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Scarred Images: Using Appearance as a Motivator to Reduce Driving Under the Influence of Alcohol

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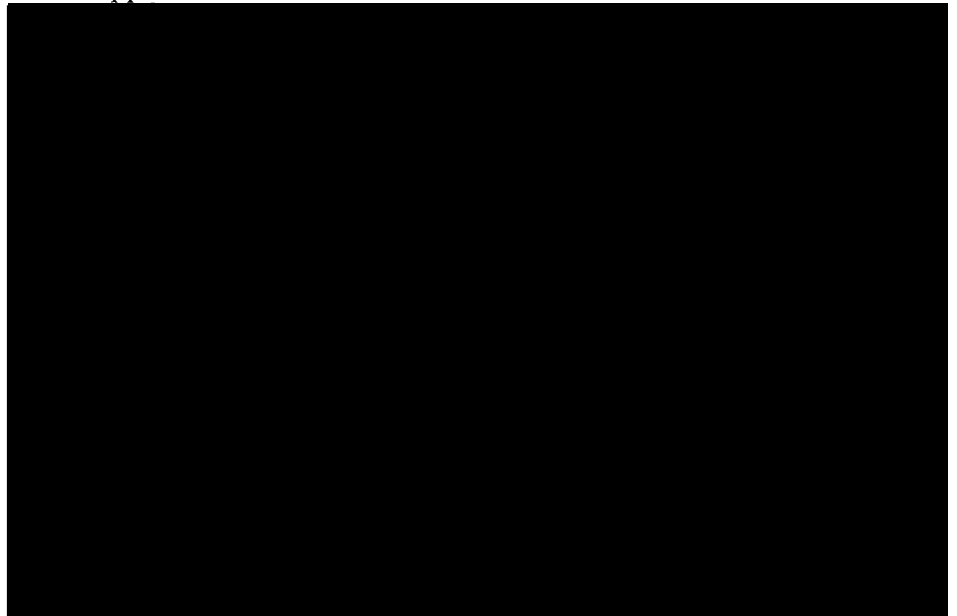
USING APPEARANCE AS A MOTIVATOR TO REDUCE DRIVING UNDER THE
INFLUENCE OF ALCOHOL

by

Mary-Theresa McNabb

A Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

Approved:



August 2009

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The University of Southern Mississippi

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ABSTRACT

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by Mary-Theresa McNabb

August 2009

In response to continued driving under the influence of alcohol (DUI) amongst young adults and increased drinking and driving amongst females, the current study aimed to decrease such risky behavior using threats to appearance as a deterrent. One hundred and thirty-three undergraduates at the University of Southern Mississippi completed a three-part study after sequential assignment to one of three groups, a no-photo group, a crash scene photo group, or a personalized-photo group. Baseline measures were taken concerning participants' alcohol-related behaviors. One week later all groups were given statistical information commonly available in DUI prevention pamphlets together with strategies to avoid DUI. The no-photo group was not shown photographs; the crash-scene photo group was shown a photo of a serious car crash taken from the Mother's Against Drunk Driving (MADD) website, and each participant of the personalized-photo group was shown his or her facial photograph altered to mimic the scarring and bruising common to DUI accidents. Post-intervention measures revealed a significant condition-by-trial interaction for riding with a drinking driver (RDD), however it reflected significant post-intervention increases in RDD for the no-photo group.

As expected, the combination of sensation seeking, importance of appearance,

alcohol expectancies, social desirability, aggressive driving, and risky driving were significant predictors of RDD, DUI, alcohol use in a car, and, seatbelt use. All groups reported less enjoyment from riding with a drinking driver following intervention and all groups experienced greater tension arousal following intervention. These unexpected findings are discussed as are the ancillary findings for decreased positive alcohol expectancies and increased negative alcohol expectancies across groups.

A prior study using a similar approach (McNabb, 2000) found attitude and intention change for the personalized-photo group. While no significant behavior changes in DUI-related behaviors were found in this study, secondary analyses suggested that efforts to increase self-efficacy in performing risk-avoidant behaviors were not strong enough. Further, trends towards decrease DUI in the photo group and increased seatbelt use in that group provide support for further investigation in the use of these vivid personal appeals.

Dedicated to the memory of my incredible parents who encouraged me to keep learning
and keep laughing.

"I'll love you forever, I'll like you for always."
R. Munsch

ACKNOWLEDGEMENTS

The process of completing a dissertation has taught me much. Most of all, that as with most things in life it is not necessarily a linear process. Therefore, I wish to thank those people who continued to encourage my efforts through both intellectual and practical support including the graduate studies staff. I wish to sincerely thank my dissertation committee. Eric Dahlen, chair of my committee, whose attention to detail is incomparable. He provided guidance throughout this process and stretched at times to accommodate my organizational style. My committee members, J.T. Johnson, Mark Leach, Bonnie Nicholson, and Anthony Calabrese, provided insightful feedback and encouragement. They were all much more than committee members, as they were my instructors and employers as well. I appreciate all that you have taught me.

Special thanks also go to my research assistants, Dustin Johnson, Anthony Oster, and Julie Rial. These friends and collaborators were invaluable through the collection process. Thanks also go to Michelle Augustine, who helped to complete data collection. I will forever be grateful for their efforts during our work together.

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LIST OF ABBREVIATIONS

1. DUI. Driving Under the Influence
2. RDD. Riding with a Drinking Driver
3. BAC. Blood Alcohol Concentration
4. NCADD. National Council on Alcoholism and Drug Dependence
5. NHTSA. National Highway Traffic Safety Administration
6. SAMHSA. Substance Abuse and Mental Health Services Administration
7. SSS. Sensation Seeking Scale Form V
8. CDC. Centers for Disease Control
9. ASTP. Alcohol Skills Training Program
10. MI. Motivational Interviewing
11. ASPS. American Society of Plastic Surgeons
12. TPB. Theory of Planned Behavior
13. PMT. Protection Motivation Theory
14. PSAs. Public Service Announcements
15. U.V. Ultra violet rays
16. IOA. Importance of Appearance
17. AOES. Alcohol Outcome Expectancy Scale
18. AD ACL. Activation-Deactivation Adjective Arousal Checklist Short Form
19. USM. University of Southern Mississippi
20. MC-C. Marlowe-Crowne Scale of Social Desirability Form C
21. MAST. Michigan Alcohol Screening Test

22. ASN. Attitudes and Subjective Norms
23. IRS. Intervention Rating Scale
24. ABS. Abbreviated Behavior Survey

CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Premise of Study

Images of crumpled metal and windshield glass scattered across a bloodied highway, video clips of parents screaming over dead sons and daughters, and tales of remorseful teens sitting in prison cells continue to be popular in anti-drinking and driving campaigns, although criticized as having limited effectiveness with a young adult population (Denscombe & Drucker, 1999). Statistics of accidents, arrests, and deaths are regularly presented as deterrents for young drivers, again without much impact (Yates & Dowrick, 1991). This population's perception of invulnerability (Elkind, 1967) or their lack of perceived personal risk (Greening & Stopplebein, 2000) are among the reasons that such attempts at preventing driving under the influence (DUI) have proven difficult.

