

The Chronicle

2012 Issue

Volume 59

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Drug or Alcohol Use**

for

Driver

Education

Professionals

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The Chronicle for Driver Education Professionals

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Greetings to ADTSEA Members

Kevin Kirby, ADTSEA President

Good day!

I hope this message finds you and your family well. I was going to spend a bit of time bemoaning our 26" of snow that fell on February 29 but, after seeing the death and destruction caused by the high winds and tornadoes in the Midwest, I really don't have much to complain about.

The school year is flying by and before you know it, July and the 56th annual ADTSEA Conference will be underway in Appleton WI. It has been 35 years since ADTSEA visited my state and the host committee is putting some activities in place to make everyone feel welcomed. Tough decisions will have to be made right away on Saturday, golf or pre-conference workshop starring the new 3.0 National Driver Education Curriculum. Seriously, the stuff in the 3.0 is excellent and the more you are able to play with it, the more effective you will be. For the host and spouse

outings, transportation will be via coach busses. Sometimes the weather can get a little sticky in July and while the Fox Valley is one of the fastest growing areas in Wisconsin, it has a good number of dairy farms in the area. One or two good whiffs of that Wisconsin dairy air and you will be very happy with the AC.

The division chairs are working their mojo and the results are very exciting. We should have some tough decisions to make here as well. If you are not able to bring some students with you, take a look at the NSSP line up. For \$25, you may want to show up a day early to take in some of their speakers (sorry, no meals are included in this fee).

For those of us who heard David Strickland, the Administrator of the National Highway Transportation Safety Administration, it was refreshing to hear his belief ***"that an effective driver education program-***

along with proven safety legislation, active law enforcement and positive engagement of parents, schools and other community members- is an important element in a program to protect these young drivers." Past president Chuck Lehning was in top form when he asked Mr. Strickland if we could have that in writing, which the Administrator has done. Stay tuned, for it looks as though we may have a packet of material and resources coming our way.

I'm looking forward to attending the Minnesota Driver Traffic Safety Education Association annual conference this April. It will be a joy to go there now that they let our retired quarterback stay retired. For the rest of you have a delightful Spring, slow down, continue to drive sober, hang up that cell phone, and as always – Buckle up. Somebody loves you!

Kevin



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Visit the ADTSEA On-Line store on the ADTSEA website www.adtsea.org to purchase the ADTSEA 2.0 Curriculum, Annual Memberships and Teaching Materials as well as items from some of our Corporate Members: AAA Driver Education is offering their How to Drive Guides and Teaching Your Teens to Drive; The National Institute for Driver Behavior has various Safety Products; and J.R. Higgins, LLC has Student Driver Signs and Mounting Kits available for purchase. Check back often to see new products as they become available.



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Parent-Teen Driving Agreement Offered Through a School-Based Program

Richard Lichenstein, M.D. (corresponding author), Director, Pediatric Emergency Medicine Research, University of Maryland Medical Center, Maura Rossman, M.D., Howard County Health Department, Daniel C. Smith, B.S., University of Maryland School of Medicine

ABSTRACT

Objective: To determine the acceptance of a county-wide public high school-based driving program highlighting a parent-teen driving agreement (PTDA).

Methods: This prospective cohort study involved a convenience sample of teenage drivers and their parents in Howard County, Maryland. Through a collaboration of the police department, the public school system, and a community organization, a program on traffic safety was presented in 12 of 13 of the county's high schools. Attendance was a requirement for students wishing to park on school grounds. Participants were asked to complete pilot online surveys within 6 weeks after the presentation and again 6 months later. This survey examined attitudes toward the PTDA, driving behaviors, and three risky driving habits (speeding, cell phone use, and driving unsupervised with other teens).

Results: The presentations were attended by 2,876 students. The initial survey was completed by 121 teens (63 males, 58 females, ages 15–17) and 100 parents; 63 teens and 58 parents took the follow-up survey. In the follow-up survey, the majority of teens and parents (72% and 76%, respectively) reported having used the PTDA. Teens were less likely than their parents to describe the PTDA as a positive experience ($p < 0.0001$) and to report that it helped them become better drivers ($p < 0.001$). The number of teens' reported risky driving behaviors and crashes increased between the initial and follow-up surveys ($p < 0.05$). There was no difference in risky driving behaviors, traffic citations, or crash rates

between PTDA signers and non-signers.

