The Chronicle of the American Driver and Traffic Safety Education Association

Publication Guidelines
Articles submitted for The Chronicle are subject to peer review and should conform to the American Psychological Association style. The basic reference for style is 1983 Publication Manual of the American Psychological Association (3rd ed.). Authors are responsible for adherence to style. Two copies of typed manuscript are required for peer review. A professional photo is requested.   Articles may be reprinted with credits to the author and The Chronicle of ADTSEA.

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ADTSEA Executive Director Comments

Conference '02

The 46th annual ADTSEA National Conference was held at the Doubletree Hotel in Overland Park, KS from August 4 – 7, 2002. It was a huge success. From the opening session, "The Art of Taking Care of Yourself," with Michael Scott Karpovich to the closing banquet, those who attended learned new content and teaching methods, explored the latest traffic safety research and enjoyed renewing contacts with old friends and making new ones. The Kansas Driver and Safety Education Association provided excellent coordination and many activities for attendees and their families. Many thanks to KDSEA for its dedication and service.

Dr. "Brad" Bradshaw

Some important content areas presented included graduated driver licensing, new state driver education curricula, motorcycle safety, impaired driving, new vehicle technology, the physics of a crash, NHTSA driver education update and techniques for on-line driver education. Attendees learned new teaching strategies and methodology for in-car instruction, using multi-media in the classroom, driver education teacher preparation, working with the special needs student, energizing activities for both classroom and in-car teaching and how to effectively combat impaired driving.

Four of our corporate members deserve special recognition for their "going the extra mile" for our conference participants. Ford Motor Company, Raydon Corporation and State Farm Insurance Companies each provided a luncheon for the participants. And, General Motors Corporation provided the conference bags/cases for members attending. Many, many thanks for this strong and continued support of ADTSEA and driver education.

Special congratulations are in order for both the Kaywood Award recipient and the ADTSEA National Teacher of the Year. Frederik R. Mottola of Connecticut received the 2002 Richard Kaywood Award. Fred was involved in teacher preparation at Southern Connecticut University and more recently with the National Institute for Driver Behavior. The 2002 Teacher of Year is Lindsay Townsend of Vermont. Townsend has been teaching driver education for some 25 years. Other T.O.Y. finalists included Marty Rossini of Minnesota and John Costa of Vermont. A debt of gratitude continues for Prentice Hall School and their continued sponsorship of the Kaywood Award. And we thank first year sponsor, AAA (American Automobile Association), for their support of the Teacher of the Year Program.

The 2003 National Conference will be held in Charlotte, NC at the Hilton-University Place Hotel from July 27 – 30. Start making your plans to attend, y'all!

... Support our Chronicle *advertisers as they support our organization and driver and traffic safety education efforts...*

ADTSEA President's Message

Greetings From Georgia Ya'll

Brad really likes it when he hears someone say, "ya'll". We are well into the school year. I trust your year is going well. For many the ADTSEA conference in Kansas City is becoming a memory. For me, one of the best parts of our ADTSEA conferences is the memories – memories and friendships that have accumulated over time through previous conferences. Over the many years we have developed many bonds of close and casual relationships. I cherish the memories of the places we've been. I thoroughly enjoy seeing different parts of our beautiful country. Each place has its' own personality, beauty, and notoriety, much like the people we meet throughout this great country.

Kal Killiher

I eagerly anticipate seeing my friends and meeting new friends at each conference. I truly miss the friends who have other obligations and can not attend. You are a great group of people and it is an honor to serve as your president.

The other part of the conference I truly enjoy is what I learn from the presentations and through networking with new and old friends alike. Often I am amazed at what I learn. I thought I knew about seat belts. Surely as driver education professionals we make every effort to be informed on those life saving devices. Studies from the Level 1 Trauma Hospitals taught me even more.

I believe the Bishop Forum did honor to Dick Bishop who was a very forward thinking individual. I feel he would have been thrilled to learn about the technology available and on the way to a showroom near you. We must keep up and prepare our students to use that technology.

I hope you enjoyed and learned a great deal at the conference. The question is how are we utilizing the knowledge we gained? If we are teaching or supervising, have we incorporated what we learned at the conference? Did we fold up the program and our notes and stick them in a file cabinet, or are we sharing our knowledge?

Obviously we want our students to benefit from our knowledge and experiences. One way is to implement what we have learned at the ADTSEA conference into our daily lessons. However, each of us can have a broader influence if we share the conference experience with our colleagues at home.

We all know people in the field of driver education who do not attend our conferences. I do hope you share the experiences and information you gained at the ADTSEA conference. You may do it informally through staff development, or even at a regional or state conference. When we improve each other we improve our students, as well as our profession.

Share the memories, the fun, and camaraderie. If you share the conference your colleagues may be so impressed by your enthusiasm that I may get to meet them in Charlotte at the next ADTSEA conference.

Keep up the good work!

SPEED SHATTERS LIFE

Beyond the Norm with Instructor Preparation:
Observational Experiences

W.E. Van Tassel and M.E. Dennis
Safety Education Program, Texas A&M University

***Note:** This article is the second in a series of three which address instructors' acquisition and use of driving-related experiences to enhance their students' learning. It will discuss opportunities for driver education instructors to gain a variety of relevant experiences through observing driving-related events. The first discussed special topics, and the third will conclude with behind-the-wheel activities.*

As the "baby boom echo" continues to result in more youth reaching legal driving age, instructor development will strive to keep pace (U.S. Census Bureau, 2002). Throughout the U.S., instructors are being prepared to teach new drivers to safely enter the highway transportation system. This article series aims to suggest ways to enhance instructors' abilities to connect with driver education students to ultimately result in safer new drivers.