The current study sought to increase awareness of the risk of DUI and to motivate attitude and behavior change by addressing an issue of high personal relevance to a young adult population: facial disfigurement due to alcohol-related motor vehicle accidents. Threats to physical appearance have previously served as motivators for intention and behavior change in skin cancer prevention studies (Hillhouse, Turrisi, & Kastner, 2000; Jones & Leary, 1994). While these studies used models or essays to portray appearance-based consequences, this study aimed to increase the personal relevance by altering facial photographs of participants to mimic the appearance-based consequences of accidents resulting from driving under the influence of alcohol.

Driving Under the Influence

Rationale for continued study in this area, particularly with this population, is evident

when viewing the statistics. Based on estimates in the year 2000, 4 million drivers in the United States drive each year with blood alcohol concentration (BAC) above the .08 limit (the National Council on Alcoholism and Drug Dependence (NCADD), 2004). While the number of intoxicated male drivers has decreased slightly in the past decade, the number of intoxicated female drivers has almost tripled according to NCADD (2004). Although all age groups are reflected in the DUI literature, college students in particular are more likely to drink and drive and do so at higher levels of intoxication than are young adults not in college (Prendergast, 1994).

Young Drivers. Surveys on drinking and driving from the National Highway Traffic Safety Administration (NHTSA, 1996) found age to be an important factor related to DUI behavior. Twenty-three percent of 20-25 year old college students who responded to the survey reported driving within two hours after drinking. At the University of Southern Mississippi, 30-day prevalence statistics of the National College Health Assessment (personal communication, March 25, 2004) indicated that 13.2 % of the student population reported driving after having five or more drinks, less than half the national average of 27.8%. No statistics were gathered on numbers of students who rode with a drinking driver; however, 15.4 % of students reported alcohol-related injuries in the past year, just under the national average of 18%. A follow-up survey by the Substance Abuse and Mental Health Services Administration (SAMHSA, 1998) concluded that in 1996, 46.5 million drivers over age 16 drove within two hours after drug or alcohol use. Almost half of those drivers were between the ages of 19 and 34. Twenty percent of drivers between the ages of 16 and 20 years of age who were involved in fatal motor vehicle accidents had BAC above that legal limit, well beyond the zero tolerance policy of most

states for drinking drivers under the age of 21 (Sells & Blum, 1996). This number doubles for those aged 21 to 24. The “Traffic Safety Facts 1996” (NHTSA, 1996) reported that drivers aged 21 to 24 had the highest rates of intoxication for fatal accidents that year. However, 86% of those who reported driving after drinking also reported only low and medium alcohol use. While these moderate reports might sound initially encouraging, another study found that drivers aged 16 to 24 who were involved in fatal DUI’s had lower BACs than older drivers (Bolen, Sleet, & Johnson, 1997). This implies that young drivers need less alcohol than adults to be at risk for alcohol-related accidents. Proposed reasons for this discrepancy included inexperience with both the effects of alcohol and the hazards of driving (Zador, Krawchuk, & Voas, 2000). The current study asked participants about the level of alcohol consumption required before driving is impaired, an important factor in the decision to DUI. The current study also looked at both driver and passenger behavior in a university undergraduate population.

Attitudes toward Drinking

Social-environmental factors such as the influence of friends, lack of unimpaired designated drivers, and failure to appreciate the seriousness of consequences were among the reasons to drive under the influence, given by adolescents and young adults (McKnight, Langston, McKnight, Resnick, & Lange, 1995.) Although the majority of youth agree that DUI behavior is wrong, they tend to see it as unavoidable (NCADD, 2004). Some individuals even reported the benefits of DUI, stating that it is fun, exciting, gets attention from the opposite sex, and leads to peer acceptance, similar to attributes given as reasons for drinking. Results of the Core Alcohol and Drug survey (Presley, Meilman, & Leichliter, 2002), looked at perceived consequences of drinking alcohol.

Positive consequences generated included the following: 58.5% reported that it facilitates bonding, 59.1% stated that it allows for peer connections, 60.4% said it allows people to have fun, 74.4% said it enhances social activity, 71.5% and 64.9% stated that it gives people something to do and gives them something to talk about respectively, and 75.8% stated that it breaks the ice. Gender differences in motivations to drink include more positive social motivations for males than females (Bailly, Carman, & Forslund, 1991) while women endorsed variables related to stress reduction and problem solving. Both men and women reported drinking to feel more confident, competent, and verbally assertive. Men endorsed more items relating to dominance (i.e., feeling in control of others), although women who suffered negative drinking outcomes were also more likely to endorse such items. Among college students, expectations for positive social outcomes were associated with fewer expectations for negative outcomes such as social problems, drunkenness, memory lapse, or blackouts (Bailly et al., 1991).

DUI and Risk Taking

Risk Taking and Invulnerability

The possible negative consequences of the risky combination of drinking and driving or riding with a drinking driver do not appear to be evident to youth (Greening & Stoppelenbein, 2000). This is consistent with one definition of risk-taking that stated that it is a choice whose outcome is uncertain yet contains the possibility of negative health outcomes (Igra & Irwin, 1996). Thus, individuals must realize the possibility of negative outcomes before choosing to protect themselves.

Behavior change models have posited that individuals need to be aware that a

problem is occurring or is likely to occur before change will transpire. The Transtheoretical Model of change (Prochaska & DiClemente, 1983) states that individuals begin the process of change once the defenses for undesirable behaviors, denial and minimization, are realized and addressed. This move from the precontemplative stage, where individuals do not recognize the need for changes in behavior, to a contemplative stage is possible only if there is awareness of the negative consequences of the individual's behaviors. Similarly, the Health Belief Model (Rosenstock, 1974) proposes that the perception of a personal health threat, together with the perception that a health practice will be effective in reducing that threat, will also motivate people to change health behaviors. In order to perceive a health threat, the individual must first be concerned about his/her health. Adolescents are by nature young, healthy, and anxious to establish their own autonomy, hence, they feel invulnerable to health dangers, and tend to be rebellious of limitations imposed upon them for their own good (DiClemente, Hansen, & Ponton, 1996).

