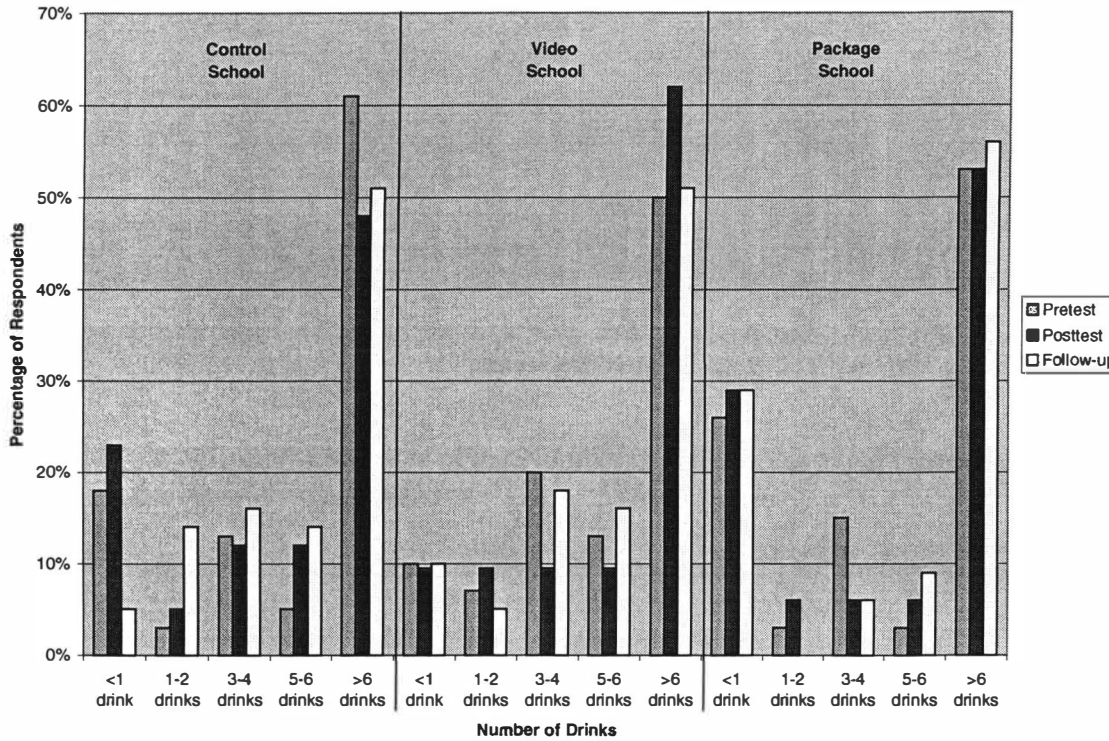

Figure 13. Most Alcohol Personally Consumed on Any One Occasion

The participants in the study were asked, "How much can you, personally, drink before you cannot drive?" Their responses to this question were surprising. On the pretest, an average of 33% of the participants responded that they could drink three to four drinks, and 15% responded that they could drink more than six alcoholic beverages before they could not drive (Figure 14).

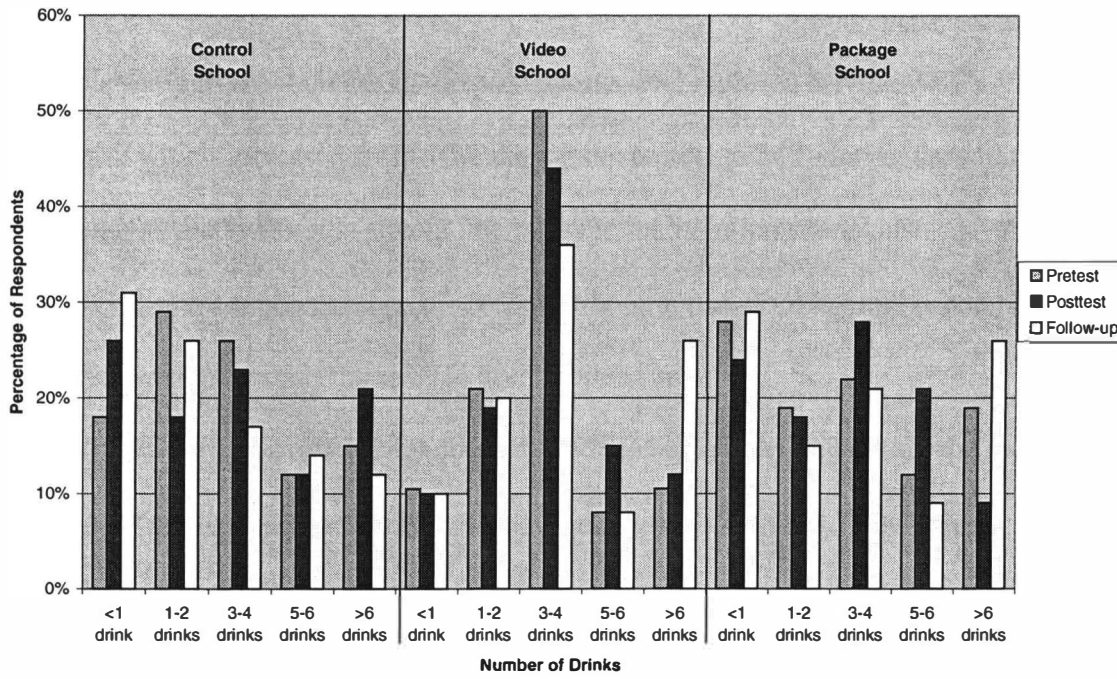

Figure 14. Participants' Estimates of the Number of Drinks They Can Consume Before They Cannot Drive

The appendix contains additional graphs (Appendix E), as well as an archive table summarizing all of the data collected (Appendix F).

Intervention Results

At the control school, the overall percentage of student who reported drinking and driving in the previous month remained fairly consistent across questionnaire administrations, although during the follow-up there was an increase in the percentage who reported driving without passengers, which increased from 8% during the pretest to 14% during the follow-up (Figure 4). At the video only school

there a notable increase in those who reported drinking and driving in the previous month, from 17% during the pretest to 30% at the follow-up. This was especially noticeable through the increase in the participants who reported driving with passengers, which increased from 10% during the pretest to 24% during the follow-up. Similar to the video only school, the package intervention school also showed an increase in the overall percentage of students who reported drinking and driving within the previous month; up to 31% at the follow-up.

Of the participants who acknowledged drinking and driving within the month preceding a questionnaire administration, surprisingly, as many as 75% of these students reported that they had drank four or more drinks before their most recent instance of drinking and driving (Figure 5). At the control school the percentage of students who acknowledged that they consumed four or more drinks increased slightly from 40% on the pretest to 46% on the follow-up, although on the posttest 75% of the participants admitted to consuming four or more drinks before their most recent instance of drinking and driving. At the video only school the percentage of students who reported that they consumed two alcoholic drinks before their most recent instance of drinking and driving decreased from 50% on the posttest to 18% on the follow-up, while the percentage of students who acknowledged consuming four or more drinks jumped from 28% on the pretest to 50% on the posttest and then dropped slightly to 46% on the follow-up. The most drastic changes were seen in the package intervention school's data. From the pretest to the follow-up the percentage of participants who reported that they consumed one alcoholic drink before their most

recent instance of drinking and driving decreased from 20% on the pretest to 0% on the follow-up. Remarkable, the increase in the percentage of students who acknowledged consuming four or more alcoholic drinks was even more dramatic, going from 0% on the pretest to 67% on the follow-up.

In terms of drinking and driving history, the most interesting changes were seen at the intervention school, where the percentage of students who acknowledged drinking and driving seven or more times increased from 20% at the pretest to 45% at the follow-up (Figure 6).

All three of the schools showed an increase in the participants who reported being a designated driver (Figure 10). The percentage of students who reported being a designated driver at both the control and package intervention schools increased by 9% from pretest to follow-up, while the video only school increased by a remarkable 21% from pretest to follow-up.

There were also striking increases in the percentage of participants who reported consuming alcohol despite being the designated driver (Figure 11). During the pretest at the control school 13% of the participants reported consuming alcohol despite being the designated driver as compared to 21% at the follow-up. Even more discernable is the increase at the package intervention school where the percentage of students who reported drinking while being the designated driver increased from 6% at the pretest to 21% at the follow-up.

DISCUSSION

Compared to National Statistics

Descriptive statistics from the pretest paint a picture of adolescent alcohol use and drinking and driving that is consistent with other studies in this area. Conversely, other previously available statistics were quite low in comparison to those found in this study. For example, the estimate of the number of high school students who have tried alcohol at some point in their lives ranges from 80% to over 90% (National Institute on Drug Abuse. Johnson, O'Malley and Bachman, 2001; Augstyn and Simons-Morton, 1995; Beck and Lockhart, 1992). The data collected through the ADDQ is consistent with those estimates, ranging from 85% to 100%. Also, according to national averages approximately 37% of adolescents report drinking and driving (Augstyn and Simons-Morton, 1995). Consistent with this estimate, as many as 31% of the students in this study acknowledged drinking and driving within the past month.

Previously reported studies have found that approximately 58% of adolescents report riding with an impaired driver (Thombs, et al., 1996; Augstyn and Simons-Morton, 1995). The participants in this study reported remarkably higher percentages. Up to 88% of the participants in this study acknowledged that at some point they had ridden with a driver who had consumed alcohol. These percentages were fairly consistent across questionnaire administrations.

Frequency of alcohol consumption is important, but knowing the quantity of alcohol that adolescents are drinking is also pertinent. According to previously published statistics, approximately 27% of 12th-grade girls and 43% of 12th-grade boys admit to drinking five or more alcoholic drinks on one occasion (Augstyn and Simons-Morton, 1995). These estimates are quite low, both in terms of percentages and quantity, when compared to the participants in this study. As many as 62% of the students in this study reported that they had consumed more than six alcoholic beverages on one occasion. Assuming that the participants in this study were a representative sample, it appears that adolescents in Southwest Michigan high schools are engaging in risky behaviors involving alcohol consumption and motor vehicle travel at relatively high levels compared to national statistics.