Conclusion: This school-based approach to offering PTDA shows promise through the high rates of use and parents' opinions of the experience. The self reported increase in risky driving behavior is troubling. This trend was also found in Connecticut's Checkpoints® program, which offers the PTDA through a mail-based system. Future school presentations will be amended to highlight the driving risks examined in this study: cell phone use, driving with other teens, and speeding. Further research is needed to improve survey response rates in order to best assess the impact of the program.

Key words: teenage drivers, parent-teen contracts, highway safety, driving risks

INTRODUCTION

Motor vehicle crashes (MVCs) are the leading cause of death among American teenagers. New drivers are particularly at risk. MVCs account for nearly 40% of deaths in 16 year olds (CDC, VitalStats, 2011; CDC, WISQARS, 2011). Driving behaviors play a major role in causing MVCs among all age groups (Evans & Wasielewski, 1982). Risk factors specific to teen drivers include lack of experience, speeding, substance abuse, primary access to a vehicle, lack of seatbelt use, and having teenage passengers in the vehicle (Committee on Injury, Violence, and Poison Prevention, AAP, 2006; Garcia-España et al., 2009).

In the past few decades, states have addressed this issue through graduated driver licensing (GDL)

programs, which have shown remarkable success in reducing teen MVC fatalities, MVC injuries, and traffic violations (Chen et al., 2006). There is also some evidence that parental involvement may decrease teen driving risk. Teens with authoritative parents have less risky driving practices, including driving while intoxicated, talking on a cell phone while driving, driving without a seatbelt, and speeding (Ginsburg et al., 2009).

Unfortunately, many parents are unaware of the risks inherent in a teen's first years of driving on the road (Simons-Morton & Hartos, 2003). Several attempts have been made to make parents a more integral part of GDL programs, for example, by encouraging the use of a parent-teen driving agreement (PTDA). PTDA are written contracts between parents and teens, which set limits on the teen's driving, particularly in risky environments. Consistent with a contractual model, consequences for breaking the limits are stated in the agreement. Parents and teens usually agree on reduced restrictions as the teen becomes older and gains more driving experience.

Current evidence for PTDA use relies on the recently implemented Checkpoints® Program, which mails contracts to the families of teenage drivers in Connecticut along with an instructional video (Simons-Morton et al., 2006). This program has been associated with a reduction in risky teen driving behavior and traffic citations compared with a GDL program alone.

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We chose to evaluate attitudes and perceptions toward the PTDA in Maryland by dovetailing on a preexisting school-based safe driving program. Our specific objectives were to (1) gauge students' and parents' acceptance of and attitudes toward the PTDA and (2) assess changes in teens' self-reported driving behaviors during the study period.

METHODS

Population

The population for this project comprised teens of driving age enrolled in 12 public high schools and their parents/guardians in Howard County, Maryland. More than half of the 16,657 high school students in the county were licensed drivers (Howard County Public School System, 2010). On average, 722 crashes (causing 5 fatalities) involved young drivers each year in the county. This represented approximately 4% of all statewide crashes and 5% of all traffic-related fatalities. During 2005, of a total 48,922 citations, 2,101 (4.3%) were issued to drivers between the ages of 14 and 17 (personal communication, Mary Levy, Howard County Police Department, July 26, 2010). The study was approved by the institutional review board at the University of Maryland.

Intervention Program

The "We Are Responsible" Program was modified from a pre-existing collaboration between the Howard County Police Department, Howard County public high schools, and a local grassroots organization, "Courtesy on the Road." The original program was 5 years old at the beginning of this project and consisted of a PowerPoint presentation of teen driving laws and local crash and fatality statistics, with voiceover narration by the school resource officer supervisor. To be granted the privilege to park on any Howard County school campus, teens had to attend one of

the 90-minute sessions offered at the county's public high schools with one of their parents or guardians.

School Presentations and the PTDA

During the year of the study, the "We Are Responsible" presentation was edited and shortened into a video that included an introduction by a high school principal, narration by the school resource officer, and footage of teens introducing educational segments on the dangers of speed, the risk associated with distracted driving, and the importance of using seat belts. The school principal and safety officer attended each presentation.