Several theories have attempted to explain this young population's inclination towards risk-taking. Those with a biological approach view risky behaviors as involving a genetic predisposition, while cognitive theorists emphasize factors such as immaturity, sensation seeking, or possessing deficits in self-esteem. The Problem Behavior Theory (Jessor, 1987) submits that problem behaviors, such as risky driving, are purposeful, goal-oriented parts of normal development used for gaining peer acceptance, establishing autonomy, coping, and marking the transition from childhood to young adulthood. Surveys of teens with personal experience of serious illness or injury lend some support to these developmental theories (Denscombe & Drucker, 1999). The authors found that

the majority of teens surveyed did not adjust their risk-taking following these experiences, thus knowledge of health threat and health promotion does not appear sufficient to change behavior within this population. Rather they continue to see themselves as invulnerable, recognize the risks but often believe the behaviors are worth the risks.

Irwin and Millstein (1986) combined the biological and developmental approaches with a social/environmental perspective to suggest that families, peers, and community interactions are at the roots of these behaviors. That is, familial predispositions and modeling, development of personal values, perceptions of the immediate and distal social environment combine with self perceptions and cognitive scope to influence peer selection and perception of risk. This biopsychosocial influence may then put youth at risk for substance misuse and risky driving. These factors may then be enhanced by peer pressure and by community tolerance for drinking, and drinking and driving.

Feelings of uniqueness (egocentrism) and accompanying feelings of invulnerability may also be the source of adolescent risk taking (Greene et al., 2000). According to Greene et al., high personal fables (i.e., high feelings of invulnerability) and high sensation seeking combined to explain the majority of risky drinking. Feelings of invulnerability may help to explain why many youths ignore health risk messages, believing the messages are not directed at them and/or are not relevant to them, leading to greater risk taking. Similarly, an optimistic bias, where youth know negative consequences do happen but do not believe that they personally are vulnerable, was one of the predictors of DUI in young adults, as were belief in friends' approval of DUI and sensation seeking (Fernandes, Job, & Hatfield, 2007).

Sensation Seeking

Sensation seeking has been defined as “the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experience” (Zuckerman, 1979a, p. 10). Studies have shown that high sensation seekers (i.e., those who participate in activities that the general public views as having possibly risky consequences) do not view themselves as being at higher risk for these consequences than those who choose not to participate in these activities (Heino, Van der Molen, & Wilde, 1996; Zuckerman, 1979a).

In a study of risky driving, participants scoring high on the Sensation Seeking Scales form V (Zuckerman, 1979a) consistently tailgated and drove at faster speeds but did not see their driving as having high risks (Heino et al., 1996). Participants with lower scores on the SSS however, used more caution when driving and they perceived tailgating and speeding behaviors as having high risks. The authors suggested that describing the former group as risk takers is a misnomer, stating that they may not deliberately be taking risks, instead, they fail to perceive their behaviors as risky. Zuckerman (1979b) agreed, pointing to surveys where high sensation seekers appraised risk as lower on various activities than did their low sensation-seeking cohorts, even for activities that they had never tried before. High sensation seekers also expected to experience less anxiety on these novel activities. This lower anxiety level, said Zuckerman, increases this group’s likelihood of participating in behaviors such as fast driving, drug taking, or volunteering for hypnosis studies, all perceived as risky by low sensation seekers.

There is some evidence that perception of control might explain these low anxiety levels experienced by high sensation seekers. In a study examining why stunt men take

risks, Piet (1987) found that, while all stunt men experienced arousal during risky stunts, this arousal was enjoyed only under conditions of subjectively perceived control. In another study on motivations to DUI, young male drivers' intentions to DUI were predicted by their perceived behavioral control over both drinking and driving (Marcil, Bergeron, & Audet, 2001). Young adults, despite their relative inexperience with driving and relative inexperience with drinking and driving, may have such subjectively perceived control over these activities and, thus, have lower anxiety over the possibility of a DUI accident.

While debate continues as to the origins of risk-taking behavior, risky driving and DUI have been linked to high sensation seeking scores on the SSS (Clement & Jonah, 1984; Jonah, 1997; Greene et al., 2000; Zimbardo, Keough, & Boyd, 1997; Zuckerman, 1979b; Zuckerman & Neeb, 1980). A literature review of forty studies on sensation seeking and risky driving included drinking and driving (Jonah, 1997). Eighteen of the 40 studies investigated the relationship between DUI and sensation seeking. Positive relationships between those two variables were found in 13 of those studies. Of the studies that used the SSS, the majority showed low to moderate positive correlations (.30 to .40) between total sensation seeking scores and acknowledgment of risky driving. This relationship appeared to be linear. As SSS scores increased, so did reports of DUI. More specifically, it seems that the Thrill and Adventure Seeking (TAS) subscale appeared to have the strongest relationship to risky driving while the Disinhibition (DIS) subscale correlates most strongly with drinking and driving specifically (Arnett, 1990).

The validity of the SSS however, has been questioned in several studies (e.g., Arnett, 1990, 1992). Criticisms include the forced choice response format, the number of

questions implying that sensation seekers must also be involved in strenuously physical activities such as mountain climbing, and the presuppositions that sensation seeking involves breaking social norms. Arnett (1990) pointed out that sensation seeking can involve assertiveness in financial and political arenas.

Other potential sources of difficulty with the SSS form V (Zuckerman, 1979a) includes outdated language. The form has not been updated since its development so it includes terms such as “swingers,” “far out,” and “jet set.” Perhaps most pertinent to this study however, is the criticism that many items on the SSS present confounding factors for studies involving drinking, drug taking, and aggressive driving practices. Due to this overlap in questions and possible confounds, several studies have omitted questions concerning alcohol, drug use, and driving aggression (Clement & Jonah, 1984; Zimbardo, Keough, & Boyd, 1997). Therefore in surveys that included questions on drinking and aggressive driving, a SSS short form (Madsen, Das, Borgen, & Grossman, 1987) was used that does not include items concerning drinking and drug use or driving. However, reliability decreased somewhat with use of the short form ($r = .63$).

While some studies have found that high sensation seeking is linked to increased drinking and so to resultant behavioral disinhibition (Earleywine & Finn, 1991), other studies suggested that individuals high in sensation seeking might have fewer alcohol-related problems because they are not necessarily impulsive (Magid, MacLean & Colder, (2007). The latter study distinguished between impulsiveness, the preference to act quickly without thinking of the consequences, and sensation seeking, finding differential paths from both to alcohol-related problems. Impulsive risk takers were found to have less concern for their health, have negative feelings towards their health, and feel no

control over their health (Ferguson, Valenti, & Melwani, 1991). Therefore, it seems that prevention efforts must consider increasing salient health threats, or use novel approaches to health threats, particularly with this young group. Further, given that only small levels of blood alcohol concentrations may result in accidents (Bolen, Sleet, & Johnson, 1997), alcohol-related accidents may occur regardless of the level of impulsiveness in sensation seekers.