An analysis of changes in behavior and knowledge across repeated administrations of the ADDQ suggest that neither intervention (the video alone or the video package intervention) produced significant decrements in risky behavior. More specifically, the frequency of alcohol consumption within the past month appeared to be fairly consistent throughout the duration of this study for both intervention schools and for the control school. Surprisingly, the frequency of drinking and driving within the previous month showed a modest increase at both the video only school and package intervention school. Furthermore, a modest increase in consuming alcohol despite being the designated driver was observed at both the control school and package intervention school. The positive behaviors of encouraging a friend not to drive after consuming alcohol, and deciding not to drive after drinking alcohol were

high among all three groups from the beginning and remained consistent across questionnaire administrations.

Because most of the primary dependent variables showed either no change across time, no obvious differences between schools, or modest but unexpected increases in risky behavior, the results were not analyzed using inferential statistics. It appears that neither of the interventions produced behavior changes of sufficient magnitude to be detectable via a visual analysis of the data. If inferential statistics revealed significant effects, the effects would either be in the "wrong" direction (i.e. an increase in risky behavior) or of such a small magnitude as to represent no socially significant impact on drinking and driving. All told, there does not appear to be a meaningful difference between the control school, video only school and package intervention school across many of the aspects of this study.

Issues That May Have Impacted the Findings

The absence of detectable effects of the two interventions tested in this study is disappointing and somewhat incongruent with previously published studies that reported some modest changes in indices of drinking and driving as a function of similar interventions. Several factors may have been operating to mitigate the effects of the interventions. First, the study took place over the last four months of the school year, with the follow-up administered just before the 12^{th}-grade students were dismissed for graduation. It is possible that the end of the school year social events which are typically associated with consuming alcohol and drinking and driving (e.g.

proms and graduation parties) may have overshadowed any effects of the interventions. These events may help explain the sharp increases seen in some of the data. Some of the results which may have been impacted by these end of the school year events include: the 15% increase in the percentage of participants at the package intervention school who reported consuming alcohol despite being the designated driver, and the 13% increase in the percentage of students who reported drinking and driving with the month preceding the follow-up at the video only school, and the 67% increase in the percentage of participants at the package intervention school who acknowledged consuming four or more alcoholic drinks before their most recent occasion of drinking and driving. While plausible, this tentative explanation is somewhat weakened by the absence of a notable increase in risky behaviors at the control school that might have been predicted had the extraneous social events been the primary factor in the lack of positive results obtained in this study.

Another factor that may have impacted the findings of this study is that many of the students reported previous exposure to activities similar to those used in the intervention of this project. On the posttest and follow-up version of the ADDQ, the participants were asked which activities they had participated in during their health class and were given choices such as viewing a video about the effects of drinking and driving, role playing assertiveness skills to refuse alcohol or to ride with a driver who has been drinking, discussion with someone who was involved in an alcohol related traffic accident, and none of the above. Of the respondents, less than 13% reported that they had not participated in any of these activities in their health class.

This is not to say that they have never participated in these or similar activities, simply that they do not recall doing so in their health class.

Another factor that could have operated to limit the impact of the current interventions involves the consistency and manner in which participants contacted the interventions. Because of the necessity to guarantee anonymity for the participants, it was impossible to ensure that all of the participants who completed the baseline measures also took part in the intervention and also completed subsequent post intervention and follow-up assessments. Had the integrity of the independent variable been compromised in such a manner that many participants were absent or failed to otherwise contact the intervention, then one would not expect any significant change in drinking and driving over time. Because we could not place identifying information (e.g. code numbers) on the assessment instruments, it was impossible to track any changes in the behavior of a specific student over repeated administrations of the ADDQ. Nevertheless, it is my impression that, in spite of variations in attendance and participation across repeated administrations of the ADDQ, most of the participants were exposed to the intervention and that the composition of the classes was relatively constant across repeated administrations of the ADDQ. Future researcher might attempt to develop a system to monitor changes in the behavior of specific individuals across repeated administrations of the dependent measures. Such a system would allow the researchers to track changes over time for an individual and thus circumvent some of the problems associated with variable participation rates for a group. Needless to say, the benefits of such an individual tracking system would

need to be weighed against any cost in terms of compromising the privacy of the participants, especially since this study was assessing underage drinking and driving and other behaviors that are illegal for all who acknowledged doing so.

A more plausible explanation for the absence of intervention effects is the lack of motivational variables at the disposal of the experimenter. Because there were no reinforcement contingencies operating for participation in the intervention, it is possible that many of the students who were exposed to the intervention simply did not "pay attention." There is some minor evidence to support this interpretation. It was not possible to assess "attention" to the video, but the difficulty in getting students to fully participate in the post video discussion and some of the participatory exercises included in the package intervention suggest that the absence of motivational variables to encourage full and active participation might have contributed to the absence of experimental effects. To support this idea it could be noted that the video only classes spent approximately 45-50 minutes watching and discussing the video, whereas the package intervention schools only spent approximately 15-20 minutes watching and discussing the video. Whether the addition of contingencies to motivate active participation would have enhanced the effects of either intervention is open for further experimentation.

Moreover, it is possible that the interventions tested in this project were not sufficiently robust to have a significant impact on drinking and driving. This would not be especially surprising because the intervention is applied in a different context and at a time that is temporally removed from the behavior of interest (e.g. drinking

and driving). Presumably, the behaviors of drinking and driving are affected by the behavioral processes operating at the time and in the context in which drinking and driving occur. These processes would include a complex array of motivational variables, including response opportunities, prior history and beliefs (e.g. verbal contingency statements), social pressure, and the physiological and social consequences of drinking and driving. From this perspective, it is somewhat surprising that interventions which do not directly alter many of the above variables would have a dramatic impact on drinking and driving. Anecdotal evidence from the post video discussion suggests that participants did not predict a major behavioral impact from viewing a single video, noting in particular the large media exposure that adolescents routinely experience. This analysis raises concerns about the robustness and reliability of the effects of prior interventions.

Is it possible that the positive effects of some of the previously reported interventions might be less robust and less reliable than one might assume? First, a sizeable number of previously published intervention studies have relied on self reports of behavioral intentions or attitudes towards drinking and driving rather than reports of the relevant behaviors. Quite obviously, the connection between intentions and attitudes and the subsequent behavior is somewhat tenuous. Thus prior reports of successful interventions that failed to ask about behavioral occurrences (e.g. recent occurrences of drinking and driving) should be viewed with some skepticism. There is an urgent need for studies that evaluate the impact of interventions on the relevant

target behaviors (e.g. drinking and driving, riding with a driver who has consumed alcohol, urging a person to refrain from drinking and driving).

Finally, it is possible that journals are less likely to publish reports of interventions with negative or ambiguous results than manuscripts with compelling results. Further, it is possible that authors self select which experimental results to submit to scientific journals, with a strong bias towards data sets that report statistically or socially significant effects. The above analysis would suggest that reports of effective interventions to alter adolescent drinking and driving should be subjected to rigorous experimentation to determine if the results can be replicated by independent researchers. If a sizeable number of experiments report results that are consistent with those obtained in this experiment, then further analysis of the variables contributing to the inconsistent results will be required as well as the development of interventions that target more proximal and powerful controlling variables for drinking and driving.

Directions for Future Research

Future studies might consider revising the assessments instruments to obtain additional information. For example, it would have been helpful to know who the impaired drivers are with whom so many of the participants are riding with. Such information might help target prevention on a smaller number of people whose behavior conveys significant risk to their peers. Additional, it might be beneficial to find out if the adolescents knew that the impaired driver had been drinking when they

accepted the ride. Then researcher may be able to target the adolescents decision making process in accepting the ride if they knew that the driver had consumed alcohol. Also, if researchers knew who the students are drinking alcohol with (e.g. peers of their own age, older students, siblings) and how they are getting the alcohol, they could attempt to prevent alcohol consumption in general. If would also be helpful to know what alternatives to drinking and driving the adolescents have employed (e.g. calling a friend or sibling for a ride, calling a taxi, staying the night at the location they were drinking), so that behaviors already in their repertoire could be reinforced. Furthermore, it would be valuable to know if their friend's encouragement not to drive after drinking was effective or if they drove regardless and, conversely, if it was effective when they encouraged a friend not to drink and drive or if the friend drove regardless. Again, if these were effective behaviors previously in the adolescents' repertoires, they could be reinforced.

Some additional suggestions for future research include expanding the range of target behaviors that are the focus of intervention programs. For example, as it appears to be the case here, a straightforward education program may not be a very effective method for deterring adolescents from drinking and driving, because it seems to be a much more wide spread problem than just drinking and driving. Alternative solutions may include focusing on not accepting rides from individuals who have been drinking alcohol. Additionally, peer monitoring should be taken advantage of. As noted earlier, a large percentage of the participants at each school reported that they had encouraged a friend not to drive after drinking, and conversely,

many of the students had been encouraged not to drive after drinking by a friend. This may be an asset when it comes to the issue of drinking and driving. Another focus may include encouraging friends not to accept a ride from an impaired driver.

In summary, this study attempted to replicate prior research concerning the prevalence and frequency of alcohol consumption and driving while under the influence of alcohol. Assessment of the impact of the two intervention programs, one based on a single viewing of a dramatic video and the other based on the video plus additional behavior rehearsal components, did not produce detectable decrements in drinking and driving. Various reasons for the absence of experimental effects are discussed. Given the prevalence of adolescent drinking and driving and the serious health, emotional and financial costs associated with these risky behaviors, additional intervention research to replicate prior experiments and to develop alternative intervention models (e.g. those focusing on more proximal and contextual variables) is sorely needed.

Appendix A

Anonymous Drinking and Driving Questionnaire

Anonymous Drinking and Driving Questionnaire Identification Sheet

You are invited to participate in a research project entitled "Adolescent Drinking and Driving: A Descriptive and Intervention Study" designed to investigate the drinking and driving habits of high school students. This research is being conducted by Western Michigan University Department of Psychology and Bronson Methodist Hospital. It is being conducted as part of the thesis requirements for Emalee M. Fields.

The attached questionnaire is comprised of 41 multiple choice questions about drinking and driving. It will take 15-20 minutes to complete. We are only asking for your name on this Identification Sheet. Information about your name and how to contact you will be used for the sole purpose of conducting a drawing for a $50 gift certificate and delivering that gift certificate to the winner. This Identification Sheet will be removed from the questionnaire and placed in a separate box so that it will be impossible for anyone, including parents, to know the questionnaire responses of individual participants. As a result, your answers on the following questionnaire will be **anonymous**.