An American Academy of Pediatrics (AAP) PTDA (Appendix A) was introduced during these courses and distributed during the presentations. This PTDA outlined the teen's key driving responsibilities, the consequences when responsibilities were not met, and the roles of teens and their parents in helping the teen succeed (Committee on Injury, Violence, and Poison Prevention, AAP, 2006). A pediatrician or study member from the Maryland chapter of the American Academy of Pediatrics (MDAAP) (the sponsor of the project) attended each presentation to answer questions related to the presentation or the PTDA.

Students were encouraged to take the PTDA home, discuss the form with their parent or guardian who also attended the presentation, and fill it out if the family wished. Regardless of whether or not they decided to sign the PTDA, students and their parent/guardian were asked to visit the MDAAP website 2 weeks after the presentation and complete a survey regarding their experience with driving and/or the PTDA. This survey asked a number of questions regarding teen driving and the PTDA. The group that completed the first survey was encouraged to fill out a follow-up survey 6 months later. The content of

these surveys was adapted from studies of teen driving risk factors by Ginsburg et al (2008, 2009). Gift cards were offered to encourage participation.

Response Analysis

Duplicate survey responses were deleted using the name and birth date on the surveys. Likewise, only the first parent/guardian response for each student was kept for analysis. Responses were compared between groups and between survey time points to determine significant changes in responses. Statistical comparison was done using two-tailed Fisher's exact test. In the subgroup of teens who completed both the initial and follow-up surveys, respondents were divided into groups according to whether or not they signed the PTDA. This response was compared with responses about crashing and risky driving behavior.

RESULTS

Presentations and Survey Collection

Table 1. Number of parent-teen driving agreement survey respondents

	Parents	Teens
Initial	100	121
Follow-up	58	63
Both	54	58

Attendance at the presentations at all 12 high schools between August and September 2009 totaled 2,876 teens. Unfortunately, one school's students were not offered the PTDA due to a scheduling conflict. Weekly email reminders were sent to attendees. One hundred twenty-one student responses (4%) were received for the initial survey. Survey respondents included 63 males and 58 females, with ages ranging from 15 to 17 (mean, 16.6). The numbers of teens and parents who completed the

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initial and follow-up surveys are shown in Table 1. Their responses are summarized in Table 2.

Table 2. Response summary by teens and parents between initial and follow-up surveys

Category	Teens		Parents	
	Initial (n=121)	Follow-up (n=65)	Initial (n=100)	Follow-up (n=58)
Signed/plan to sign PTDA	98 (81)	47 (72)	86 (86)	46 (79)
Believe PTDA will make/has made them a better driver¹	69 (70)	19 (40) ²	79 (92) ³	40 (87) ³
PTDA was a positive experience¹	-	30 (64)	-	43 (93) ³
Would feel safer if all teens on road signed PTDA	69 (57)	27 (42) ²	64 (64)	42 (72) ³
Teen has been in crash(es)⁴	8 (7)	11 (17) ²	12 (12)	10 (17)
Teen has received traffic ticket(s)	3 (2)	5 (8)	3 (3)	4 (7)
Risky driving behavior				
Use cell phone in car ⁵	23 (19)	20 (31)		
Regular speeding	23 (19)	20 (31)		
Driving unsupervised with minors ⁶	72 (60)	55 (85) ²		
>1 risky behavior	29 (24)	28 (43) ²		
Biggest risk in teen driving				
Speeding			10 (10)	7 (12)
Other teens in car			33 (33)	13 (22)
Use of cell phone			16 (16)	19 (33) ²
Lack of reflexes			15 (15)	11 (19)
Substance abuse			2 (2)	5 (9)
Lack of traffic knowledge			22 (22)	2 (3) ²
Other			2 (2)	1 (2)

¹Percentage of those reporting to sign PTDA. Only those answering that they signed the PTDA were prompted with these questions.

²Significant change ($p < 0.05$) from initial to follow-up survey

³Significant difference ($p < 0.05$) between parents and teen responses

⁴As driver

⁵"Uses cell phone in car" refers to teens responding that they would use cell phone when stopped at a light or

at any time.

⁶Admitted to driving with other minors with no parental supervision.

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Teens and parents reported a high rate of use of the PTDA on both the initial (81%/86%) and follow-up (72%/79%) surveys. Among the group of parents and teens who reported using the PTDA, the majority believed it was a positive experience (64% and 93%, respectively).