Persuasion and Sensation Seeking

Although the literature is mixed regarding the causal link between sensation seeking and risky behavior, it appears that a majority of college-age students who score high on sensation seeking also tend to engage in riskier behaviors (Heino, Van der Molen, & Wilde, 1996; Zuckerman, 1979b). Numerous studies have attempted to identify psychosocial interventions that would persuade these risk takers to curb their potentially dangerous behaviors. High sensation seekers demonstrated a preference for seeing extreme emotions in images aimed to decrease their risk taking (Zaleski, 1984) and sensationalistic public service announcements (Donohew, Lorch, & Palmgreen, 1991). Those who were low on sensation seeking preferred more low-key, less emotional images without sensationalism. One study on condom use and fear appeals found that high sensation seekers reported increased intentions for condom use in response to complex messages that included two or more fear threats, and to concrete (and highly arousing) messages that contained specific descriptions of those threats (Sheer, 1995). The same response was not found for low threat, low arousal messages. That is, fear messages should outline multiple-part, explicit consequences of risky behaviors for high sensation seekers as they do not attend to more subtle messages to the same degree as do

low sensation seekers. Given high sensation seekers' need for novel stimulation, it is not surprising that other studies found that high sensation seekers chose ads that were creative, offbeat, and unpredictable compared to low sensation seekers who showed a preference for more predictable, sentimental story lines (Palmgreen et al., 1991). As noted previously, impulsive individuals tend to be less concerned with health issues and feel little control over them (Ferguson et al., 1991). Although untested, the use of novel interventions that frame health risks in ways previously not considered by these individuals, such as threats to appearance, may hold potential for persuasion within this group.

The polarized preferences of high sensation seekers versus low sensation seekers suggest that persuasive appeals should be tailored to each group. However, as mentioned previously, few studies have included motivations and characteristics of those who ride with drinking drivers. So while drinking drivers themselves may recognize and even enjoy the risk or not view it as risky, passengers may actually prefer a less risky ride home but either do not acknowledge alternatives or do not perceive the personal risk to their well-being. It may be that, in addition to, or rather than being high on sensation seeking, passengers show a tendency towards responding in a socially desirable manner, attempting to avoid disapproval of others. Social desirability was a significant predictor of psychological abuse (Bell & Naugle, 2007), thus peer pressure or pressure from significant others may induce passengers to RDD.

Prevention Programs

The need for novel prevention programs has been emphasized in prior research where provision of information regarding negative health consequences, such as premature

death from DUIs, is not a sufficient deterrent for a young population (Perry & Stauffer, 1996). Numerous programs that have been implemented at the national, state, and local levels include minimum drinking age laws, per se BAC laws decreasing the legal blood alcohol limit, zero tolerance laws for youth making it illegal to drive with a BAC of .00, sobriety checkpoints, vehicle compound or immobilization of cars of drinking drivers, ignition interlock that requires a vehicle BAC test prior to starting the ignition, graduated driver licensing limiting the times new drivers are eligible to be on the road, alcohol beverage control, server intervention programs, server fines for serving more than 5 drinks to one person, and repeat offender alcohol treatment (Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001).

Community-based efforts, involving parents, professionals, social action and public health organizations have also been recommended (Perry & Stauffer, 1996). Safe Lanes on Campus: A guide for preventing impaired driving and underage drinking, is one such program. Published by the NHTSA and the U.S. Department of Education, the program promoted environmental changes such as zero tolerance, sobriety checkpoints, designated driver programs, seller sanctions, and normative feedback. While effective in reducing risk due to alcohol, the \$200,000 yearly budget for this program at Texas A&M university prohibits wide spread use (Zimmerman & DeJong, 2004).

Research efforts focusing on primary prevention programs such as training in peer and social pressure, decision-making, and communication skills are among current efforts to reduce this risk among teens. Information and knowledge dissemination is the basis of education/awareness prevention efforts. These approaches also include values and goals clarification incorporating responsible decision-making into an individual's educational,

employment, and relationship goals. Many social marketing campaigns disseminate leaflets, stickers and posters with information regarding the financial, social, health and career risks involved in DUI behavior. Florida State University reported reductions in student risky drinking in 2002 from 15% for males to 5% for females (Turner, Perkins, & Bauerle, 2008). Information-only programs have traditionally been the most widely used prevention technique on college campuses (Weschler, Seibring, Liu, & Ahl, 2004; Ziemelis, 1998). This type of appeal was therefore included in the current study as a control group intervention.

Cognitive-behavioral prevention methods tend to incorporate an interactive component with educational information, normative approaches, and values clarification. Examples of cognitive behavioral programs include alcohol skills training such as blood alcohol discrimination training, alcohol self-monitoring training, and life skills training. Life skills include stress and time management, and general assertiveness that typically include alcohol awareness education. One alcohol skills training study (Darkes & Goldman, 1993) placed participants in a social setting where they either received alcohol, or a placebo, and were then asked to judge who received the alcohol, based on observed behaviors. This “party” group showed no significant differences in alcohol consumption from the traditional education group. That is, neither group decreased consumption.

Classroom efforts for DUI prevention often include an interactive component such as role play. The Plan a Safe Strategy (PASS) program for 10th graders across the country attempted to modify attitudes, beliefs, perceived norms, and perceived control (Sam Houston State University, 2008). Role-play strategies focused on recognizing and resisting peer pressure to drink and to ride with a drinking driver as well as learning

alternatives to DUI and RDD. Results of this longitudinal study provided some support for changing young adult behavior through this educational and experiential method. None of the strategies were recalled by participants at follow up and intentions to DUI were not significantly changed. Although attitudes and intentions for riding with a drinking driver were significantly different following the intervention, no significant behavioral change was noted.