First and Last Name:_____
(Note: This sheet will be removed and all of the answers on the questionnaire will be anonymous)

Address:_____

Phone Number:_____
(Note: This contact information will be used for the raffles only)

Anonymous Drinking and Driving Questionnaire (Posttest)

You are invited to participate in a research project entitled "Adolescent Drinking and Driving: A Descriptive and Intervention Study" designed to investigate the drinking and driving habits of high school students. This research is being conducted by Western Michigan University Department of Psychology and Bronson Methodist Hospital. It is being conducted as part of the thesis requirements for Emalee M. Fields.

This questionnaire is comprised of 41 multiple-choice questions and will take 15-20 minutes to complete. Your responses will be completely anonymous, so do not put your name anywhere on this questionnaire and be sure to remove the cover sheet that contains your name. You may choose to not answer any question and simply leave it blank. If you choose not to participate, you may return the blank questionnaire. Returning the questionnaire indicates your consent for use of the answers you supply. In an attempt to reduce the possibility of unauthorized viewing of your questionnaire answers, you have been provided with a large envelope that can be used to cover your answers while you complete the questionnaire. When you are finished, remove the identification sheet (top page) from the questionnaire, place the questionnaire in the envelope, and place the two items in the appropriate boxes. If you would like to complete the questionnaire, but do not wish to participate in the gift certificate drawing, simply leave the identification sheet blank. If you have any concerns about participating in this research project, we encourage you to discuss the project with a parent or another adult before participating. School counselors will be available to provide confidential assistance should you find any aspect of this research project to be upsetting.

Due to the sensitive nature of the questionnaire material, we suggest that participants use discretion when discussing the project, their participation, and their answers with fellow students. Please note that in an attempt to keep even participation in the project confidential, we are asking all students to return the questionnaires in the envelope provided whether the questionnaire has been completed or left blank.

If you have any questions, you may contact Dr. R. Wayne Fuqua at 387-4474, the Western Michigan University Human Subjects Institutional Review Board at 387-8293, the Western Michigan University vice president for research at 387-8298, or Dr. James W. Carter of Bronson Methodist Hospital at 341-8400.

This consent document has been approved for use for one year by the Western Michigan University Human Subjects Review Board and the Bronson Methodist Hospital Human Use Committee as indicated by the stamped dates and signatures of the board chairs on this document. You should not complete this questionnaire if it does not have the stamped dates and signatures.

Have you previously completed the Anonymous Drinking and Driving Questionnaire?

- ❑ Yes
- ❑ No

In which of the following activities did you participate during the health education class at your school? (Check all that apply)

- ❑ Viewing a video about the effects of drinking and driving
- ❑ Risk assessment and decision-making skills
- ❑ Making a public commitment not to drink and drive
- ❑ Role playing assertiveness skills to refuse alcohol or to ride with a driver who has been drinking
- ❑ Discussion with someone who was involved in an alcohol related traffic accident
- ❑ None of the above

(Note: Previous two questions on posttest and follow-up only)

Check the box of the answer that most applies.

1. Have you ever consumed an alcoholic beverage?
   - ❑ Yes
   - ❑ No (if No, skip to question 11)
2. Within the last month, on how many occasions have you consumed alcohol?
   - ❑ Almost never (0-3 times)
   - ❑ Occasionally (4-8 times)
   - ❑ Frequently (> 8 times)
3. Within the last month, have you driven a car after consuming alcohol?
   - ❑ Yes
   - ❑ No (if No, skip to question 9)
4. Approximately how far did you drive after consuming alcohol?
   - ❑ Less than 5 miles
   - ❑ 5-10 miles
   - ❑ 10-15 miles
   - ❑ More than 15 miles
5. On what type of roads did you drive after consuming alcohol?
   - ❑ Unpopulated side roads
   - ❑ Main city streets
   - ❑ Highways
6. The last occasion on which you drove after consuming alcohol did you have passengers riding with you?
   - ❑ Yes
   - ❑ No

7. During the most recent occasion of driving after drinking alcohol, how many drinks did you consume? (1 drink = 1 beer, 1 glass of wine or 1 mixed drink)
   - ❑ 1
   - ❑ 2
   - ❑ 3
   - ❑ 4 or more
8. On how many separate occasions have you driven after drinking alcohol?
   - ❑ 1-2
   - ❑ 3-4
   - ❑ 5-6
   - ❑ 7 or more
9. Have you ever decided NOT to drive after drinking alcohol?
   - ❑ Yes
   - ❑ No
10. Has a friend ever encouraged you NOT to drive after drinking alcohol?
   - ❑ Yes
   - ❑ No
11. Have you ever been the "designated driver"?
   - ❑ Yes
   - ❑ No
12. Have you ever been the "designated driver", but consumed alcohol anyway?
   - ❑ Yes
   - ❑ No
13. Have you ever encouraged a friend NOT to drive after they consumed alcohol?
   - ❑ Yes
   - ❑ No
14. Have you ever ridden with another person who has consumed alcohol?
   - ❑ Yes
   - ❑ No
15. Have you ever ridden with another person who has consumed alcohol, even though they were the "designated driver"?
   - ❑ Yes
   - ❑ No
16. Have you ever been a passenger in a vehicle that crashed when the drive had consumed alcohol?
   - ❑ Yes
   - ❑ No

17. How often do you usually drink beer?
(If you do not drink beer at all skip to question 19)
- ❑ Every day
- ❑ At least once a week but not every day
- ❑ At least once a month but not every week
- ❑ More than once a year but not every month
- ❑ Once a year or less

18. When you drink beer, how much do you usually drink at any one time?
- ❑ Less than 1 can or glass
- ❑ 1-2 cans or glasses
- ❑ 3-4 cans or glasses
- ❑ 5-6 cans or glasses
- ❑ More than 6 cans or glasses

19. How often do you usually drink wine?
(If you do not drink wine at all skip to question 21)
- ❑ Every day
- ❑ At least once a week but not every day
- ❑ At least once a month but not every week
- ❑ More than once a year but not every month
- ❑ Once a year or less

20. When you drink wine, how much do you usually drink at any one time?
- ❑ Less than 1 glass
- ❑ 1-2 glasses
- ❑ 3-4 glasses
- ❑ 5-6 glasses
- ❑ More than 6 glasses

21. How often do you usually drink liquor?
(If you do not drink liquor at all skip to question 23)
- ❑ Every day
- ❑ At least once a week but not every day
- ❑ At least once a month but not every week
- ❑ More than once a year but not every month
- ❑ Once a year or less

22. When you drink liquor, how much do you usually drink at any one time?
- ❑ Less than 1 drink
- ❑ 1-2 drinks
- ❑ 3-4 drinks
- ❑ 5-6 drinks
- ❑ More than 6 drinks

23. Will drinking milk before drinking alcohol slow the absorption of alcohol into the body?
- ❑ Yes
- ❑ No

24. Will mixing liquor with soda pop affect you faster than liquor alone?
    - ❑ Yes
    - ❑ No
25. Will eating while drinking alcohol slow the absorption of alcohol into the body?
    - ❑ Yes
    - ❑ No
26. What is the most amount of alcohol you, personally, have ever consumed?
    - ❑ Less than 1 drink
    - ❑ 1-2 drinks
    - ❑ 3-4 drinks
    - ❑ 5-6 drinks
    - ❑ More than 6 drinks
27. Is drinking coffee an effective way of sobering up?
    - ❑ Yes
    - ❑ No
28. Is taking a cold shower an effective way of sobering up?
    - ❑ Yes
    - ❑ No
29. Will mixing liquor with water affect you faster than liquor alone?
    - ❑ Yes
    - ❑ No
30. What is your approximate body weight in pounds?_____ pounds
31. Please mark your sex.
    - ❑ Male
    - ❑ Female
32. How much can you, personally, drink before you cannot drive?
    - ❑ Less than 1 drink
    - ❑ 1-2 drinks
    - ❑ 3-4 drinks
    - ❑ 5-6 drinks
    - ❑ More than 6 drinks
33. Does a person's weight influence their blood alcohol concentration?
    - ❑ Yes
    - ❑ No
34. While keeping their blood alcohol concentration below the legal limit, could a 150 pound person drink more than 3 beers in one hour?
    - ❑ Yes
    - ❑ No
35. When comparing people of equivalent weights, does alcohol affect men the same as women?
    - ❑ Yes
    - ❑ No

36. For people under 21 years old, what is the legal blood alcohol level for driving in Michigan?

- ❑ 0.00
- ❑ 0.02
- ❑ 0.06
- ❑ 0.08
- ❑ 0.10

37. For people 21 years and over, what is the legal blood alcohol level for driving in Michigan?

- ❑ 0.00
- ❑ 0.02
- ❑ 0.06
- ❑ 0.08
- ❑ 0.10

38. What is your age? _____

39. Please check your driving status.

- ❑ I do not have a learner's permit or driver's license.
- ❑ I have a learner's permit (level 1).
- ❑ I have my intermediate license (level 2).
- ❑ I have my full driver's license (level 3).

Appendix B

Participant Recruitment Speech

Oral Recruitment Speech

Hello, my name is Emalee and I am a graduate student at Western Michigan University. Western Michigan University and Bronson Methodist Hospital along with the assistance of (name of the high school) High School are doing a research project on drinking and driving among adolescents. We are investigating this topic because, as I'm sure you all know, drinking and driving is a serious issue in our society. Studies have reported some startling statistics about drinking and driving, including the fact that alcohol is involved in 47% of all deaths in car crashes and 20% of injuries. Researchers have found that approximately 37% of adolescents have driven after drinking and 29% have ridden with a driver who has been drinking.

With the assistance of your health instructor, we would like to invite all of you to participate in our study. Participation consists of completing a questionnaire about alcohol consumption and patterns of drinking and driving. Myself or someone else from the project will give you the questionnaire that takes approximately 15-20 minutes to complete. The questionnaire will be completed once at the beginning of the project, once about a month after you finish the project and the third time about three months after you finish the project. If you choose to participate, your questionnaire answers will be completely **anonymous**, so that no one, not even your parents, can find out your responses. Whether you take part in the study or not, your health course will be exactly the same for everyone else in the class.