Substantial opportunity exists for instructors to engage novice drivers through sharing their experiences regarding driving. Certainly, those driving events that instructors experience randomly can make for interesting discussions. It is possible for instructors to experience substantially more events, in a safe manner, that can be shared for the benefit of their students. Such events could include:

Prevention of Impaired Driving

Certainly, impaired driving is a very important topic to be covered with new drivers. However, many instructors have a limited repertoire of discussion points to address this danger. Instructors who attend events such as the following should be able to develop a much broader ability to cover this topic with the necessary emphasis:

- Victim Impact Panels- These panels involve victims of impaired driving sharing their stories and experiences with DWI offenders. They are designed to educate offenders and involve highly emotional content to seek to have them change their drinking/driving habits. VIPs are hosted by organizations such as MADD, RID and local probation departments (Fors & Rojek, 1999; Shinar & Compton, 1995);

- Alcohol Offender Education Classes- These are multi-hour intervention courses for alcohol offenses, including Minor in Possession and DWI offenses, which have an educational rather than punitive emphasis (Texas Commission on Alcohol and Drug Abuse, 2001a; Texas Commission on Alcohol and Drug Abuse, 2001b);

- Mock DWI Crashes- Such "crashes" are hosted by high schools and have a full-scale simulated alcohol-involved "fatal" crash, which involves students, parents and community resources, including police, EMS, emergency helicopter transport (Every 15 Minutes, 2002);

- "Drink-Ins"- These are actual impaired driving demonstrations conducted under controlled conditions on closed courses, using sober and drinking drivers, and providing a summary of effects on driving behavior.

Such events are held regularly, so instructors should not find it too difficult to attend, even if they are unable to be present for the entire event (Ex. Some offender education classes are 12 hours or longer). It is likely that students could be quite captivated to hear about these events, giving instructors new opportunities to communicate the all-important "don't drink and drive" message.

Traffic Safety Organizational Events

Hopefully, instructors will already be involved with the organizations that support them in their field. Attending events such as the following can serve to further develop instructors as they seek to connect with their students:
Instructors can obtain information about such events from a number of sources,
- Conferences- state chapters of ADTSEA, traffic safety forums, impaired driving prevention meetings, teen safety conferences, state safety organization meetings (ADTSEA, 2002; Texas Transportation Institute, 2002; National Student Safety Program,

2002);

- Organizational Events- MADD candlelight vigils, organizational fundraisers, membership meetings, local coalition promotions, school-based safety messages (Ex. Prom and Spring Break emphases).

Most safety-related organizations are very receptive to persons interested in learning more about and participating in the organization's events. Instructors will find themselves welcomed and appreciated.

Additional Observational Opportunities

A variety of other opportunities exist to observe other driving safety-related events. While they may vary in frequency of occurrence, each can provide impactful information for instructors:

·Focus Groups- novice drivers, parents of novice drivers, driver education instructors;

·Traffic Court- observe a few cases, studying the procedures, personnel involved and types of penalties assessed;

·Child Safety Seat Clinics- watch and assist in surveys and correct placement and mounting of child safety seats;

·Driving Skill Competitions- 18-wheeler "rodeos," low speed driving competitions (Sports Car Club of America, 2002), manufacturer "ride and drives."

New drivers will likely be highly interested in hearing about their instructors' experiences with these events. The resulting greater engagement of students could facilitate improved interaction between the instructor and the entire class.

Instructors can obtain information about such events from a number of sources, including:
- Local probation departments

Social Norms and Social Marketing in Driver Education and Traffic Safety

By

Dale O. Ritzel, Ph.D., Professor, Health Education
Director, Safety Center, Southern Illinois University

Social norms are people's beliefs about the attitudes and behaviors that are normal, acceptable, or even expected in a particular social context. In many situations, people's perception of these norms will greatly influence their behavior.

Social norms theory provides a model for understanding human behavior that has important implications for driver education and traffic safety. It states that our behavior is influenced by incorrect perceptions of how other members of our social groups think and act. For example, an individual may overestimate the permissiveness of peer attitudes or behavior with respect to alcohol or underestimate the extent to which peers engage in safe behavior.

The theory predicts that over estimations of problem behavior will increase these problem behaviors, while under estimations of healthy behaviors discourage individuals from engaging in them. Thus, correcting these misperceptions is likely to result in decreased drinking or increased prevalence of safe, protective behaviors.

These assumptions have been validated by extensive research on student drinking and by interventions to promote safe drinking and abstinence on college campuses. Other social norms interventions have been developed to reduce cigarette smoking, prevent sexual assault, improve academic climate, and reduce prejudicial behavior.

Social norms interventions focus on peer influences, which have been found to be more influential in shaping individual behavior than biological, personality, familial, religious, cultural and other influences (Berkowitz & Perkins, 1986a; Perkins, in-press). These peer influences are based more on what we think our peers believe or do (the "perceived norm") than on their real beliefs or actions (the "actual norm").