Normative feedback is another popular approach included under information and knowledge dissemination that has been used frequently in this area over the past decade providing students with realistic statistics regarding peer drinking behavior. A false consensus effect where students regularly misperceive the average amounts of alcohol consumed by others (Baer, Stacy, & Larimer, 1991) prompted college campuses to intervene by educating students on social norms. Authors of the Risk Skills Training Program (ASTP) study concluded that provision of normative feedback of cohort drinking behavior was key to success in that program (D'Amico & Fromme, 1997). The ASTP, an eight-week skills training program (Kivlahan, Marlatt, Fromme, Coppel, & Williams, 1990) was compared to the eight-week Alcohol Information School (AIS) and an assessment-only group. Significant increases in alcohol consumption were found for the latter while significant reductions were found for the former two groups. This initially promising intervention has recently been questioned. Results of the Harvard School of Public Health College Alcohol Study (Weschler, Seibring, Liu, & Ahl, 2004) indicated that campuses using social norms programs had similar rates of binge drinking and drinking and driving as did those not using the social norms program. According to a study on social norms interventions (Werch, Pappas, Carlson, DiClemente, Chally, &

Snider, 2000), presentation of normative information seemed to make the numbers of drinkers and drivers become more salient to participants. Participants who had already engaged in DUI or those who were in the preparation stage to DUI saw the normative numbers as supportive of their intentions rather than recognizing the relatively low number of students who DUI.

Brief Interventions

The current study used a brief intervention in an attempt to add to strategies that do not require extensive resources. Numerous current brief intervention strategies use motivational interviewing (MI). Studies of MI have reported success in harm reduction (i.e., fewer injuries involving alcohol and fewer reports of drinking and driving) compared to standard warnings (Monti et al., 1999). As the name suggests, this type of intervention explores an individual's motivations to continue with the target behavior and motivations to stop that behavior, recognizing the ambivalence inherent in any behavior change. Brief Alcohol Screening and Intervention for College Students (BASICS) used two MI sessions to provide feedback about students' personal drinking levels together with an interactive planning session to reduce alcohol intake (Baer et al., 2001). Reductions in alcohol consumption were evident up to the one-year follow up. Another MI study by (Baer et al., 1992) provided either 45-minute in-person motivational interviews or assessment only to 348 high-risk college students. Frequency and quantity of alcohol consumption were reduced for the MI group at six weeks. In a replication of this study (Larimer et al., 2001) 296 participants were randomly assigned to either a brief feedback group or an assessment group. Fraternity members in the MI group reported significant decreases in consumption at the one-year follow up whereas increases were

reported in the assessment group. No difference was found for the sorority members, possibly due to fewer female participants.

MI has also been used recently in trauma units for individuals being treated for alcohol-related injuries. Capitalizing on the arousal levels and the opportunistic timing, the situation makes it difficult for individuals to minimize or deny the risks of continuing their behavior (Field, Hungerford, & Dunn, 2005). While this seems to be an ideal time for intervention and can prevent future incidents, injury has already occurred, perhaps catastrophic injury. Further, the individual format of most MI treatments limits the population served. Motivational interviewing techniques were tested in group format with positive success in temporarily reducing drinking and drinking and driving in adolescents (D'Amico & Fromme, 1997). Personalized feedback on participants' risk taking behavior was followed by group discussions on peer influence, their personal positive outcome expectancies, and their overestimation of peer risk-taking behavior. A skills training component was also included. This personalized interactive method demonstrated significant change in DUI from intervention to a two month follow up. However, significant increases in driving after drinking and riding with a drunk driver were found between the two and the six-month follow-ups. Interestingly, the initial reduction in drinking was not concurrent with expectancy change. That is, alcohol outcome expectancies remained stable in spite of the discussion using personalized data. In fact, no studies to date have shown that changes in drinking behavior are moderated by changes in alcohol expectancies (Jones, Corbin, & Fromme, 2001).

In another MI study, assessment of intentions and behaviors to sun tan was followed by personalized feedback on the risk of skin cancer in a longitudinal study on stage of

change-matched interventions (Weinstock, Rossi, Redding, & Maddock, 2002).

Motivational interviewing techniques were used via mailed feedback of behaviors and reported and suggested motivations to change. Baseline information was gathered at the beach and participants were assessed as to their stage of change. Results of assessments of behaviors and intentions were mailed to participants several weeks later. A 12-month assessment and feedback report preceded additional mailed interventions containing stage-tailored information, providing a booster to the initial intervention while a control group received no such booster. Final assessments occurred 24 months post baseline. Generally, increases in use of protective measures continued to through to the 24-month follow-up. Of note, the greatest effect of the intervention was noted in 16 to 24 year olds. The authors of the study suggested that approaches using stages of change from the Transtheoretical theory may persuade a young population where other approaches often fail. Thus the risks and risk-avoidant behaviors may be more salient when guided through stages of change however time and resources for this program are not minimal. In a review of prevention efforts (Larimer et al., 2001) brief, motivational approaches were found to have superior methodology although were lacking in long-term follow-up studies. Further, while these approaches are brief and thus time-effective, the personal interviews demand trained professionals and considerable resources, limiting their accessibility (Dimeff, Baer, Kivlahan, & Marlatt, 1998). Delivery involves individuals or small groups limiting the size of the intervention population.

Other prevention efforts have included graphic information or images in an attempt to frighten adolescents and teens into behavior change. These fear appeal programs will be

discussed further but the aim of these appeals and others discussed above is to raise both awareness of susceptibility and self and response efficacy. The issue of susceptibility within this population however, may not be clear-cut. Realization of negative outcomes may not increase awareness of personal susceptibility. Although students in a study on the risks of drinking and driving acknowledged their intentions to drink and drive and recognized the potential for accidents, jail time, or death, they did not perceive these to be personal threats (Greening & Stoppelenberg, 2000). Even when teens had personal experience with serious illness or injury, as in the Denscombe and Drucker (1999) study mentioned previously, they did not adjust their risk-taking. It was not clear from that study however, if permanent injuries or disabilities were sustained by the teens. Perhaps then, those teens experienced a feeling of invulnerability to the long-term effects of injuries and how their lives would be affected. Finding an issue of high personal relevance that they perceive as problematic in their daily lives may be key in behavior change.

Importance of Appearance

The importance of physical appearance in our society is well recognized. Appearance, including attractiveness, has been shown to be important in social settings, job success, and marriage (Dion, Berscheid, & Walster, 1972; Houston & Bull, 1994; Stevenage & McKay, 1999). An attractiveness bias was first documented when judges assigned more favorable personality ratings to photographs of attractive versus less-attractive faces (Dion, Berscheid, & Walster, 1972). A halo effect demonstrated an association between attractiveness and goodness (Feingold, 1992) where physically attractive people were

seen as more sociable, dominant, sexually warm, mentally healthy, intelligent, and likeable than physically unattractive people.