Participation is totally voluntary. If you choose not to participate, it will not affect your completion of your health course. If you choose to participate, but later change your mind, you may withdrawal from the project at any time and it will not affect your completion of the course either. To withdraw from the project you would simply inform your teacher or the project's principal investigator Dr. Fuqua, who's number I will give you later.

To participate in the study, you simply complete the questionnaire. There is no consent form to sign. We are using what is called an anonymous consent, where if you choose to participate you can complete the questionnaire, but if you choose not to participate you can turn the questionnaire in blank. By completing the questionnaire you are giving your consent for us to use your responses. If you have any concerns about participating in this research project, we encourage you to discuss the project with a parent or another adult before participating. I will be handing out an informational letter to assist you in discussing the project with an adult, if you choose to do so. School counselors will be available to provide confidential assistance should you find any aspect of this research project to be upsetting.

If you choose to participate, you will be entered into a drawing after each time the questionnaire is given. You could win a $50.00 gift certificate to Target, just for completing our questionnaire.

Do you have any questions?

Appendix C

Informational Letters for Participants

Western Michigan University
Department of Psychology
Principal Investigator: R. Wayne Fuqua, Ph.D.
Research Associates: Emalee M. Fields, B.S.
from Western Michigan University,
and Brian R. Plaiser, MD, Paul A. Blostein, MD,
Suzan D. Olson Ph.D., MHS, RN and Jacqueline Tibbs, MA, RN
from Bronson Methodist Hospital

The student who is holding this letter has been invited to participate in a study being conducted by Western Michigan University and Bronson Methodist Hospital in collaboration with [redacted] High School. The purpose of the study is to compare the impact of two interventions targeted at drinking and driving among adolescent drivers. Prior to beginning this study, we encourage students to discuss the project with an adult, possibly a parent, friend or teacher. Thus we are asking you to take a few minutes to review and discuss this information on the study with this student before the student makes their decision about whether or not to participate in the study.

Drinking and driving is a serious issue in our society. It has been reported that alcohol is involved in 47% of all motor vehicle fatalities and 20% of injuries. This is also a critical issue with adolescent drivers. A recent study found that 37% of adolescents reported drinking and driving, and 29% reported riding with a driver who had been drinking.

With the student's permission, he or she will complete an anonymous questionnaire about alcohol consumption and drinking and driving. This questionnaire will be completed at three different times throughout the course of the school's health education class. Participation in this study is completely voluntary and refusal to participate will have no adverse impact on the student's relationship with the high school, Bronson Hospital or Western Michigan University. If the student chooses to participate, he or she will be free to end their participation in the study by simply notifying their health education instructor or the principal investigator, Dr. Wayne Fuqua, professor of psychology at Western Michigan University, or Jacqueline Tibbs, Regional Trauma Coordinator at Bronson Methodist Hospital. All information collected during the study will be completely anonymous, thus the risks of violating the student's privacy and confidentiality are minimized. The evaluation data will be collected in a manner so that no one, not even parents, will be able to identify the responses of individualized participants.

The benefit of participating is that after each questionnaire administration, each of the students who complete the questionnaire (administered three times over the course of the class) will be entered into a drawing for a $50.00 gift certificate to Target. One gift certificate will be awarded at each school participating in the study. Additionally, by completing the questionnaire, participants may reflect on the dangers

of drinking and driving. Finally, student participation will also be contributing to the evaluation of a program to prevent adolescent drinking and driving.

The risk of participating in this study is minimal. It is possible that some participants may experience mild discomfort in the disclosure of private information. If a student experiences distress while completing the questionnaire, he or she may withdraw from the study without penalty. If the level of distress is extreme, the student will be encouraged to seek counseling from the school counselor or psychologist.

If you or the student who is seeking your consultation on this project have any questions or concerns, please feel free to call Dr. Fuqua at 387-4474 or Jacqueline Tibbs at 341-8965.

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Department of Psychology
Principal Investigator: R. Wayne Fuqua, Ph.D.
Research Associates: Emalee M. Fields, B.S.
from Western Michigan University,
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The students will be required to view and be given the opportunity to discuss a brief video that dramatizes the consequences of drinking and driving. All students in the health education class will view this video as a regular part of their health class whether or not they participate in the experiment by completing the above described questionnaire.

The benefit of participating is that after each questionnaire administration, each of the students who complete the questionnaire (administered three times over the course of the class) will be entered into a drawing for a $50.00 gift certificate to Target. One gift certificate will be awarded at each school participating in the study. Additionally, by completing the questionnaire, participants may reflect on the dangers of drinking and driving. Finally, student participation will also be contributing to the evaluation of a program to prevent adolescent drinking and driving.

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With the student's permission, he or she will complete an anonymous questionnaire about alcohol consumption and drinking and driving. This questionnaire will be completed at three different times throughout the course of the school's health education class. Participation in this study is completely voluntary and refusal to participate will have no adverse impact on the student's relationship with the high school, Bronson Hospital or Western Michigan University. If the student chooses to participate, he or she will be free to end their participation in the study by simply notifying their health education instructor or the principal investigator, Dr. Wayne Fuqua, professor of psychology at Western Michigan University, or Jacqueline Tibbs, Regional Trauma Coordinator at Bronson Methodist Hospital. All information collected during the study will be completely anonymous, thus the risks of violating the student's privacy and confidentiality are minimized. The evaluation data will be collected in a manner so that no one, not even parents, will be able to identify the responses of individualized participants.

The students will be required to view and be given the opportunity to discuss a brief video that dramatizes the consequences of drinking and driving. They will also participate in other activities designed to lower the risk of drinking and driving. The activities will include: training in how to resist peer pressure, making public commitments to refrain from drinking and driving, and talking with young adults who have been involved in alcohol related traffic accidents. These activities will occur at

school and take no more than five hours of time over the course of the health education class. All students in the health class will complete these activities as a regular part of the class whether or not they participate in the experiment by completing the above described questionnaire.

The benefit of participating is that after each questionnaire administration, each of the students who complete the questionnaire (administered three times over the course of the class) will be entered into a drawing for a $50.00 gift certificate to Target. One gift certificate will be awarded at each school participating in the study. Additionally, by completing the questionnaire, participants may reflect on the dangers of drinking and driving. Finally, student participation will also be contributing to the evaluation of a program to prevent adolescent drinking and driving.

The risk of participating in this study is minimal. It is possible that some participants may experience mild discomfort in the disclosure of private information. If a student experiences distress while completing the questionnaire, he or she may withdraw from the study without penalty. If the level of distress is extreme, the student will be encouraged to seek counseling from the school counselor or psychologist.

If you or the student who is seeking your consultation on this project have any questions or concerns, please feel free to call Dr. Fuqua at 387-4474 or Jacqueline Tibbs at 341-8965.

Appendix D

Package Intervention Role Playing Scenarios

Role Playing Scenarios

- Scenario for Group 1
  - Character 1: An intoxicated individual insisting on driving themselves home
  - Character 2: Their sober friend taking the keys and volunteering to drive them home

- Scenario for Group 2
  - Character 1: An intoxicated individual insisting on driving themselves and their friends home
  - Character 2: A (sober or intoxicated) friend agreeing to ride with the intoxicated driver
    - Both characters 1 & 2 are trying to convince their sober friend to ride with them
  - Character 3: A sober friend refusing to ride with them

- Scenario for Group 3
  - Character 1: A sober individual refusing to drink (whether they are the designated driver or not)
  - Character 2: A drinking friend trying to get the sober friend to drink
  - Character 3: A drinking friend trying to get the sober friend to drink

- Scenario for Group 4
  - Character 1: An intoxicated individual insisting on driving themselves and their girlfriend/boyfriend home
  - Character 2: The girlfriend/boyfriend refusing to ride with them

- Scenario for Group 5
  - Character 1: An intoxicated individual calling their parent for a ride home
  - Character 2: The parent (on the phone)

- Scenario for Group 6
  - Character 1: An intoxicated individual insisting on driving themselves home
  - Character 2: A sober friend calling the intoxicated friend's parent to come pick them up
  - Character 3: The grateful parent of intoxicated friend (on the phone)

Appendix E

Graphs of Additional Data

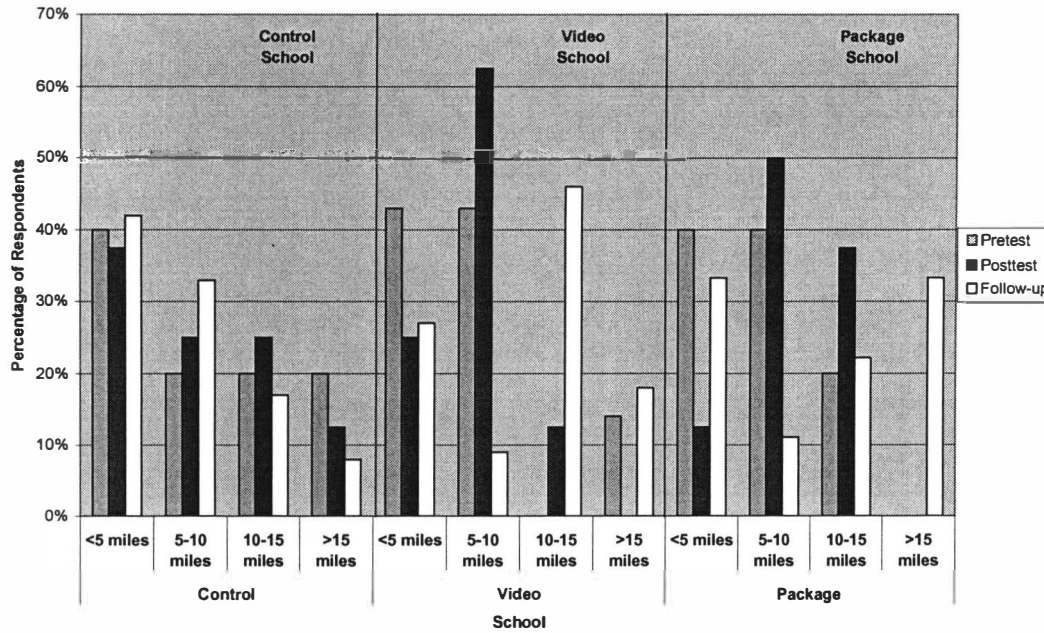

Figure 15. Distance Driven on Most Recent Occasion by Those Who Acknowledge Drinking and Driving