This misperception and the effect it has on individuals provide the basis for the social norms approach to prevention. By presenting correct information about peer group norms, perceived peer pressure is reduced and individuals are more likely to express pre-existing attitudes and beliefs that are safe-promoting.

Therefore, when people misperceive the norms of their group—that is, when they inaccurately think an attitude or behavior is more (or less) common than is actually the case—they may choose to engage in behaviors that are in sync with those false norms. For example, many studies have shown that high school and college students overestimate how much their peers drink. Prevention experts have argued that this misperception of the norm drives greater alcohol consumption.

Student perceptions of drinking norms are part of that school environment, and correcting student misperceptions about their peers' drinking is an important part of ensuring that inaccurate perceptions about the environmental are not negatively influencing student behavior. A growing body of evidence suggests that providing information to students about accurate drinking norms is associated with decreased drinking on high school and college campuses.

Individuals may is perceive their social environments in a number of ways that may affect their behavior. For example, someone may incorrectly think that he or she is in the majority when actually they are in the minority (false consensus) or believe that they are in the minority when they are actually in the majority (pluralistic ignorance). Each of these misperceptions operates in a different way and may affect behavior differently.

False consensus is the incorrect belief that others are like oneself when they are not (Ross, Greene, & House, 1977). For example, heavy drinkers may think that most other students are heavy drinkers when they are not or prejudiced individuals may think that they speak for the group when they do not.

The false consensus misperception functions to maintain the denial by an individual that his or her attitudes or behavior are problematic or unusual. Heavy drinkers have a personal motivation for believing in exaggerated drinking norms because this misperception allows them to justify their abusive drinking.

The most common misperception occurs when the majority of students (who drink moderately) falsely assume that most other students drink more than they really do (i.e., more than themselves.) This phenomenon is referred to as pluralistic ignorance (Miller & McFarland, 1987, 1991). Social norms interventions correct pluralistic ignorance by informing the majority that a group or community hold these misperceptions.

This provides permission to act on values of moderation or non-use by reducing perceived peer pressure to drink, bringing behavior more closely in line with personal attitudes.

Misperceptions are formed when individuals observe a minority of students engaging in highly visible problem behavior (such as public drunkenness), and remember it more than responsible behavior that is common but less visible (Perkins, 1997). These misperceptions are assumed to be normative and are spread in "public conversation" by all members of the community (Perkins, 1997).

Research suggests that the meaning and extent of these misperceptions may vary among individuals with different drinking styles (Pollard, et al., 2000) and that correcting misperceptions may have different effects on individuals at different stages of change (Werch et al., 2000). An interesting phenomenon is that misperceptions are greater with increasing social distance. Thus, most individuals perceive that friends drink more than they do, members of their living unit drink more than their friends, and students in general drink more than members of one's living unit.

Perkins and Wechsler (1996) found that the perception of campus drinking climate explained more of the variance in drinking behavior than any other variable. Scher et al. (2000) studied fraternity drinking patterns and found that misperceptions accounted for all differences in Greek drinking behavior across class years. Thombs (1999) tested four different models of driving while intoxicated (DWI) or driving with someone else who was intoxicated (RWID), and found that misperceptions in DWI and RWID had the greatest predictive value in explaining both

DWI and RWID.

Clapp and McDonnell (2000) found that misperceptions predicted both drinking behavior and drinking-related problems. Thombs, Wolcott and Farkash (1997) found that the best predictors of alcohol use were misperceptions of alcohol use and social climate. Prentice and Miller (1993) conducted a study of college freshmen in

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which men were found to adjust their drinking over time to fit the misperceived norm.

Successful Interventions Utilizing the Social Norms Approach

Social norms theory can be used to develop interventions that focus on the three levels of prevention specified as universal, selective, and indicated (Berkowitz, 1997). Universal prevention is directed at all members of the population in question without identifying those at risk of abuse. Selective prevention is directed at particular members of a group who are at risk for a behavior.

Indicated prevention is directed at particular individuals who already display signs of the problem. Interventions at all three levels of prevention can be combined and intersected to create a comprehensive program which is theoretically based and which has mutually reinforcing program elements.

Berkowitz (2000) suggested that there are certain questions that must be answered in order for the social norms model to be applied effectively:

What misperceptions exist with respect to the attitude or behavior in question?;

Are there over or under-estimations of attitudes and/or behavior?;

What is the meaning and function of misperceptions for individuals and groups?;

Do the majority of individuals in a group or community hold these misperceptions?;

Does the target group function as a group with respect to the behavior in question? That is, do the individuals in the group influence each other's behavior?;

What is the hypothesized effect of these misperceptions?;

What changes are predicted if protective behaviors that already exist in the population are supported and increased?

Social Norms Marketing Campaigns

A number of campuses have successfully reduced drinking by developing campus-wide electronic and/or print media campaigns that promote accurate, healthy norms for drinking and non-use (Fabiano et al 1999, Glider et al, 2001; Haines, 1996; Johannesen, et al, 1999; Perkins & Craig, in-press). These campaigns utilize social marketing techniques to deliver messages about social norms and are thus described as "social norms marketing campaigns." It is my contention that the same campaigns can be utilized in a high school and its community setting too.