Unattractiveness and facial disfigurement have been associated with negative characteristics (Langlois et al., 2000). Not only have studies shown a preference to avoid scarred and disfigured individuals on the street and in trains (Houston & Bull, 1994; Rumsey, Bull, & Gahagan, 1986) but personal qualities and job skills in those with facial disfigurements were judged less favorably than were those of individuals without such a disfigurement (Stevenage & McKay, 1999). In that latter study, professional recruitment officers and students reviewed job applications with accompanying photographs of job seekers seated in wheelchairs, candidates with large facial port-wine stains (applied to cohorts' faces prior to the photographs being taken), and candidates without any visible disfigurement or disability. Personal qualities such as friendliness, trustworthiness, confidence, intelligence, assertiveness, and sensitivity were assessed together with job skills such as public speaking, communication, working as a team member, leadership, ability to work under pressure, and initiative. Assessment results were similar across student raters and professional recruiters. Final recruitment decisions (to hire or not) appeared more difficult in the presence of a visible disability or disfigurement as more judges remained indecisive with these individuals. Applicants with the facial disfigurement were judged more negatively than both those in wheelchairs and those without a visible disfigurement or disability. In fact, photographs of cohorts in wheelchairs who possessed a port-wine stain seemed to fair better than those who possessed just the port-wine stain. The presence of the physical disability appeared to

temper judges' opinions, possibly due to awareness of campaigns and legislation fighting discrimination of disabled individuals.

Gender differences related to importance of appearance have been noted previously. Research on the qualities of attractiveness found gender differences supporting the evolutionary theory of attractiveness, part of which proposes that Caucasian females with smoother, rosier complexions are deemed to be fitter and more likely to reproduce healthy offspring (Kalik, Zebrowitz, Langlois, & Johnson, 1998). According to this biological theory, females evolved to select mates with parental investment and resources. Males sought cues for female fertility, some of which were estrogen-related body development and neotenous faces, that is, faces with full lips and soft, rosy skin. This trend continues today as one study found a greater predictor of facial attractiveness in males was having been reared in a higher SES environment, whereas, body mass index and past health problems were predictors of facial attractiveness in females (Hume & Montgomerie, 2001). Further, it seems that preference for beauty develops in infancy (Langlois et al., 2000) as two month old infants showed a preference for attractive faces. The stress that youth place on their appearance, cosmetics, hair grooming, clothing, and cosmetic surgery is also evident in research literature. According to 2002 statistics from the American Society of Plastic Surgeons (ASPS, 2004), more than 3000 women 18 years of age or younger had breast augmentation surgery that year. More than 3000 had liposuction, more than 40,000 had rhinoplasty, and more than 500 had Botox injections (ASPS, 2004). As an important concern to this population, appearance should be a good motivator in avoiding potential harm. Previous studies on sun protection have suggested

the importance of including appearance in research to deal with the growing skin cancer problem (Beasley & Kittle, 1997; Hillhouse et al., 2000; Jones & Leary, 1994).

Motivation to improve one's appearance, or appearance motivation was tested using the Theory of Planned Behavior (Ajzen & Fishbein, 1972) in a study on tanning behavior (Hillhouse, Turrisi, & Kastner, 2000). The Theory of Planned Behavior (TPB) suggests that behaviors are purposeful and goal directed even in light of perceived risks to health. Thus, in the tanning study (Hillhouse et al., 2000) participants reacted to suggestions to reduce their tanning behaviors by increasing their intentions to tan. The authors suggested this reactance was due to the threat of appearing less attractive without a tan, ignoring the potential threat to appearance from skin damage. Appearance motivation did not have a direct impact on tanning behavior but was a moderator variable in that participants higher in appearance motivation were more likely to report positive tanning attitudes and less inclination to change.

Captology

Captology (Fogg, 2003), the use of computers as tools for mass persuasion, has emerged as a potentially leading approach to appearance-based persuasion. Several technological companies have developed software that enables alteration of personal images as a means for potential changes in health behavior attitudes and intentions. Multia-media approaches to risk reduction were also used by New Mexico State University in 2006 in their Wellness, Alcohol, and Violence Education (WAVE) program (NMSU, 2008). Social norms messages were advertised in campus newspapers. Peer education programs were run for freshman and health center and counseling center staff

were trained in motivational interviewing. Twenty-first birthday cards were also sent to students and their parents with tips for responsible drinking enclosed.

Seize the Keys, and “carpe key-em” were catch phrases used by Sam Houston State University in 2005 during their alcohol-risk reduction program (SHSU, 2008). Drunk driving simulators with interactive capabilities to provide feedback on their progress were used in this campaign. Fatal vision goggle obstacle courses and motivational speakers were also featured.

The Persuasive Mirror (A.C. Andresdevalle, personal communication, February 5, 2009) is currently being tested at the University of California as part of their Pace project that aims to alter parents’ nutritional decisions for their children by reflecting weight gain on children’s faces and bodies. Face Value (Hysert, Mirand, Giovino, Cumming, Kuo, 2003) is a smoking prevention program aging adolescents’ facial photographs 30 years to mimic the wrinkling typical of smokers. Results of the pre-post surveys found change in attitudes for both current smokers and never-smokers but the focus of each group differed. That is, smokers’ intentions to smoke in the future were reduced following exposure to their aged photographs and they saw the decision to smoke less positively. Never-smokers’ post-exposure attitude change lay in greater perception of harm from smoking. This group also showed greater emphasis on making daily decisions based on concerns for their appearance.

Fear Appeals

Fear Appeals and Health Change Models

Fear arises from a perceived threat and thus serves as a cue to protect oneself (Rogers,

1975). Rogers stated that fear appeals provide information emphasizing the consequences of the threat if recommendations to protect oneself are not followed. He identified two key variables in fear appeals: perceived threat and perceived efficacy as part of his Protection Motivation Theory (PMT). Perceived threat involved the perceived susceptibility to a threat together with the perceived severity. Perceived efficacy was defined by perceived self-efficacy (i.e., the individual's belief in his/her ability to perform the recommended course of action) and perceived response efficacy (i.e., the individual's belief that the recommended course of action will be effective in averting the threat). Some support for PMT was found as the interaction between severity and/or susceptibility and self-efficacy and/or response efficacy appeared to influence attitudes, intentions, and behaviors.

Fear appeals have received mixed reviews for the past 50 years. Three major theories have predominated the literature: drive theory, parallel process theory, and Protection Motivation Theory (PMT). Drive theories (Hovland, Janis, & Kelley, 1953; Janis, 1957) suggest that the level of fear produced in individuals drives them to action, either facilitating change or interfering with it. That is, drive theory proposed an inverted U-shaped relationship where a moderate amount of fear arousal was thought to best motivate change. Lack of support for this model resulted in its rejection in the early 1970's. At that time, Leventhal (1970) suggested a parallel process theory; fear appeals produced two separate but interdependent processes. His proposal that danger control processes (i.e., efforts to control a threat) combined with fear control processes (i.e., efforts to control the fear aroused by the threat) was never tested and indeed was

criticized as being un-testable (Witte, 1994). His theory did, however, lead the way for other theories combining cognition and emotion.