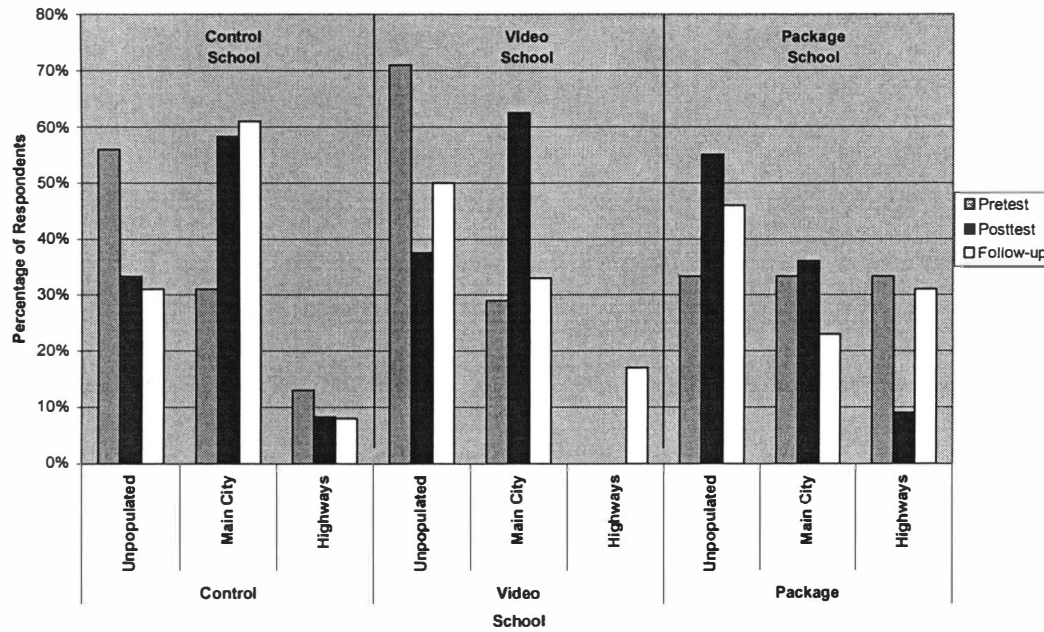

Figure 16. Type of Roads Driven on During Most Recent Instance of Drinking and Driving

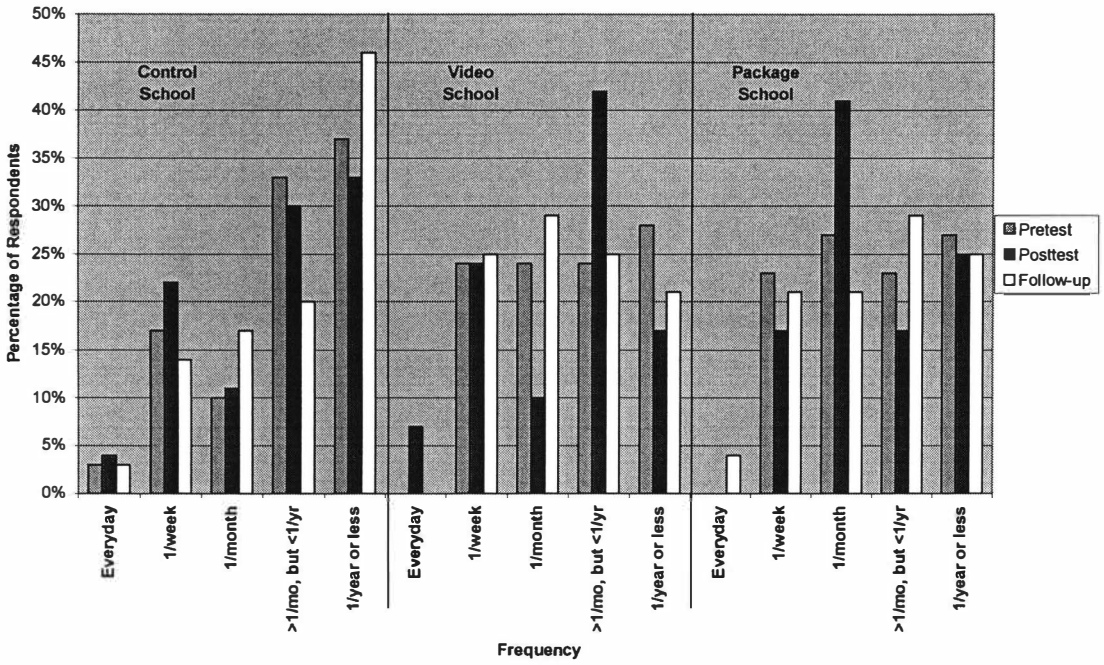

Figure 17. Frequency of Beer Drinking

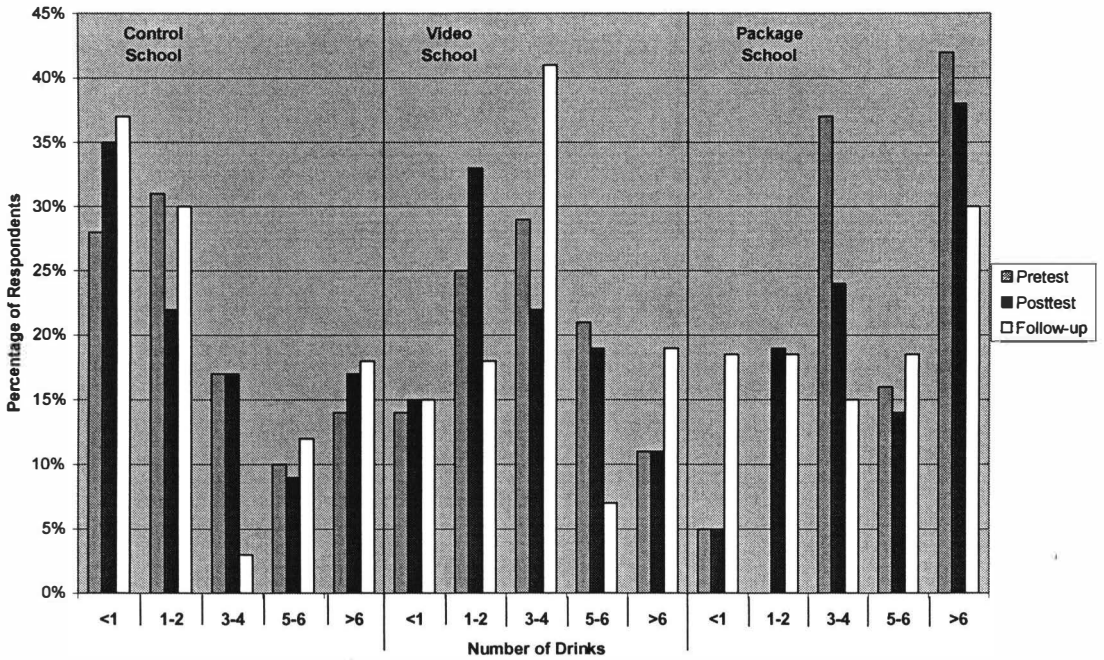

Figure 18. Quantity of Beer Drinking (on Typical Occasion)