Initial vs. Follow-up

On the follow-up survey, teens were less likely than on the initial survey to report that the PTDA made them a better driver (70% vs. 40%, $p < 0.0005$) and that they would feel safer if teens signed PTDA before driving (57% vs. 42%, $p < 0.05$). Over the same period, teens were more likely to report having driven unsupervised with other minors (60% vs. 85%, $p < 0.001$), having two or more of the risky driving behaviors studied (24% vs. 43%, $p < 0.05$), and having been in a crash as the driver (7% vs. 17%, $p < 0.05$).

Comparing the parents' response on the initial and follow-up surveys, respondents became less likely to think lack of traffic knowledge was the biggest risk in teen driving (22% vs. 3%, $p < 0.005$) but more likely to think that use of a cell phone was the biggest risk (16% vs. 33%, $p < 0.05$).

Teens vs. Parents

In the group that reported using the PTDA in the initial survey, teens were less likely than parents to believe the PTDA would make them better drivers (70% vs. 92%, $p < 0.0005$). In the follow-up survey, teens were again less likely than parents to believe the PTDA would make them better drivers (40% vs. 87%, $p < 0.0001$) and were also less likely to report the PTDA was a positive experience (64% vs. 93%, $p < 0.001$).

Matched Teen Analysis: PTDA and Risky Teen Driving

Analysis of the 58 matched teen responses, divided by reported use of

Table 3. PTDA and reported teen risky driving

	Category	PTDA (n=42)	No PTDA (n=16)
Initial survey	>2 risky driving behaviors	10 (24)	4 (25)
	Received a ticket	1 (2)	1 (6)
	Have crashed as driver	2 (5)	1 (6)
Follow-up survey	>2 risky driving behaviors	17 (40)	6 (38)
	Received a ticket	3 (7)	2 (13)
	Have crashed as driver	8 (19)	2 (13)

the PTDA in the second survey, revealed no significant difference in responses related to risky driving behaviors, tickets, or crashing (Table 3).

DISCUSSION

This study presents attitudes and behaviors toward a school-based offering of PTDA. It also examines reported risky driving behaviors in teens' and parents' beliefs about risks in teen driving.

Risky Driving and the PTDA

Using a cell phone, speeding, and driving with teen passengers have been shown to increase crash risk (Chen et al., 2000; Kloeden et al., 1997; Strayer & Drews, 2004). Our study showed increases in all three of these behaviors, particularly driving with other teens unsupervised. There was no difference in the increase of these behaviors if the PTDA was used, but the number of teens in each group (42 PTDA, 16 non-PTDA) was very low. Reported crashes in both the teen and parent groups rose, with only the teen response change reaching statistical significance. Teen crash statistics for Howard County, Maryland, during the study period are not yet available but will be analyzed in the future to determine the overall impact of this program.

PTDA Attitudes and Behaviors

Reported use of the PTDA dropped between the initial and follow-up surveys, although this drop was not statistically significant. Attitudes toward the PTDA were less positive for teens than for parents. Teen attitudes dropped from the initial to the follow-up survey, whereas parents' PTDA beliefs remained the same. These findings may indicate that the initiation and enforcement of the PTDA is driven by more by parents than their teens.

Comparison with Checkpoints

Connecticut's Checkpoints® study, which uses a mail-based offering of the PTDA, was a statewide randomized control trial that showed PTDA use modestly decreased risky driving behavior and traffic citations. However, the PTDA users still showed an increase in risky driving behaviors and did not have different rates of crashing from the rate among non-users. Our study showed the same increase in teen risky driving over time but failed to show the PTDA's effect on risky driving or traffic citations. However, since our study was based on lower numbers of participants and convenience sampling, comparison of outcomes is severely limited.

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Another interesting finding in the Checkpoints® study is that teen and parent knowledge of the exact restrictions set on the teen drivers was widely disparate. Parents were much more likely than teens to report restrictions, regardless of intervention. This difference is interesting when combined with our findings showing differences in teen and parent attitudes toward the PTDA. Survey responses revealed that teens did not believe in the PTDA's effectiveness, particularly in the follow-up study. This disconnect between parent and teen attitudes and behaviors toward the PTDA undermines the principle that the contract increases communication. A possible intervention to circumvent this effect would include periodic review of expectations/perceptions between both parties (including at signing), a stipulation that could be included in the contract itself. Future studies could better evaluate where and why the breakdowns in perceptions occur.