Perkins and Craig (in-press) recently completed the most thorough and comprehensive evaluation of a social norms marketing campaign to date. Their intervention combined a standard poster campaign with electronic media, an interactive web site, class projects that developed parts of the campaign, and teacher training for curriculum infusion. The intervention began in 1996 at a college with higher than average alcohol use. A number of evaluations were conducted to determine the effectiveness of the campaign. Results included: a 21% reduction in drinking increases during the freshman year; a campus-wide decrease in binge drinking during the previous week from 56% to 46%; and successive decreases in alcohol-related arrests over a four-year time period. Corresponding reductions were also found in misperceptions of use, heavy drinking at a party, and negative consequences associated with alcohol use.

Surveys conducted at three time periods over a five-year period indicate successive linear decreases in all of these measures over time.

While social norms marketing campaigns are directed at all students through widely disseminated campus media, targeted interventions focus on members of a particular group, such as first-year students, social organizations members, athletes, or members of an academic class. Misperceptions of close friends' behavior are highly correlated with personal use, a finding that has led to the development of selective social norms interventions on a number of schools. In most selective interventions, information about the actual norms for the group are provided in small interactive group discussions, workshops, or academic classes.

These examples provide qualified support for the effectiveness of social norms interventions in the context of selective preventive interventions directed at particular groups of at-risk students. Targeted social norms interventions such as these appear to be more effective when the normative data is tailored to the group in question and when it is presented in more extended, interactive formats. However, it is extremely important to determine the most salient and relevant influences on the target group before designing an intervention to make sure that the norms being corrected are influential. These influences may differ by gender and participation in other activities such as athletics and social group.

Johannesesen (1999) and Haines (1996) reported in detail on the developmental phases of a social norms campaign, which Fabiano (1999) has condensed into six stages:

e   assessment (collection of data),

e   selection of the normative message

e   testing the message with the target group

e   selecting the normative delivery strategy

e   dosage of the message

e   evaluation of the effectiveness of the message.

Berkowitz (2001) outlined the types of mistakes it is possible to make at any of these stages of a campaign. For example, students are likely to initially question the validity of survey data because of misperceptions they hold, but will rethink their assumptions if the data are reliable and presented in an open manner.

In contrast, unreliable or confusing survey data will be rejected by students and in the end undermine the campaign and reinforce these misperceptions. In addition, media that: is confusing or unappealing to students, is presented by unreliable sources, or which is not presented in sufficient doses, will not have an impact. Similarly, if key stakeholders do not support the campaign, they can undermine it through negative comments and criticisms.

These findings suggest that when social norms campaigns are unsuccessful it is important to assess what went wrong and why, rather than to assume that the model is flawed. It is also important to determine if the questions for successful implementation of the model outlined above were answered adequately.

Social Norms Dos and Don'ts

Do your homework. You will need to do some research to determine your school norms, where your students receive their information (school newspaper, campus radio, fliers, posters, etc.), and what images they identify with.

Messages should be positive (promote achievable behaviors), inclusive (include all elements of target population), and empowering (affirm/encourage rather than scare and blame) (Haines, 1996).

Tell the truth and provide the sources for the statistics you use.

Use normative behavior (that which more than 50 percent do). Focus on normalizing protective behaviors, not on de-normalizing negative behaviors.

Start with where you are. If your school norm is five drinks or fewer, start there and adjust your messages as that number decreases.

Use one main message (i.e., "Most students drink four or fewer when they party."). A few supporting messages can help, but always tie them to your main message.

Feedback from students is critical. Use student focus groups to determine which

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messages are most memorable, and most favorably received.

Make ads visually appealing. Photographs of students tend to work well.

Match the photo to the message. A photo of a trashed after-party residence hall room will seem incongruous with a "most students drink moderately" message.

Don't overload your media with text. Newspaper ads should be kept simple. Posters that will stay up in places where students can read them can accommodate more information, but be judicious.

Dose the message. Use multiple forms of media. Newspaper ads, radio spots, posters, fliers, keychains, pins, cups, folders, bookmarks, t-shirts, and hats are all potential places for your message.

Realize that every school is different, and each will require a slightly (or radically) different approach. Messages and media that work well on a high school with high newspaper readership may differ from those that work on another high school with a local popular radio station.

Don't expect immediate results. Believability and recognition comes with time.

Do take a look at the Centers for Disease Control and Prevention's publication "Simply Put" at http://www.cdc.gov/od/oc/simpput.pdf . This document explains effective ways to make posters and fliers containing health messages.

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Motor Vehicle Crashes and Sleep Deprivation

by

George L White, Jr., Ph.D., MSPH, Professor and Director, Public Health Program,
Department of Preventive Medicine University of Utah,
Martin J. Spellicy, MS Ed., M Ed., Director, Alabama Traffic Safety Center
University of Montevallo , and
Aaron J. Portmann, MSPH, Clinical Research Coordinator School of Medicine
University of Utah

INTRODUCTION

In the past few decades, motor vehicle crashes, as a result of drowsy driving, have become a major public health issue. Much has been written supporting a relationship between sleep deprivation and automobile crashes.[1-9] The National Highway Traffic Safety Administration (NHTSA) recently reported that 56,000 crashes annually were reported by officials at the scene to be related to sleepiness.[1] These are certainly conservative estimates based on the difficulty in determining sleepiness after a crash has occurred.