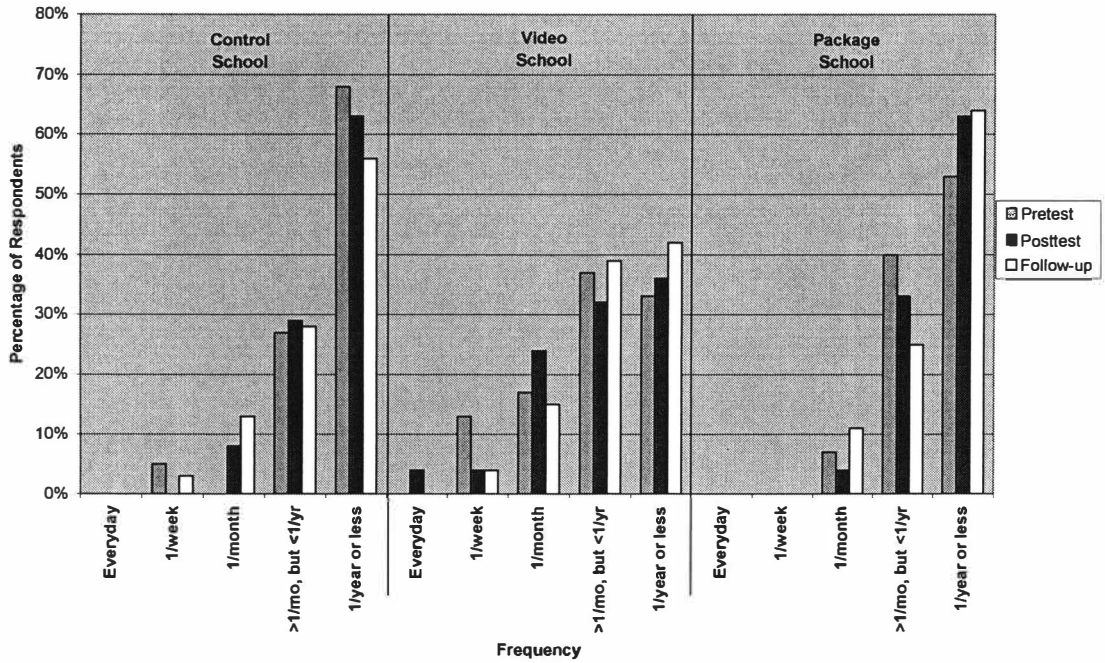

Figure 19. Frequency of Wine Drinking

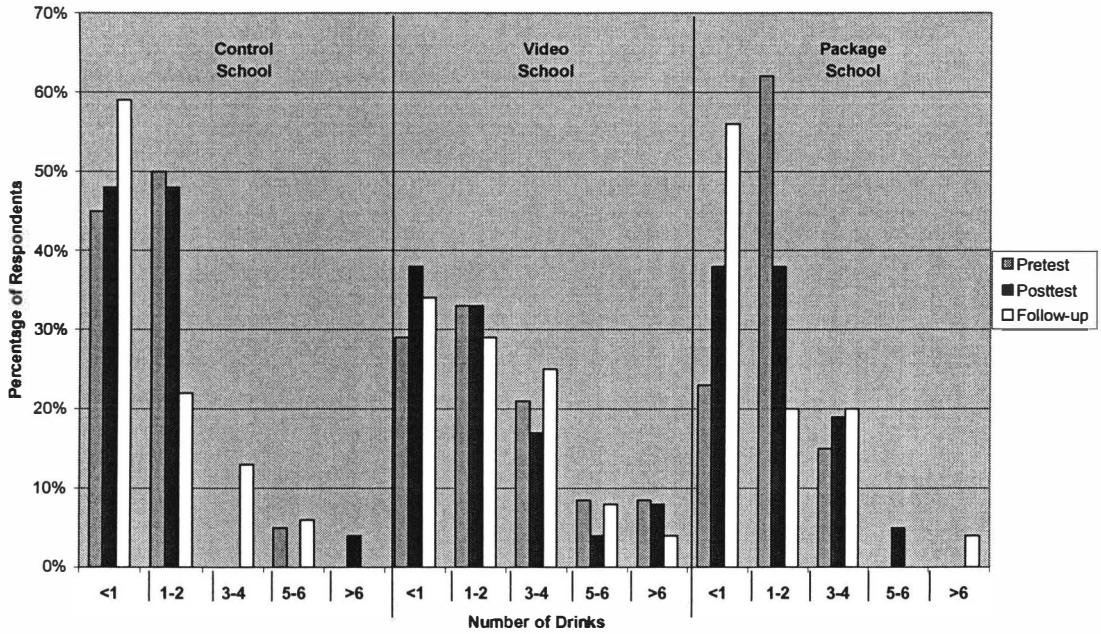

Figure 20. Quantity of Wine Drinking (on Typical Occasion)

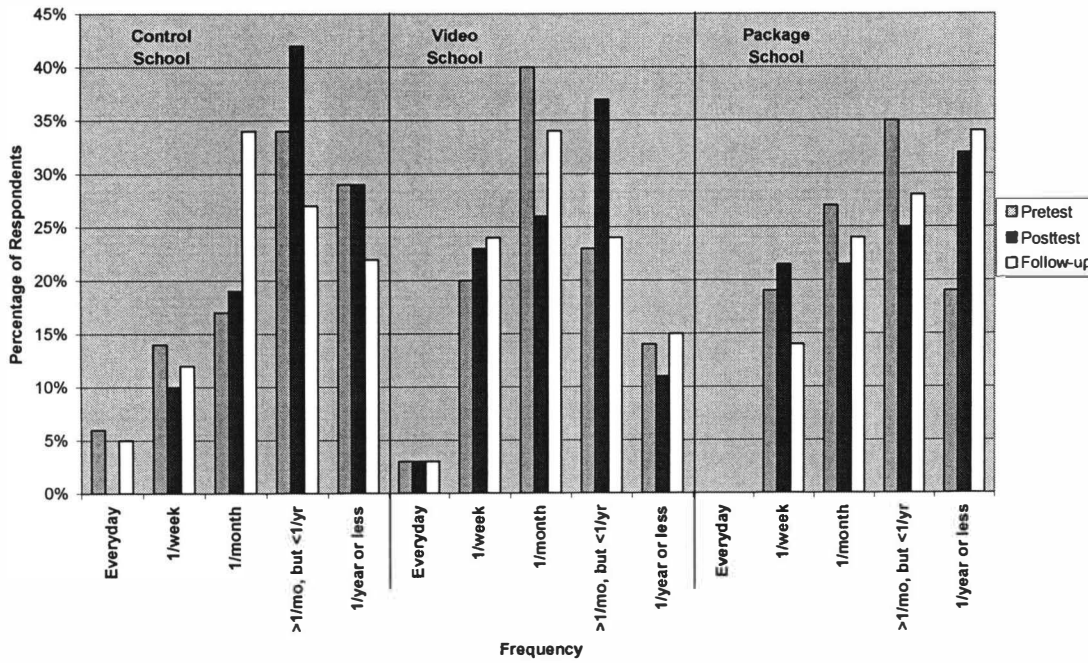

Figure 21. Frequency of Liquor Drinking

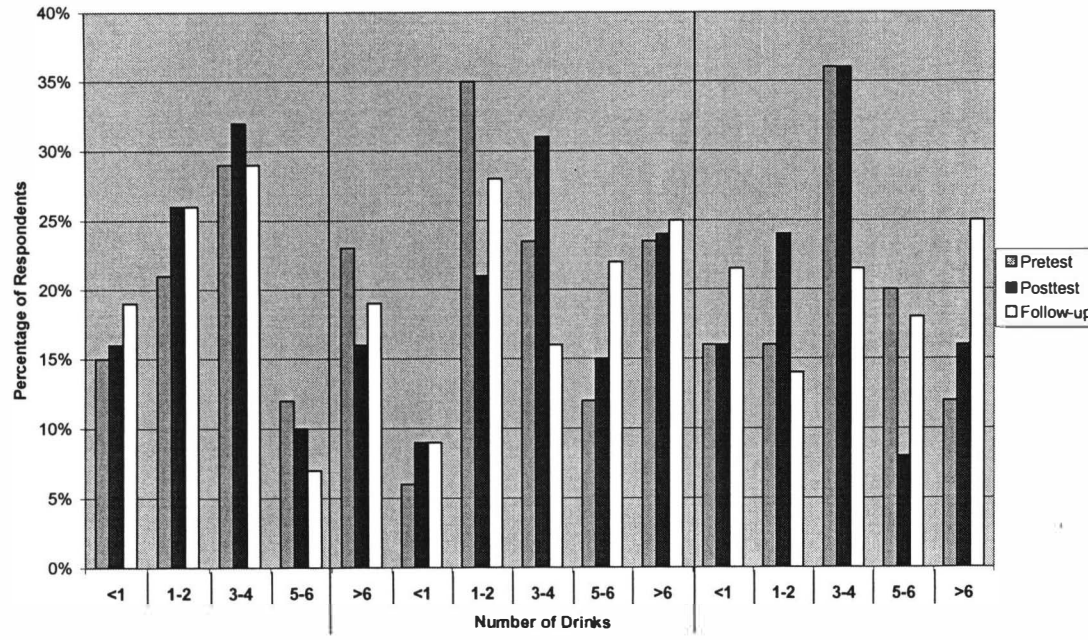

Figure 22. Quantity of Liquor Drinking (on Typical Occasion)

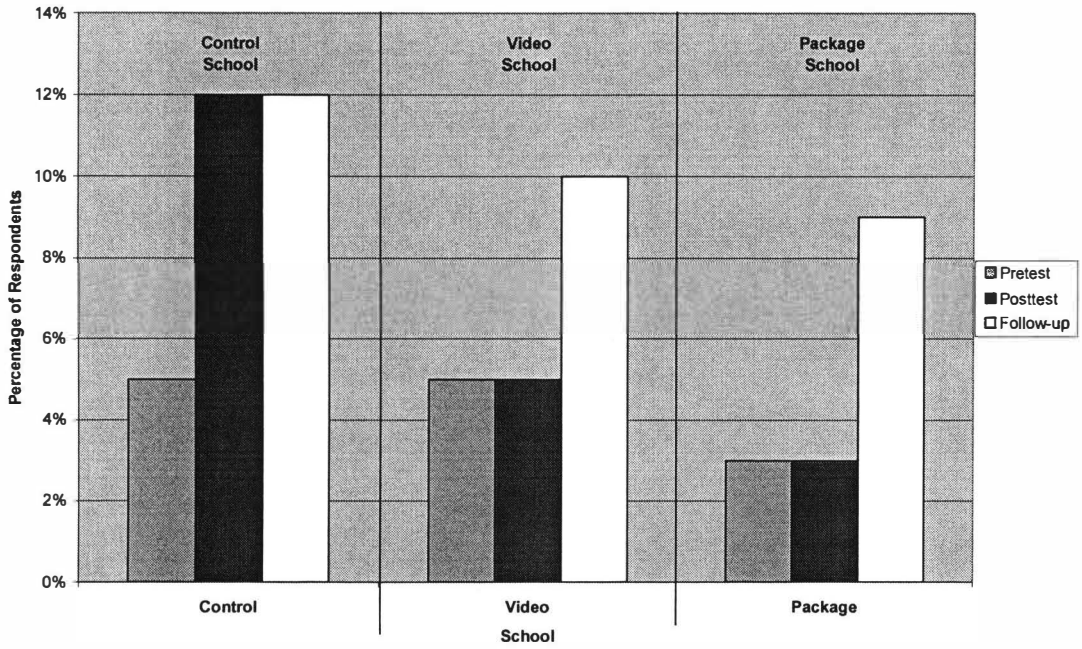

Figure 23. Participants Who Have Been the Passenger in Auto Accident with Driver Who Consumed Alcohol