Limitations

This study has some important limitations. It was a prospective convenience survey based on self-report by teen drivers and parents. Only 4% of school program participants responded in the initial phase and 3% in the follow-up survey. Therefore, as is the case in many convenience sample studies, results may be less reflective of actual knowledge, attitudes, and behaviors toward the PTDA. Moreover, since the presentations were required only for students wishing to park on school grounds, teens who do not own a car or do not need to drive to school were not exposed to the PTDA.

In addition to the low response rate, our survey questions were not validated or checked for reliability prior to the study. However, the themes for teen driving risks presented in the survey are well accepted.

Another possible limitation is that survey respondents may have been

motivated to provide responses perceived as correct or not self-implicating regarding their abilities as parents or teen drivers. However, a reasonable proportion of responses indicated risky driving behaviors and self-reported crashes. This limitation is similar to that in the Checkpoints® study.

CONCLUSIONS AND FUTURE DIRECTIONS

In Howard County, Maryland, a partnership of schools, the police department, and the community led to an innovative safe-driving program that mandates the presence of teens and their parents at a school presentation as a prerequisite for the teens to be able to park on campus. At the beginning of the second year of this program, it was modified to highlight a parent-teen driving agreement similar to that implemented in the Checkpoints® program based in Connecticut.

Our study revealed evidence of positive attitudes toward the PTDA but increases in risky driving behaviors in teens regardless of whether or not they signed the PTDA. Future studies can use comparative county teen crash statistics to analyze the effectiveness of this intervention during the study period. A validated survey tool and improved survey compliance are required for future studies to better understand knowledge, attitudes, and behaviors toward teen driving risks. The PTDA and video will be revised for the next year's version to better address speeding, cell phone use, and driving with other teens in the car—behaviors that increased during this study and are known to increase crash risk. The disparity between parent and teen attitudes toward the PTDA mirrors the differing perception of driver restrictions found in the Checkpoints® study. This phenomenon may point toward barriers in parent-teen communication

that cannot be addressed with the PTDA in its current form.

Acknowledgments

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Appendix A: Parent–Teen Driving Agreement (PTDA)**Parent–Teen Driving Agreement**

I, _____, will drive carefully and cautiously and will be courteous to other drivers, bicyclists, and pedestrians at all times.

I promise that I will obey all the rules of the road.

- Always wear a seat belt and make all my passengers buckle up.
- Obey all traffic lights, stop signs, other street signs, and road markings.
- Stay within the speed limit and drive safely.
- Never use the car to race or to try to impress others.
- Never give rides to hitchhikers.

I promise that I will make sure I can stay focused on driving.

- Drive with both hands on the wheel.
- Never eat, drink, or use a cell phone while I drive.
- Drive only when I am alert and in emotional control.
- Call my parents for a ride home if I am impaired in any way that interferes with my ability to drive safely.

I promise that I will respect laws about drugs and alcohol.

- Drive only when I am alcohol and drug free.
- Never allow any alcohol or illegal drugs in the car.
- Be a passenger only with drivers who are alcohol and drug free.

I promise that I will be a responsible driver.

- Drive only when I have permission to use the car and I will not let anyone else drive the car unless I have permission.
- Drive someone else's car only if I have parental permission.
- Pay for all traffic citations or parking tickets.
- Complete my family responsibilities and maintain good grades at school as listed here:

- Contribute to the costs of gasoline, maintenance, and insurance as listed here:

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Appendix A: Parent-Teen Driving Agreement (PTDA) continued

I agree to the following restrictions, but understand that these restrictions will be modified by my parents as I get more driving experience and demonstrate that I am a responsible driver.

For the next _____ months, I will not drive after _____ pm.

For the next _____ months, I will not transport more than _____ teen passengers (unless I am supervised by a responsible adult).

For the next _____ months, I won't adjust the stereo or air conditioning/heater while the car is moving.

For the next _____ months, I will not drive in bad weather.

I understand that I am not permitted to drive to off-limit locations or on roads and highways as listed here:

I agree to follow all the rules and restrictions in this contract. I understand that my parents will impose penalties (see below), including removal of my driving privileges, if I violate the contract. I also understand that my parents will allow me greater driving privileges as I become more experienced and as I demonstrate that I am always a safe and responsible driver.