Evidence for, and identification of, risk factors for sleep related crashes is limited. However, there are some common risk factors and populations at increased risk that have been reported in several articles.[1-10] The major issues that have been recognized recently will be covered in this article, as well as some recommendations based on current evidence. Finally, a listing of websites for obtaining current research on the drowsy driving issue is presented.

BACKGROUND

The Federal Highway Administration (FHWA) Office of Motor Carries (OMC) has made research into sleep related crashes a top priority. As of 1999 they had completed or planned 25 research projects related to sleep deprivation and motor vehicle crashes (MVCs).[8] Most of these studies are related to hours-of-service regulations placed on commercial carriers. The commercial trucking industry is one of the first that comes to mind when one thinks of sleep deprivation and MVCs. Both the duration and hours of the day commercial truckers drive put this class of driver at increased risk of having a sleep related crash. In the early 1970s, FHWA published results showing that by 10 hours of continuous driving, still the current limit placed on the industry, truck and bus drivers' alertness and performance deteriorated significantly.[5]

This study also showed that rest breaks became less effective and the probability of crash involvement increased. Further, in 2000, the Federal Motor Carrier Safety Administration (FMCSA) published results showing that during the 13th hour of continuous driving, drivers were at 16 times

the risk of having a crash as during the first hour.[5]

In 1998, the National Highway Traffic Safety Administration (NHTSA) and the National Center on Sleep Disorders Research (NCSDR) released a definitive report entitled, "Drowsy Driving and Automobile Crashes: Reports and Recommendations." This joint report details the biology of sleep, characteristics of sleep related crashes, risk factors for these crashes and what populations are at the greatest risk for sleep related crashes.

The NCSDR/NHTSA report summarizes how sleep is a biologic need and can be described by certain predictable patterns. These agencies contend that habitually restricting sleep by as little as 1-2 hours of sleep per night, can lead to chronic sleep deprivation.[1] There are also certain characteristics of these crashes laid out in this report. Typically, these crashes occur at night, in the early morning or mid-afternoon; involve a single vehicle with a single occupant, occur at high speed, show no sign of the driver attempting to avoid them, and are likely to be serious.[1]

NCSDR/NHTSA identify a group of risk factors for sleep related crashes, including: sleep loss, driving patterns, use of sedating medication, undiagnosed or untreated sleep disorders, or consumption of alcohol. The panel emphasizes that these risk factors can have a cumulative effect; and the combination of any of these can greatly increase risk.[1] In addition, they identify what they see as three key populations at highest risk. Young people, shift workers, and those with untreated sleep disorders are at highest risk of crash.[1]

Duration of sleep in the past 24 hours has been related to motor vehicle crashes. A study of truck drivers found that those who were involved in fatigue-related crashes had an average of 5.5 hours of sleep compared to 8 hours of sleep in non-fatigue related crashes.[5] Hours-of-service related sleep deprivation can be extended to other populations besides the commercial trucking industry. Physicians-in-training, or residents, have been identified as a population at risk for single vehicle crashes. Many of these residents work more than 80 hours a week and for as many as 30 hours at

a time in hospitals.[9]

After these long shifts are over, many of them drive home under extremely sleep-deprived conditions. A 1999 study of emergency medicine residents showed that 76 residents had been in 96 crashes, the majority of which occurred driving home after a nightshift. Of these 96 crashes, 70% were single-vehicle crashes, typical of sleep related crashes.[9]

Another study of anesthesia residents based on survey responses showed that 17.4% reported having an accident during residency. 72.4% reported having narrowly avoided a crash, with one third reporting five or more, and 84.5% remembered being specifically concerned for their safety because of fatigue while driving.[10] The population of physicians-in-training, like commercial truckers, is a difficult one to regulate, where physicians feel that patient care comes before sleep, and that limiting the hours-of-service limits their education.

Similarly, shift workers are at greater risk for sleep disturbances, which can lead to sleep deprivation. Nurses are another easily identifiable population who, as shift workers, often work rotating schedules. NCDSR/NHTSA reported a study showing that nurses who worked rotating shifts reported more "accidents", be it MVCs, or errors on the job.[1]

A 1999 study found that sleep deprivation was a significant risk factor for single vehicle off-road crashes. Using a driving simulator, the study showed that lateral placement variance increased with progressive levels of sleep deprivation. Lane excursions, leaving the lane inadvertently, also increased with sleep deprivation. In addition, vehicle speed significantly increased in slower speed zones with sleep deprivation.[8] All of these characteristics can be correlated to crashes involving single vehicles.

People with undiagnosed or untreated sleep disorders is certainly a population at risk for sleep related MVCs. The NCSDR/NHTSA report that sleep apnea syndrome (SAS) causes the greatest absolute number of crashes. The other sleeping disorder, untreated narcolepsy has a higher risk of crash, but is far less common than SAS.[1] The

population who has untreated sleeping disorders like these are difficult to capture. Most of these people who have untreated sleeping disorders do not even know they are affected.