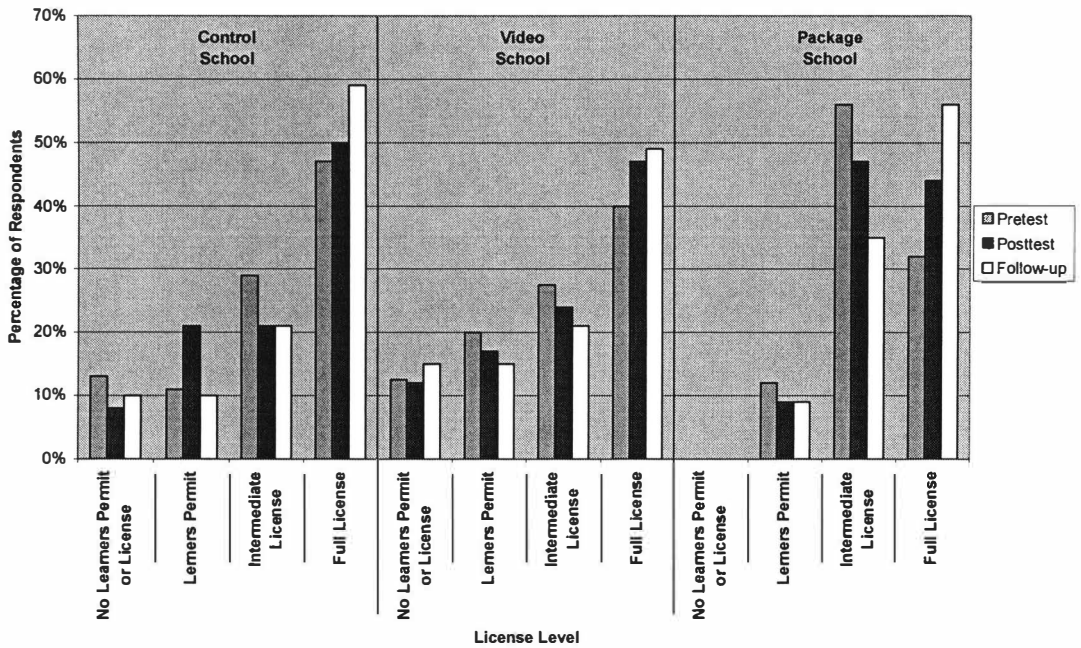

Figure 24. Participant Driving Status

Appendix F

Archive Table of All Data Collected

Have you previously completed the Anonymous Drinking and Driving Questionnaire?			
		Yes	**No**
Control	Pretest	N/A	N/A
	Posttest	28	6
	Follow-up	40	2
Video	Pretest	N/A	N/A
	Posttest	37	4
	Follow-up	38	1
Package	Pretest	N/A	N/A
	Posttest	30	3
	Follow-up	33	0

In which of the following activities did you participate during the health education class at your school?						
	Viewing a video about the effects of drinking & driving	Risk assessment & decision-making skills	Making a public commitment not to drink & drive	Role playing assertiveness skills	Discussion with someone involved in an alcohol related accident	None of the above
Control						
Pretest	N/A	N/A	N/A	N/A	N/A	N/A
Posttest	27	16	5	17	13	3
Follow-up	33	24	16	17	17	3
Video						
Pretest	N/A	N/A	N/A	N/A	N/A	N/A
Posttest	37	13	5	10	5	4
Follow-up	33	8	4	8	4	5
Package						
Pretest	N/A	N/A	N/A	N/A	N/A	N/A
Posttest	32	21	17	32	30	0
Follow-up	32	26	15	31	30	1

1. Have you ever consumed an alcoholic beverage?			
		Yes	**No**
Control	Pretest	38	2
	Posttest	33	2
	Follow-up	43	0
Video	Pretest	37	4
	Posttest	39	3
	Follow-up	37	2
Package	Pretest	29	5
	Posttest	29	5
	Follow-up	29	5

2. Within the last month, on how many occasions have you consumed alcohol?				
		Almost Never (0-3 times)	Occasionally (4-8 times)	Frequently (>8 times)
Control	Pretest	26	7	4
	Posttest	19	8	6
	Follow-up	25	12	6
Video	Pretest	22	10	5
	Posttest	24	12	3
	Follow-up	22	8	7
Package	Pretest	22	4	3
	Posttest	19	8	2
	Follow-up	18	6	5

3. Within the last month, have you driven a car after consuming alcohol?			
		Yes	**No**
Control	Pretest	10	28
	Posttest	8	25
	Follow-up	12	31
Video	Pretest	7	35
	Posttest	8	31
	Follow-up	11	26
Package	Pretest	5	24
	Posttest	8	21
	Follow-up	9	20

4. Approximately how far did you drive after consuming alcohol?					
		Less than 5 miles	5-10 miles	10-15 miles	More than 15 miles
Control	Pretest	4	2	2	2
	Posttest	3	2	2	1
	Follow-up	5	4	2	1
Video	Pretest	3	3	0	1
	Posttest	2	5	1	0
	Follow-up	3	1	5	2
Package	Pretest	2	2	1	0
	Posttest	1	4	3	0
	Follow-up	3	1	2	3

5. On what type of roads did you drive after consuming alcohol?				
		Unpopulated side roads	Main city streets	Highways
Control	Pretest	9	5	2
	Posttest	4	7	1
	Follow-up	4	8	1
Video	Pretest	5	2	0
	Posttest	3	5	0
	Follow-up	6	4	2
Package	Pretest	2	2	2
	Posttest	6	4	1
	Follow-up	6	3	4

6. The last occasion on which you drove after consuming alcohol did you have passengers riding with you?			
		Yes	**No**
Control	Pretest	7	3
	Posttest	6	2
	Follow-up	6	6
Video	Pretest	4	3
	Posttest	5	3
	Follow-up	9	2
Package	Pretest	1	4
	Posttest	4	4
	Follow-up	6	3

7. During the most recent occasion of driving after drinking alcohol, how many drinks did you consume? (1 drink = 1 beer, 1 glass of wine or 1 mixed drink)					
		1	2	3	4 or more
Control	Pretest	1	3	2	4
	Posttest	0	1	1	6
	Follow-up	2	1	3	5
Video	Pretest	1	2	2	2
	Posttest	0	4	0	4
	Follow-up	2	3	3	3
Package	Pretest	1	3	1	0
	Posttest	2	2	2	2
	Follow-up	0	2	1	6

8. On how many separate occasions have you driven after drinking alcohol?					
		1-2	3-4	5-6	7 or more
Control	Pretest	3	4	2	2
	Posttest	4	1	1	2
	Follow-up	3	4	2	2
Video	Pretest	1	2	1	3
	Posttest	4	0	2	2
	Follow-up	2	3	3	3
Package	Pretest	2	1	1	1
	Posttest	6	0	1	1
	Follow-up	2	2	1	4

9. Have you ever decided NOT to drive after drinking alcohol?			
		Yes	**No**
Control	Pretest	30	5
	Posttest	27	6
	Follow-up	34	7
Video	Pretest	27	10
	Posttest	30	8
	Follow-up	29	7
Package	Pretest	27	2
	Posttest	26	3
	Follow-up	23	4

10. Has a friend ever encouraged you NOT to drive after drinking alcohol?			
		Yes	**No**
Control	Pretest	24	13
	Posttest	19	15
	Follow-up	28	15
Video	Pretest	20	18
	Posttest	26	12
	Follow-up	24	13
Package	Pretest	21	8
	Posttest	20	9
	Follow-up	23	5
11. Have you ever been the "designated driver"?			
		Yes	**No**
Control	Pretest	22	17
	Posttest	19	16
	Follow-up	28	15
Video	Pretest	16	23
	Posttest	23	19
	Follow-up	24	15
Package	Pretest	17	17
	Posttest	17	17
	Follow-up	20	14
12. Have you ever been the "designated driver", but consumed alcohol anyway?			
		Yes	**No**
Control	Pretest	5	34
	Posttest	6	29
	Follow-up	9	34
Video	Pretest	7	33
	Posttest	7	35
	Follow-up	7	31
Package	Pretest	2	32
	Posttest	6	28
	Follow-up	7	27
13. Have you ever encouraged a friend NOT to drive after they consumed alcohol?			
		Yes	**No**
Control	Pretest	31	9
	Posttest	26	7
	Follow-up	35	8
Video	Pretest	36	4
	Posttest	37	5
	Follow-up	34	5
Package	Pretest	30	4
	Posttest	30	4
	Follow-up	29	4

14. Have you ever ridden with another person who has consumed alcohol?			
		Yes	**No**
Control	Pretest	31	9
	Posttest	28	7
	Follow-up	34	8
Video	Pretest	34	7
	Posttest	37	5
	Follow-up	31	7
Package	Pretest	26	8
	Posttest	25	9
	Follow-up	25	9
15. Have you ever ridden with another person who has consumed alcohol, even though they were the "designated driver"?			
		Yes	**No**
Control	Pretest	16	24
	Posttest	15	20
	Follow-up	17	25
Video	Pretest	22	19
	Posttest	17	25
	Follow-up	20	19
Package	Pretest	16	18
	Posttest	11	23
	Follow-up	11	23
16. Have you ever been a passenger in a vehicle crash when the driver had consumed alcohol?			
		Yes	**No**
Control	Pretest	2	38
	Posttest	4	30
	Follow-up	5	38
Video	Pretest	2	39
	Posttest	2	40
	Follow-up	4	35
Package	Pretest	1	33
	Posttest	1	33
	Follow-up	3	30

17. How often do you usually drink beer?					
	Every day	At least once a week, but not every day	At least once a month, but not every week	More than once a year, but not every month	Once a year or less
Control					
Pretest	1	5	3	10	11
Posttest	1	6	3	8	9
Follow-up	1	5	6	7	16
Video					
Pretest	0	7	7	7	8
Posttest	2	7	3	12	5
Follow-up	0	7	8	7	6
Package					
Pretest	0	5	6	5	6
Posttest	0	4	10	4	6
Follow-up	1	6	6	8	7

18. When you drink beer, how much do you usually drink at any one time?					
	Less than 1 can or glass	1-2 cans or glasses	3-4 cans or glasses	5-6 cans or glasses	More than 6 cans or glasses
Control					
Pretest	8	9	5	3	4
Posttest	8	5	4	2	4
Follow-up	12	10	1	4	6
Video					
Pretest	4	7	8	6	3
Posttest	4	9	6	5	3
Follow-up	4	5	11	2	5
Package					
Pretest	1	0	7	3	8
Posttest	1	4	5	3	8
Follow-up	5	5	4	5	8
19. How often do you usually drink wine?					
	Every day	At least once a week, but not every day	At least once a month, but not every week	More than once a year, but not every month	Once a year or less
Control					
Pretest	0	1	0	6	15
Posttest	0	0	2	7	15
Follow-up	0	1	4	9	18
Video					
Pretest	0	3	4	9	8
Posttest	1	1	6	8	9
Follow-up	0	1	4	10	11
Package					
Pretest	0	0	1	6	8
Posttest	0	0	1	8	15
Follow-up	0	0	3	7	18
20. When you drink wine, how much do you usually drink at any one time?					
	Less than 1 glass	1-2 glasses	3-4 glasses	5-6 glasses	More than 6 glasses
Control					
Pretest	10	11	0	1	0
Posttest	10	10	0	0	1
Follow-up	19	7	4	2	0
Video					
Pretest	7	8	5	2	2
Posttest	9	8	4	1	2
Follow-up	8	7	6	2	1
Package					
Pretest	3	8	2	0	0
Posttest	8	8	4	1	0
Follow-up	14	5	5	0	1