Penalties for contract violations

Drove after drinking alcohol or using drugs
No driving for _____ months.

Got ticket for speeding or moving violation
No driving for _____ months.

Drove after night driving curfew
No driving for _____ weeks/months.

Drove too many passengers
No driving for _____ weeks/months.

Broke promise about seat belts (self and others)
No driving for _____ weeks/months.

Drove on a road or to an area that is off-limits
No driving for _____ weeks/months.

Signatures

Driver _____ Date _____

Parent promise: I also agree to drive safely and to be an excellent role model.

Parent (or guardian) _____ Date _____

Parent (or guardian) _____ Date _____

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College Student Utilization of Designated Drivers After Drug or Alcohol Use

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The National Highway Traffic Safety Administration's Fatality Reporting System has reported a steady decline in fatal crashes among young drivers particularly owing to changes in minimum purchasing ages for alcohol. The per capita death rate of fatally injured 16-20 year-old passenger vehicle drivers with a positive BAC declined by 54 % between 1982 and 1995 and by 31% between 1995 and 2008 (Longthorne, Subramanian, & Chen, 2010). Despite the fact that the death rate has decreased in the last two decades, almost 30 people in the United States die each day from motor vehicle crashes that involve an alcohol-impaired driver (US DOT, NHTSA, 2009). Hingson, Heeren, Zakocs, Kopstein, and Wechsler (2002) performed extensive analysis using multiple data sources to estimate the annual number alcohol-related deaths and injuries among 18-24 year old college students in the United States. The results of the study concluded that over 1,400 students enrolled in two- and four -year colleges died from alcohol- related unintentional injuries, including motor vehicle crashes. Over two million of the eight million college students in the United States drove under the influence of alcohol and over three million rode with a drinking driver, while over 500,000 full-time four -year college students were unintentionally injured under the influence of alcohol (Thompson & Richardson, 2002).

Since the late 1980s, the practice of using a "designated driver" has become a well-known prevention strategy for Driving While Impaired (DWI). The basic premise of the strategy is that when a group of friends is in a drinking situation, one member

of the group will abstain from drinking in order to be the sober driver (Barr & MacKinnon, 1998). Having a designated driver is now seen as an effective strategy to reduce alcohol-related car crashes and deaths particularly among college students (DeJong & Winsten, 1999). Researchers report that the designated driver may not always abstain from alcohol but might instead limit drinking or may even be the least intoxicated member of the group (Timmerman, Geller, Glindemann, & Fournier, 2003; Knight, Glascoff & Rikard, 1993; Glascoff, Knight & Jenkins, 1994). Other studies of college students have suggested those in the group who are drinking may drink more knowing that someone will be looking out for their safe ride home (Ditter et al., 2005).

While use of a designated driver to reduce the risks of impaired driving from alcohol is well documented, the literature related to the use of designated driver to reduce the risks of impaired driving from drug use is limited. Dennis (2010) outlined four issues associated with alcohol and/or drug use: driving related impairment, actual driving impairment, risk of fatal crashes, and crash responsibility. Research on DWI from drugs is complicated by the fact there are a great variety in the types of drugs that may be commonly used and in the effects of those drugs. Walsh, Werstraete, Huestis, and Morland (2008) reported that six classes of drugs (in addition to alcohol) were frequently observed in DUI arrests and among motor vehicle crash victims: cannabis, benzodiazepines and other tranquilizing agents, opioids, stimulants (such as, amphetamine, cocaine, methamphetamine, and

MDMA), antidepressants and antihistamines. Dennis (2010) has noted that the effects of these various types of drugs can be different ranging from euphoria to sedation to altered mental state. Testing for impairment from drug use is more difficult. A recent report conducted by the Canadian Centre on Substance Abuse of more than 14,000 driver fatalities between the years 2000 and 2006 found that 33% of drivers tested positive for at least one drug and 38% tested positive for alcohol. The most commonly detected drugs were depressants, cannabis, stimulants, and narcotic analgesics (opioids) (Beirness, Beasley, Mayhew, LaCavalier, & Boase, 2010). A second study reported involved a random traffic stop between the hours of 9:00 PM and 3:00 AM on Wednesday through Saturday nights in three British Columbia cities where researchers simultaneously collected data on both drug and alcohol use (Beirness & Beasley, 2010). Of the 1,533 vehicles selected, 89% of drivers voluntarily provided a breath sample and 78% provided an oral fluid sample. Of those who provided samples, 10.4% tested positive for drug use and 8.1% had been drinking, revealing that drugs were more commonly used than alcohol among nighttime drivers in this study (Beirness & Beasley, 2010). Beirness and Beasley (2010) found that cannabis and cocaine were the most prevalent substances found when testing nighttime drivers for substance use. Previous research using laboratory testing found that cannabis use may acutely impair several driving-related skills, with impairment increasing as dosage increases (Sewell, Poling, & Sofuoglu, 2009). Scientists have speculated that it is virtually impossible to agree upon