Young people, especially males, are at particular risk when it comes to MVCs both sleep related and non-sleep related. The NCSDR/NHTSA report cited an article suggesting that drivers younger than 30 years of age account for two-thirds of drowsy-driving related crashes. They emphasize that these drivers only represent one quarter of licensed drivers. This population is at excess risk for sleepiness based on maturational changes, changes in sleep patterns, and lifestyle factors leading to sleepiness.[1]

When drugs or alcohol are added to these factors they are increasingly vulnerable. In a North Carolina study, males were found to be driving in 3 out of 4 sleep related crashes. In addition NHTSA evidence has shown males are 5 times as likely to be involved in these crashes.[1] A 2000 study, showed that traffic fatalities peaked at age 20 for both males and females, but males were three times as likely to die in a MVC.[4] Combining inexperience with all of the factors listed above puts young males at a heightened risk for drowsy driving related crashes.

RECOMMENDATIONS

The most effective means of reducing sleepiness is to sleep. The field of traffic safety education can play a significant role in increasing the awareness of motor vehicle crashes resulting, wholly or in part, from sleep deprivation. In the traditional driver education classroom setting, instructors need to be well versed in the current understanding of the sleep needs for teens. This science needs to be packaged and presented in a manner that emphasizes the need for proper duration of sleep, with specific focus on the concept of sleep debt and the role of preventative self-regulation. An understanding and appreciation for circadian rhythms is critical for novice drivers.

Novice drivers need to understand that sleep is not voluntary and a drowsy driver cannot tell when he/she is about to fall asleep.[11] Additionally, the association of lifestyle choices in relation to drowsy-driving crashes needs to be included in the training module. Crash risk increases as sleepiness impairs the elements of human performance that are essential to safe driving (slower reaction time, reduced vigilance and deficits in information processing).[1]
The Drowsy Driving and Automobile

Crashes: Report and Recommendations provides the central characteristics of drowsy-driving crashes.[1] The traffic safety education professional can easily make application and create learning exercises to emphasize the relevancy of these central characteristics to the teen driver. Suggested points of emphasis can be directed to pre-trip and in-trip risk reduction methods.

The importance of providing novice drivers with an accurate understanding of the basic need for sleep can provide a foundation for subsequent focus on the application to reduced risk vehicle operation. Pre-trip emphasis points can include; the role of proper trip planning, the fact that sleep onset is highly unpredictable, along with a focus on ensuring proper rest prior to embarking on the journey. Adequate and proper perception of crash risk associated with sleep deprivation and drowsy-driving is the primary preventive (pre-trip) strategy in mitigating crash exposure.

Strategies may be invoked in-trip to reduce the risk of a crash. Such actions should be considered secondary strategies to adequate pre-trip actions. In Preventing Drowsy Driving Among Shift Workers: Employer Administrator's Guide, recommendations easily applied to novice drivers include avoiding alcohol and any medications that can make one drowsy, invoking public transportation, and utilizing carpools.[11] The report also advances stopping driving altogether, if possible. If stopping driving is not immediately possible, the report advocates consuming the caffeine equivalent of two cups of coffee; taking a 20-minute nap, and after the nap, driving to the nearest safe resting spot.[1]

The Consumer Reports book, Driving Emergencies, suggests frequent stops and not relying solely on coffee or other beverages containing caffeine, as the stimulus attained from such beverages is short lived. Eating invigorating fruits and vegetables are better to eat than greasy foods. Greasy foods tend to accentuate drowsiness.[12]

As the body of research regarding drowsy-driving, sleep deprivation, and the relationship to motor vehicle crashes is expanded and updated, it is imperative that the traffic safety education professional keeps abreast of the current science and recommendations. Some websites providing useful information include:

http://www.nhlbi.nih.gov/about/ncsdr/index.htm (National Center on Sleep Disorders Research, of special interest to traffic safety education professionals: Educating Youth About Sleep and Drowsy Driving Strategy Development Workshop Report).

http://www.nhtsa.dot.gov/people/injury/drowsy_driving1 (NHTSA's page provides current resources on educational and technological approaches to combating drowsy-driving related crashes).

http://olias.arc.nasa.gov/zteam/fredi/home-page.html (NASA's Fatigue Resource Directory providing scientific background on sleep deprivation issues).

http://www.luhs.org/depts/injprev/Transprt/tran1-02.htm#Drowsy%20Driving (Loyola University (Chicago) Health System's web page devoted to timely tips and information on drowsy-driving).

http://www.sleepfoundation.org/activities/daaamain.html (National Sleep Foundation's web page includes drowsy-driving fact sheet, quiz, power point presentation, current press releases and other pertinent information).

www.aaafoundation.org/pdf/drowsydriving.pdf (AAA Foundation for Traffic Safety report on Drowsy-Driving providing scientific background to this issue).

The aforementioned sites have related links providing additional insight into related issues of drowsy-driving/sleep deprivation and motor vehicle crashes. In conclusion, it is recommended that traffic safety education professionals present their audiences with current drowsy-driving/sleep deprivation science in a salient format that results in practical application of the information.

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Analysis and Evaluation of the Effects of Varying Blood Alcohol Concentrations on Driving Abilities

By

Maurice E. Dennis, Ph.D., Texas A&M University

Introduction

While alcohol-related traffic deaths in the United States have declined in recent years, DWI is still a serious problem as 38% of all traffic deaths involve alcohol (NHTSA, 2000). Many efforts have been undertaken, with varying levels of success, to seek to ameliorate problems caused by drinking drivers. One legislative effort has been the passing of laws lowering the per se Blood Alcohol Concentration (BAC) level to .08%. As of March 2001, 21 states had enacted a .08% level (Community Prevention Service, May 2001). On what basis should a determination of intoxication be made?