21. How often do you usually drink liquor?					
	Every day	At least once a week, but not every day	At least once a month, but not every week	More than once a year, but not every month	Once a year or less
Control					
Pretest	2	5	6	12	10
Posttest	0	3	6	13	9
Follow-up	2	5	14	11	9
Video					
Pretest	1	7	14	8	5
Posttest	1	8	9	13	4
Follow-up	1	8	11	8	5
Package					
Pretest	0	5	7	9	5
Posttest	0	6	6	7	9
Follow-up	0	4	7	8	10
22. When you drink liquor, how much do you usually drink at any one time?					
	Less than 1 drink	1-2 drinks	3-4 drinks	5-6 drinks	More than 6 drinks
Control					
Pretest	5	7	10	4	8
Posttest	5	8	10	3	5
Follow-up	8	11	12	3	8
Video					
Pretest	2	12	8	4	8
Posttest	3	7	10	5	8
Follow-up	3	9	5	7	8
Package					
Pretest	4	4	9	5	3
Posttest	4	6	9	2	4
Follow-up	6	4	6	5	7

23. Will drinking milk before drinking alcohol slow the absorption of alcohol into the body?			
		Yes	**No**
Control	Pretest	5	33
	Posttest	5	30
	Follow-up	6	37
Video	Pretest	8	31
	Posttest	4	38
	Follow-up	11	27
Package	Pretest	13	21
	Posttest	10	24
	Follow-up	9	25

24. Will mixing liquor with soda pop affect you faster than liquor alone?			
		Yes	**No**
Control	Pretest	6	32
	Posttest	8	27
	Follow-up	15	28
Video	Pretest	8	32
	Posttest	3	39
	Follow-up	6	32
Package	Pretest	10	24
	Posttest	8	26
	Follow-up	8	25

25. Will eating while drinking alcohol slow the absorption of alcohol into the body?			
		Yes	**No**
Control	Pretest	20	19
	Posttest	21	14
	Follow-up	21	21
Video	Pretest	25	16
	Posttest	20	22
	Follow-up	21	17
Package	Pretest	23	11
	Posttest	18	16
	Follow-up	20	14

26. What is the most amount of alcohol you personally have ever consumed?					
	Less than 1 drink	1-2 drinks	3-4 drinks	5-6 drinks	More than 6 drinks
Control					
Pretest	7	1	5	2	24
Posttest	3	2	5	5	19
Follow-up	2	6	7	6	22
Video					
Pretest	4	3	8	5	20
Posttest	4	4	4	4	26
Follow-up	4	2	7	6	20
Package					
Pretest	9	1	5	1	18
Posttest	10	2	2	2	18
Follow-up	10	0	2	3	19

27. Is drinking coffee an effective way of sobering up?			
		Yes	**No**
Control	Pretest	6	31
	Posttest	7	28
	Follow-up	6	36
Video	Pretest	10	31
	Posttest	8	34
	Follow-up	8	31
Package	Pretest	4	30
	Posttest	3	31
	Follow-up	6	28

28. Is taking a cold shower an effective way of sobering up?			
		Yes	**No**
Control	Pretest	8	29
	Posttest	10	25
	Follow-up	9	33
Video	Pretest	8	32
	Posttest	10	32
	Follow-up	9	30
Package	Pretest	5	29
	Posttest	7	27
	Follow-up	7	27
29. Will mixing liquor with water affect you faster than liquor alone?			
		Yes	**No**
Control	Pretest	5	34
	Posttest	5	29
	Follow-up	5	37
Video	Pretest	7	33
	Posttest	9	32
	Follow-up	8	30
Package	Pretest	4	30
	Posttest	4	30
	Follow-up	5	29
30. What is your approximate body weight in pounds?			
		Range	Average
Control	Pretest	100 – 240 lbs.	154 lbs.
	Posttest	105 – 250 lbs.	161 lbs.
	Follow-up	102 – 260 lbs.	160 lbs.
Video	Pretest	75 – 300 lbs.	139 lbs.
	Posttest	55 – 300 lbs.	140 lbs.
	Follow-up	100 – 300 lbs.	145 lbs.
Package	Pretest	100 – 215 lbs.	155 lbs.
	Posttest	97 – 220 lbs.	154 lbs.
	Follow-up	115 – 210 lbs.	154 lbs.
31. Please mark your sex.			
		Male	Female
Control	Pretest	22	18
	Posttest	17	17
	Follow-up	20	23
Video	Pretest	12	29
	Posttest	11	31
	Follow-up	10	29
Package	Pretest	19	15
	Posttest	19	15
	Follow-up	19	14

32. How much can you personally drink before you cannot drive?					
	Less than 1 drink	1-2 drinks	3-4 drinks	5-6 drinks	More than 6 drinks
Control					
Pretest	6	10	9	4	5
Posttest	9	6	8	4	7
Follow-up	13	11	7	6	5
Video					
Pretest	4	8	19	3	4
Posttest	4	8	18	6	5
Follow-up	4	8	14	3	10
Package					
Pretest	9	6	7	4	6
Posttest	8	6	9	7	3
Follow-up	10	5	7	3	9

33. Does a person's weight influence their blood alcohol concentration?			
		Yes	**No**
Control	Pretest	36	2
	Posttest	31	3
	Follow-up	38	5
Video	Pretest	39	2
	Posttest	38	4
	Follow-up	36	3
Package	Pretest	32	2
	Posttest	32	2
	Follow-up	33	1

34. While keeping their blood alcohol concentration below the legal limit, could a 150 pound person drink more than 3 beers in one hour?			
		Yes	**No**
Control	Pretest	11	24
	Posttest	12	21
	Follow-up	13	30
Video	Pretest	19	21
	Posttest	16	24
	Follow-up	18	21
Package	Pretest	9	25
	Posttest	8	25
	Follow-up	6	28

35. When comparing people of equivalent weights, does alcohol affect men the same as women?			
		Yes	**No**
Control	Pretest	7	30
	Posttest	11	23
	Follow-up	12	31
Video	Pretest	1	38
	Posttest	4	37
	Follow-up	4	35
Package	Pretest	5	28
	Posttest	8	25
	Follow-up	3	31

36. For people under 21 years old, what is the legal blood alcohol level for driving in Michigan?					
	0.00	0.02	0.06	0.08	0.10
Control					
Pretest	20	10	5	2	0
Posttest	15	11	5	2	1
Follow-up	24	11	2	4	3
Video					
Pretest	21	10	2	3	3
Posttest	23	12	3	1	3
Follow-up	22	10	4	2	0
Package					
Pretest	23	6	2	2	1
Posttest	26	7	0	1	0
Follow-up	32	2	0	0	0
37. For people 21 years old and over, what is the legal blood alcohol level for driving in Michigan?					
	0.00	0.02	0.06	0.08	0.10
Control					
Pretest	1	15	11	3	8
Posttest	3	18	2	8	3
Follow-up	5	22	10	3	2
Video					
Pretest	3	12	9	5	8
Posttest	1	20	7	6	7
Follow-up	2	15	12	4	5
Package					
Pretest	0	8	9	8	8
Posttest	2	9	2	20	0
Follow-up	5	7	6	11	4
38. What is your age?					
	15	16	17	18	19
Control					
Pretest	0	7	15	14	1
Posttest	0	7	9	14	2
Follow-up	0	4	15	17	4
Video					
Pretest	5	9	24	3	0
Posttest	4	8	23	7	0
Follow-up	4	6	20	9	0
Package					
Pretest	0	16	16	2	0
Posttest	0	12	19	3	0
Follow-up	0	8	21	4	0

39. Please check your driving status.				
	I do not have a learner's permit or driver's license	I have a learner's permit (level 1)	I have my intermediate license (level 2)	I have my full driver's license (level 3)
Control				
Pretest	5	4	11	18
Posttest	3	7	7	17
Follow-up	4	4	9	25
Video				
Pretest	5	8	11	16
Posttest	5	7	10	20
Follow-up	6	6	8	19
Package				
Pretest	0	4	19	11
Posttest	0	3	16	15
Follow-up	0	3	12	19

Appendix G

Protocol Clearance from the Western Michigan University
Human Subjects Institutional Review Board

Vice President for Research
and Dean of the Graduate College

Kalamazoo, Michigan 49008-5456
616 387-8298
FAX: 616 387-8276

WESTERN MICHIGAN UNIVERSITY

Date: May 11, 2001

To: R. Wayne Fuqua, Principal Investigator
Emalee Fields, Student Investigator for thesis

From: Michael S. Pritchard, Interim Chair Michael S. Pritchard

Re: HSIRB Project Number 00-11-06

This letter will serve as confirmation that your research project entitled "Adolescent Drinking and Driving: A Descriptive and Intervention Study" has been **approved** under the **full** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: March 21, 2002

Appendix H

Protocol Clearance from the Bronson Methodist Hospital
Human Use Committee

BRONSON
Healthcare Group

Protocol BMH-2000-0017: "Adolescent Drinking and Driving: A Descriptive and Intervention Study (Dr. R.W. Fuqua)

At the July 13, 2000 Meeting of the Bronson Methodist Hospital (BMH) Human Use Committee your Protocol BMH-2000-0017 (referenced above) was approved as submitted.

1. The BMH Human Use Committee determined the continuing review interval for this study to be set at 12 months.

2. ***Before this protocol(s) can be implemented (i.e. prior to a drug being given or a procedure undertaken) all changes must be made (if applicable) and a final, signed copy of the protocol and informed consent filed with the BMH Human Use Committee Chairman (or designee).*** The clinical investigator is required to receive approval from the BMH Human Use Committee prior to initiating any changes in approved research during the period for which BMH Human Use Committee approval has been given. Dr. Fuqua attended this meeting and has agreed to the above changes and procedures.

James W Carter MD

July 13, 2000
Dated

James W. Carter, M.D. Chairman
Bronson Methodist Hospital
Human Use Committee
601 John Street, Suite M-020
Kalamazoo, MI 49007
(616) 341-8400

cc: Protocol File

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