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the concentration of a psychoactive substance in the blood that leads to impairment in most people due to tolerance effects, differences in smoking techniques, and different concentrations absorbed of an unregulated substance (Jones, Holmgren, & Kugelberg, 2008). Mixing cannabis with alcohol is much more likely to impair driving than either drug used alone (Sewell, Poling, & Sofuoglu, 2009; Fergusson, Horwood, & Boden, 2008). Researchers have noted that increasing efforts to enforce rules and legal sanctions related to alcohol use while driving and greater public disapproval for drinking and driving parallel trends of increased marijuana use while driving (Licata, Verri, & Beduschi, 2005). Given the increased prevalence of cannabis use, nineteen states have laws that address the presence of a prohibited substance on or in the driver's body while he/she is in control of a motor vehicle (GHSA, 2011). While there are standards and testing methods for blood alcohol levels (i.e., breathalyzers and blood tests), there are no non-medical testing methods for drug concentrations. In the absence of testing standards for drug concentrations, forty-seven states, the District of Columbia, and the Northern Mariana Islands have Drug Evaluation Classification (DEC) programs that train law enforcement officers to better identify indicators of impairment (GHSA, 2011). Until standardized mechanisms for detecting drug induced impairment and enforcement of zero-tolerance legislation improves, continued study is needed in the area of utilization of designated drivers for drug and alcohol use and public health promotion of the role of a designated driver.

The purpose of the study was to collect preliminary data on whether college students use strategy of designating driver following use of drugs similar to that of designating a driver following consumption of alcohol

and the extent to which designated drivers may drink alcohol or use drugs while serving in that role. A more in-depth study on being a designated driver following drug use is planned.

METHODS

Survey Questions

Each year the Department of Health Education and Promotion at large southeastern university conducts an on-line research study on a variety of health-related topics. Respondents to the study come from a required personal health course offered by the department. Departmental faculty may submit questions on for the study on a limited basis. Responses to common demographic questions are provided to participating researchers along with responses to their questions. There were six questions related to being or using a designated driver. The questions were:

1. Have you ever used a designated driver?
2. When you used a designated driver how often did your designated driver have something to drink?
3. Have you ever used a designated driver who may have been using some form of drug other than alcohol?
4. Have you ever been a designated driver?
5. Have you ever been a designated driver for someone else who has been using a drug or drugs other than alcohol?

When you have been a designated driver, how often did you drink while you were the designated driver?

The questions were reviewed for face validity by a former health specialist for the state department of public instruction who was responsible for health education and driver education and by the current senior health education and community relations officer for the state department of public instruction who

was instrumental in developing the state's driver education curriculum and continues to oversee that section of the DPI. A college professor not associated with the study and proficient in test construction also reviewed the questions for face validity. All three agreed that the questions appear to measure what they are intended to measure. The data were analyzed using Predictive Analytic SoftWare Version 18. (Predictive Analytics Software (PASW) Statistics v. 18, 2007, SPSS Inc., Chicago, IL).

Sample

In fall 2007, an invitation to participate in the on-line survey was sent to all students registered for the course and an announcement for the study was posted on the Blackboard@ site for the course. Participation was voluntary and anonymous. To insure anonymity, a coupon (receipt) printed out at the end of survey. The student would then take the coupon to his/her instructor as evidence of completion of the survey and to request extra credit.

The protocol for the on-line survey randomly directed one-half of those who responded to the invitation to participate to a survey that contained the questions for this study. The other half was directed to a non-related study. In the Fall 2007 semester there were 2214 students enrolled in the personal health course meaning that 1107 students could possibly have answered this survey. Seven hundred and twenty students ages 18-24 responded to the questions on designated driving for a response rate of 65%.