Per se limits should obviously be based on research and not on what is politically acceptable. In addition, all states have a "loss of mental and physical fatalities because of alcohol" definition of intoxication (AAA, 2000). The important question then is: Is .08 or .10, or the magic number at which impairment occurs for all persons? Can research determine whether impairment begins at levels lower that the per se statues? In recent years much research has been undertaken which sought to evaluate a wide range of abilities related to driving after ingestion of different amounts of alcohol.

The finding of 112 such research efforts are reported in an excellent National Highway Traffic Safety Administration publication " A Review of the Literature on the Effects of Low Dosage of Alcohol and Driving Related Skills (Moskowitz and Fiorentino, 2000). This study concluded, "alcohol impairs some driving skills beginning with any significant departure from zero BAC".

Methods

To seek to determine how drivers performed simple and complex driving tasks as well as other human abilities related to driving, an experiment was conducted in April 2000 by the Texas A&M University Center for Alcohol & Drug Education Studies (CADES). A cross section of drivers by age, ethnicity, and gender was selected to participate. The breakdown is present in Table 1.

Table 1- Subject by age, ethnicity, and gender.

Age	Ethnicity	Gender
20-30=6	Anglo=11	Males=10
30-40=5	Black=4	Females=9
40-50=5	Hispanic=3	
50-60=3	Asiml=1	

All drivers completed human subject forms and were screened for alcohol use and abuse using a personal data form, Substance Abuse Subtle Screening Inventory, Alcohol/Drug Profile and Numerical Drinking Profile. From the pool of 36 volunteers, 21 subjects met the requirements of the study. Note: Two subjects did not complete the training and were excluded from the study.

Driving Exercises

Personnel from the Texas A&M University Driver Skill Enhancement Program (DSE) were responsible for design and testing of six different maneuvers in a closed course setting at the TAMU Riverside Campus. The DSE program is designed to train drivers to cope with complex driving situations. Exercises used in the DSE program were adapted for use in this experiment. The exercises were as follows:

Skid Control- Involves the instructor locking the brakes to cause a skid and having the driver seek to recover from the skid.

Auto Control Monster- A special set of wheels was attached to the rear of a front- wheel drive vehicle. Unless the vehicle is steered and braked in smooth manner, loss of control occurs.

Crash Simulator- Involves a response to a traffic light which designates the lane into which the vehicle should be steered. T -Turn: Driver approaches a set of cones outlining IIT'1 and has to make a left or right turn and then back up to allow exit from the exercise.

Blocked Lane-Involves approaching a set of barrels upon which a red light is placed. The light was illuminated as the vehicle crossed a trip wire and the driver has to execute a left lane change.
Slalom: Involves weaving between a set of cones set up in a slalom pattern.

Non Driving Exercises

Exercises involving balance, vision, and reaction time were designed. Detailed scoring sheets were used to record the results of each test. Explanation and analysis of the non-driving exercises will be reported in a future paper.

Training Activities

All subjects received training on all aspects of the experiment. This involved use of videotapes, lectures, and hands on training by DSE, CADES staff and specialists brought in for the experiment. There was a subject to instructor ratio of 3 to 1 so ample individual attention was provided. This ratio permitted subjects to ride with the drivers being trained so that additional learning could be obtained.

Pre-Test Activities

After a complete day of training, all subjects were tested using an approved Intoxilyzer instrument at the beginning of the second day of the experiment to insure they began with no alcohol in their systems. Each control and experimental subject was then given a pre-test on all driving and non-driving activities to determine their pre-drinking abilities. Data were recorded on all subjects for comparison with ability after reaching designated HAC'S.

Drinking and Testing Activities

After all sober pre-tests were completed, the participants in the drinking group began to consume alcoholic beverages of their choice. All drinking was closely monitored to determine the time and amount consumed by each person. When it was estimated that .04 HAC was reached, drinking participants took both breath and blood tests given by Texas Department of Public Safety personnel.

Subjects who were at the prescribed level were then re-tested on all driving and non-driving activities and results were recorded. The control group also periodically re-tested. Assistants who scored each exercise were not told whether the vehicle was being driven by an experimental or control subject and identified each subject by a number placed on the car door. Assistants timed all exercises and used the scoring instruments to mark any cones or barrels struck or judgement errors if an incorrect action was taken.

After completion of the first trial at .04 HAC, subjects returned to the experiment headquarters and consumed additional alcoholic beverages until the next test level (,07 HAC) was reached. The testing process was repeated at .07 HAC and subjects returned to drink additional alcohol so that the final (.10 HAC) level could be reached for the last round of testing.

Results

Comparisons were made between the abilitis demonstrated at zero. .04, .07, and .10 HAC. Driving analysis was divided into two segments; tasks that were more psychophysically complex and tasks which involved lesser amounts of judgement and physical skills.

The three more complex tasks were: Skid Pad; Crash Simulation;Auto Control Monster. Each of these three tasks require a combination of quick judgement, complex reacton time, and fine handling skills as small errors resulted in loss of vehiclecontrol.

The three less complex tasks were: Blocked Lane; T -Turn; Slalom. While these included handling skills, there is less judgement and complex reaction involvement.

By a BAC of .04, all drivers had experiencedlosses of ability on the complex tasks with the average decrements being 13%. Progressive losses of abilities were found at the higher (.07 & .10) BAC's studied (see Table 2).