The Transtheoretical Theory (Prochaska & DiClemente, 1983) and the Health Belief Model (Rosenstock, 1974), outlined previously in this paper, also recognized individual variations in perceptions of risk to a health threat. A more recent model, the Extended Parallel Process Model (Witte, 1994), integrates previous theories, attempting to identify when and why fear appeals fail. The model states that if a threat is not perceived as likely, the fear appeal is not processed further. If, however, an individual believes him/herself to be susceptible to a threat and it is perceived as severe, fear or concern is raised, and the individual is motivated to reduce the threat. Response efficacy and self-efficacy are then assessed. That is, the individual asks, "is the recommended response likely to reduce the threat?" If yes, the individual assesses whether he/she is capable of performing that response.

Witte (1994) suggested that some previous fear appeals have concentrated more on the threat, or on raising fear, and not enough on response and self-efficacies. Reisberg (1999) demonstrated this point by outlining the "Party Smart" campaign in Boston where posters warned "A safari shirt works well with this classic black pant. The white and red accents from puke don't." While the fear of looking foolish is implied, behavioral responses to avoid such a situation are not. Individuals in that study, suggested Witte and Morrison (2000), were left to reduce fear in any manner available to them, including avoidance, minimization, and denial. Even if the appeal makes behavioral recommendations, if they are not perceived as feasible, the individual is likely to reject

the message. Similar findings stemmed from breast self-examination research (Prentice-Dunn, Floyd, & Flournoy, 2001) where threat levels and coping levels were manipulated. High threat group participants read graphic essays of chemotherapy side effects and viewed photographs of a radical mastectomy. Low threat essays described breast cancer as a rare disease with less severe impact. High threat information proved effective in increasing intention to act on the threat when high coping information followed. The message receiver moved away from maladaptive responses such as avoidance and hopelessness to rational problem solving.

According to Witte & Morrison (2000) fear appeals can be dealt with adaptively by responding behaviorally (e.g., reducing the risky behavior) or maladaptively through psychological responses aimed at reducing the fear (e.g., denying or minimizing the risk or personal relevance). The key to encouraging adaptive responses may lie in the presentation of feasible alternatives to the risky behavior. The effectiveness of a fear campaign was tested on college women in an effort to reduce genital warts caused by human papillomavirus (HPV) through vivid and personalized language (Witte, Berkowitz, Cameron, & McKeon, 1998). Consistent with the Extended Parallel Process Model (EPPM), appeals contained messages of participant's susceptibility to HPV and the severity of the disease in either a high threat (vivid) or low threat form. Response efficacy and self-efficacy to avoid the disease were also measured. As the authors predicted, when high threat was combined with high efficacy, appeals were effective.

When breaking down the components of fear in appeals, LaTour and Rotfeld (1997) suggested that fear is an emotional response to threat that can induce attitude, intention,

and behavior change. So while some studies have concluded that fear appeals can boomerang if the threat is perceived as too high, other studies suggested that the threat should be high. The seemingly contradictory evidence of fear appeals is discussed below.

The boomerang effect was observed in a study that used various warning labels on alcoholic beverages in an attempt to increase the perception of risk (Snyder & Blood, 1992). Participants instead showed decreased risk perception and increased perception of the benefits of the beverages. A similar effect was found in a study in which participants who were matched on their beliefs to a perceived health threat (hence, those who perceived the threat as being of high relevance were grouped apart from those who perceived the threat as being of low relevance) were then exposed to high or low threat messages (Lieberman & Chaiken, 1992). The authors found that following the message presentation, high relevance participants were less likely to believe in the health threat for both high and low threat messages.

Evidence does exist in the fear appeals literature that refutes this boomerang effect (Sherman, Cialdini, Schwartzman, & Reynolds, 1985). As Sherman et al. demonstrated, the ease with which a participant can imagine that he/she has a disease is crucial in perceiving a threat. Following exposure either to easy-to-imagine or difficult-to-imagine symptoms, participants rated both ease of imagination and estimated their likelihood of contracting the disease. In contrast to studies finding a boomerang effect, this study found that the more vivid or easier to imagine the symptoms appeared, the more likely participants thought themselves to be at risk. In focus group studies of Public Service Announcements (PSAs), researchers found that PSAs emphasizing consequences to DUI

behavior, that is, scenes ending in tragedy, were more salient and induced significantly more reports of attitude and intention change than did lower key “intervention” messages similar to the “friends don’t let friends drive drunk” campaign (NHTSA, 1996).

Tanning was the focus of the Jones and Leary study (1994) comparing the effectiveness of health-based warnings to appearance-based warnings. Participants read essays on the negative effects of tanning. Individuals deemed to be lower in appearance motivation were more persuaded by the appearance-based consequences of tanning than were those who were higher in appearance motivation. That is, those with scores low on a measure of the importance of their appearance reported greater intentions to change tanning habits while individuals with high scores on the importance of appearance measure reported even stronger intentions to tan. The authors concluded that among youth, messages on the negative effects to body and facial appearance might be more persuasive than health-based messages. This boomerang effect has also been found in other studies, leading to theories suggesting that individuals who perceive a health threat as too personally relevant are likely to take a defensive stance, not only by disregarding the health warning but by increasing the risk behavior (Lieberman & Chaiken, 1992; Snyder & Blood, 1992).

Prior research on fear appeals and persuasive messages suggests the need for increased arousal as an indication that individuals will attend to messages (LaTour & Rotfeld, 1997, Sheer, 1995, Witte et al., 1998). A study conducted on the effectiveness of public service announcements in 7th and 8th graders found evidence that social threat communications were more persuasive than physical threat communications, suggesting

that arousal is not a necessary component in a young population (Schoenbachler & Whittler, 1996). That study did not consider the social threat resulting from physical scarring used in the current study. As noted earlier in a review of appearance literature, social alienation is a negative reality amongst disfigured individuals. Further, researchers have recognized that public health campaigns must consider the audience; threats aimed at persuading teen smokers to quit are more likely to be effective by demonstrating the consequences of smoking on dating than by showing the possibility of lung cancer (Kelly & Edwards, 1998). Thus, the social threat posed from physical threats to appearance indicates the need for more specific research in this area.