Participants

Of the 720 students aged 18-24 who answered the survey, 65% were female and 35% were male. In terms of race, 76% self-identified as white, 13% as black, 3% as Hispanic, 3% as Asian, less than 1% as Native American, and 4% as other. Sixty-two

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percent of the survey respondents indicated they reside in a dorm, less than 1% in a fraternity or sorority house, 36% in off-campus housing, and 4% at home with their parents.

RESULTS

Results

More than half (64%) of the sample reported usage of a designated driver. A chi-square test of independence was calculated comparing the frequency of utilization of designated drivers for males and females. A significant interaction was found ($X^2(1)=3.070, p<.05$). Females were more likely to use a designated driver than males. To compound the issue of safety, not only are males less likely to use designated drivers, they were also significantly more likely than females to willingly use a designated driver that had been using drugs ($X^2(2)=15.111, p<.001$).

Seventy percent of the participants indicated they had previously served as a designated driver and 19.2% of those serving as designated drivers admitted to using alcohol while serving as the designated driver. A chi-square test of independence was calculated comparing gender differences in consuming alcohol while serving as a designated driver and no significant relationship was found ($X^2(4)=2.702, p>.05$). Over one-half of students (52.9%) reported serving as a designated driver for someone using a drug other than alcohol. There was no statistical significance was found when using a chi-square test for independence ($X^2(2)=.128, p>.209$) when comparing gender differences.

Limitations

While this study offers some insight on the use of designated drivers on one college campus, the results cannot and should not be generalized to the college population. The sample lacked diversity in race and more than half of the sample was

below the legal drinking age. Future research would need to be conducted with a more racially diverse sample and with more participants above the age of 21.

The questions asked were specifically to assess the utilization of designated drivers; future research should compare the use of designated drivers with patterns of consumption of alcohol or use of other drugs. This study asked six simple questions developed under circumstances of face validity only. The development of valid and reliable instruments to assess the utilization of designated drivers and patterns of drug and alcohol consumption are indicated.

DISCUSSION

The results of this study indicate that while college students report using a designated driver after consuming alcohol and after using drugs, the designated driver may have consumed alcohol or used drugs also. A common understanding of the term "designated driver" is that the person in that role will abstain from impairing substances, yet students in this survey indicated a willingness to ride in a car driven by a person who might be impaired. This study did not explore the students' assessment of impairment, i.e., while the questions asked if the designated driver had consumed alcohol, it did not ask if the students willingly rode in a car with a driver they deemed impaired.

Over 50% of the sample reported serving as a designated driver for someone who had used a drug other than alcohol. Future research is indicated to explore circumstances surrounding the use of a designated driver following drug use. Common circumstances for using a designated driver after alcohol use are well known. One example might be where bars and other establishments that serve alcohol offer free non-alcoholic

beverages to an individual who is willing to be identified as the designated driver by a hand stamp or bracelet. Fraternities, sororities, and other campus organizations often participate in programs where individuals take turns on a rotating basis to be the abstinent designated driver. In other words, the designated driver is determined before drinking takes place. Further study is required to determine if similar decisions are made before a group uses drugs.

While the consumption of alcohol is illegal for individuals under the age of 21, alcohol is a legal substance that can be purchased and used. Bars, restaurants, social clubs, etc. serve alcohol and can openly promote the use of designated drivers, advise against driving while impaired, offer to call a taxi cab for impaired individuals, etc. Most impairing drugs (other than alcohol) are illegal. Individuals do not use these drugs in a public setting. A discussion of designating a driver for an individual or group who is/are impaired by an illegal drug could be construed as condoning drug use. Nevertheless, determining the circumstances under which a driver is designated would be a helpful in planning programs discussing safety and the prevention of impaired driving. Further information that would be helpful might include knowing the type of drugs commonly used that indicate the need for a designated driver, the setting for drug use during which a driver is designated, and whether the use of a designated driver is planned before the use of drugs by a group.

The role of the designated driver and the consequences of assuming this role while impaired should also be promoted, especially among the college-age population. Until the detection and enforcement of legal sanctions for driving while impaired by drugs increases, driver education teachers must promote this social norm of not using illegal drugs and

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when impaired, regardless of alcohol, illegal, or prescription drugs, using an abstinent designated driver.

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