Table 2 Mean Decline in Complex Driving Exerces by Drinking Group

MEAN BAC	DECLINE
.04	13%
.07	17%
.10	24%

.

Skid Pad, Auto Control Monster, Crash Simulatorl losses were less apparent at .04 for the less complex skills as an average loss of only 2% was found. Losses of ability increased as BAC rose but were still much lower than those on the complex skills (see Table 3).

Table 3 Mean Decline on Less Complex* Exercises by Drinking Group

MEAN BAC	DECLINE
.04	2%
.07	3%
.10	8%

* Blocked Lane, T -Turn, Slalom

Control group scores on both the complex and less complex tasks were not different from their initial testing level.

Discussion and Conclusions

The finding that BAC's below those considered legally intoxicating in any state produce increases in driving errors support other research. Previous research has demonstrated (Moskowitz and Bums, 1971: Kobayoski 1975, Moskowitz and Murray, 1976; Hamilton and Copeman, 1970; Moskowitz, et al, 1985, the ability to divide attention and process information is effected at low BAC's. These abilities are critical to making and executing correct driving decisions.

The decrements in driving ability found in this study are likely to be very conservative compared to driving losses in actual traffic situations. Reasons for this include:

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Practice Effects- All subjects were taught and repeatedly drilled on the tasks to be performed.

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Knowledge of Tasks- Each subject was prepared to deal with usually one and at most 3 options.

.

Duration- All actions were confined to a matter of seconds in which a response was needed.

.

Time of Day- All activities were conducted in clear, daylight hours and therefore fatigue and darkness were not factors.

.

Protection- All vehicles had dual braking systems with trained Driver Skill Enhancement professionals ready to stop or take control of the vehicle if needed. In addition, all exercises were on the runway of a closed air base with no interaction with other traffic.

The findings of this and similar studies should be widely disseminated through formal and public information efforts. Such efforts may help dispel the concept that a person must visibly appear intoxicated to pose a hazard when driving or that the legal limit is a "magic number". Continued research activities at BAC's below legal standards should be conducted. Such efforts will provide more information about the nature of alcohol effects on human performance.

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Certainly instructors might consider arranging for their students to experience some of these same events. However, the entire learning experience would likely be enhanced by having instructors first experience these events without students present. By initially attending such events without students, instructors can devote as much time as needed to learn about the events by observation, discussion with on-site personnel and attending follow-up summary meetings.

By attending events such as these, instructors' driving-related experiences will become broader, which then can be shared to their students' substantial benefit.

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Note: The final installment of this article series will address the benefits of hands-on experiences for instructors.

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Driver Fatigue: A Survey of Long Distance Transport Companies in Australia

One of the key findings of this report was that there is a lag between increased awareness of fatigue and changes in operational practice. The majority of companies reported that awareness of fatigue had increased, both for themselves and their company, as well as for the industry at large over the last 5 years. However, from the results it seems that this increased awareness does not guarantee better management of the problem. Only half of the companies surveyed reported that they believed that fatigue was well managed in the industry and one fifth reported that it is badly managed. Even so, this is more optimistic compared with the verdict of drivers, half of whom reported that fatigue is badly managed in the industry.

More information at: www.atsb.gov.au/road/res-exec/cr209ex.cfm

Traffic Tech Technology Transfer Series Number 274, June 2002

STATES WITH OPEN CONTAINER LAWS HAVE FEWER ALCOHOL-INVOLVED VEHICLE CRASHES

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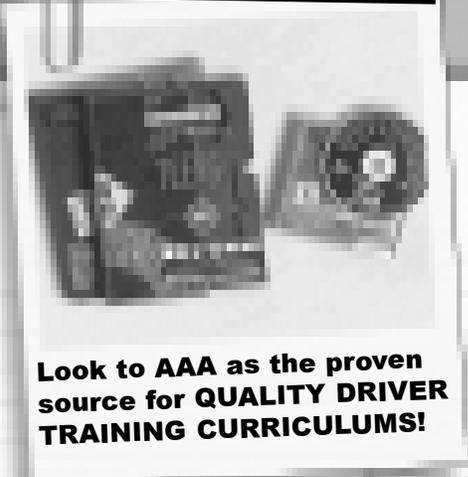
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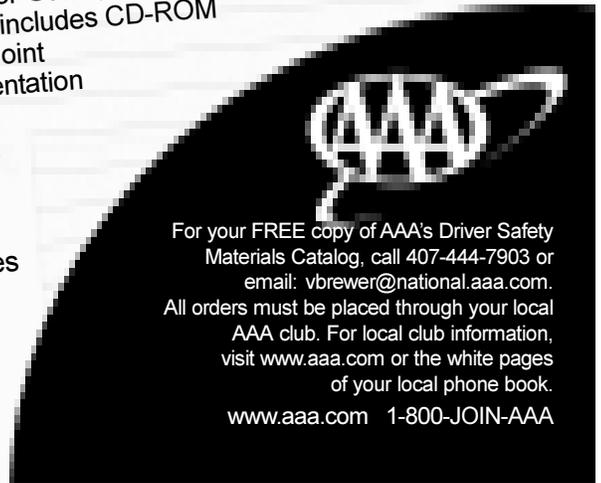
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