Persuasive Appeals and DUI

Although there are no known published studies relating personal fear or persuasive appeals to the decision to drive while intoxicated, results of an unpublished study by the current author (McNabb, 2000) suggested the need for further inquiry. Following administration of a survey regarding attitudes and intentions to drink and drive, half of the participants in that study (i.e., those randomized into the experimental group) consented to having their facial photographs altered on a computer. Photographs were altered to mimic the facial bruising and scarring of windshield injuries common in DUI accidents (Schultz, 1998). One week later, all participants in both groups were given psycho-educational material on DUI, with suggestions aimed at raising their self-efficacy to avoid such a situation in the future. The comparison group was shown a crash-scene photo and told that one student was injured and one killed in the alcohol-related crash, and individuals in the personalized-photo group received their own photos altered to

reflect the scarring and bruising common to alcohol-related car crashes. DUI-related attitudes and intentions (over a three-week-long period) were compared between groups. The experimental group was told of the appearance-related consequences of windshield injuries in drinking and driving crashes. Intentions to drink and drive were significantly reduced in participants exposed to computer-altered images compared to controls. Specifically, a significant group-by-time interaction indicated that following the intervention, those in the experimental group reported decreased intentions to drive or ride in a car where the driver had been drinking and increased intentions to use a designated driver or take a cab after drinking. No such post-intervention changes were found in the control group. Not surprisingly, higher post-intervention anxiety levels were found in the experimental group and their perception of the likelihood of a future DUI also significantly increased.

No boomerang effect, as found in the Jones and Leary (1994) study, was found in the McNabb (2000) study, likely due to the paradox of asking Caucasian youth to forgo appearance-enhancing sun-tanning behaviors. In essence, tanning behavior competes with prevention of skin cancer through limiting exposure to ultraviolet (UV) rays whereas social alcohol use does not necessarily compete with limiting DUI. Characteristics defining facial beauty in both Caucasian men and women begin with suntanned skin (Fink, Grammer, & Thornhill, 2001). The McNabb study, however, raised the possibility of using the detrimental effects to appearance through drinking and driving in behavior change programs. That study also included an element lacking in previous studies: strategies to increase the efficacy of behavior change. In order for fear appeals to have

long-term behavior-change effects, individuals must not only recognize their susceptibility and the severity of the event, but must also perceive the efficacy of a change strategy (Maddux & Rogers, 1982). These changes in design may have made this persuasive appeal an effective method for attitude and intention change.

Limitations of prior fear appeals research include the study of attitudes and intentions rather than behaviors. Further, previous fear appeals studies have relied on personalized language or participants' imagination to put themselves in the position of patients suffering the health consequences. While imagining that one's health or one's social future has been put at risk has proven to be an effective tool (Sherman et al., 1985), it is not likely as vivid a tool as a personal photograph altered to portray possible outcomes of health behaviors.

The Present Study

While many prior studies, including McNabb (2000) focused on attitude and intention changes, the current study used persuasive appeals in an attempt to change behavior, not merely attitudes. It was designed to assess the absolute and relative impact of persuasive appeals made personally relevant through use of participants' own photographs altered to illustrate the potential appearance-based consequences of driving under the influence. Rather than examining attitudes and intentions related to DUI, the current study assessed behavior change in DUI-related behavior. Given that many colleges use social marketing campaigns, (Weschler et al., 2004) that contain mainly printed only material such as pamphlets, newspaper ads, and posters of crash-scene photos, the current study adds to the McNabb (2000) study with the inclusion of an information-only control group to

measure the relative behavioral impact of information-only campaigns, crash-scene posters, and personalized photos.

Definition of Terms

The following definitions are applicable within the context of the current study:

DUI behavior – the term driving under the influence of alcohol or drugs when reactions may be impaired (also referred to as “drinking driver”) was chosen due to negative feedback from participants in prior studies using the terms “Driving while Intoxicated” or “Driving Drunk”

RDD behavior – riding with a driver who is under the influence of alcohol or drugs and may have impaired reactions (also referred to as “riding with a driver who has been drinking/drug taking”)

BAC – blood alcohol limit of .08 across the United States

Fear – an emotional response that can prompt attitude or intention changes as well as action (LaTour & Rotfeld, 1997)

Arousal – emotional or physiological escalation as provided through self-report

Fear Appeals – threat messages designed to change behavior by increasing arousal and so calling attention to the possible consequences of failing to change behavior

Persuasive Appeals – fear appeals that include educational strategies on how to change behavior

Research Questions

The specific research questions are as follows:

1. Did the intervention for participants in the personalized photo condition (i.e.,

providing them with altered facial photographs to reflect the negative appearance-based consequences of driving under the influence) reduce reported DUI-related behaviors more than standard crash scene appeals showing an image of a crumpled car and informing them of the death of the two student occupants?

2. Did the non-personalized crash scene photo reduce DUI-related behaviors more than the standard information appeals?

3. Did the importance of appearance, sensation seeking, alcohol outcome expectancies, social desirability, and/or risky and aggressive driving influence behavior changes of participants?

4. When compared to their pre-intervention levels, did arousal levels for those in the personalized photo group increase following exposure to their altered photographs?

5. Did importance of appearance become more important for those in the personalized photo group immediately after exposure to their altered photographs?

Hypotheses

This study attempted to answer the preceding questions, based on the following hypotheses, best answered by the nine questions on the abbreviated Behavior Survey (see Appendix F). Findings from other questions, not included in the hypotheses, were considered ancillary.

- I Participants in the personalized photo group will show a greater reduction in DUI-related behavior than will a) those in the crash scene photo group and b) those in the no photo control group.
- II Participants in the crash scene comparison group will show a greater reduction in DUI-related behavior than will those in the no photo control group.
- III Importance of appearance (as measured by IOA), sensation seeking, (as measured by

SSS), alcohol outcome expectancies (as measured by AOES), aggressive driving, and risky driving (as measured by the Driving Survey) will predict DUI-related behavior at follow-up, regardless of pre-intervention responses.

- IV Participants in the personalized photo group will have higher post-intervention arousal levels (as measured by AD ACL) whereas no change in arousal level is anticipated for those in the crash scene photo group and the no-photo group.
- V Scores for importance of appearance (as measured by IOA) will increase from pre-intervention assessment to post-intervention for those in the personalized-photo group.

CHAPTER II

METHOD

Participants

Four hundred and fifty-three college student volunteers in social science and education classes at the University of Southern Mississippi were screened for participation in this study. A brief screening questionnaire, administered during class time, allowed for the selection of those who were (1) over 18 years of age, (2) reported either drinking and driving or riding with a drinking driver during the past year, and (3) were willing to be contacted about participating in this study. Two hundred and eighty interested students who met selection criteria were contacted by phone or email (based on their preference) with participation dates and times.

Instruments

Screening Questionnaire

A five-item screening questionnaire (see Appendix A) developed by the researcher for the McNabb (2000) study, designed to keep participants blind to the purpose, assessed general health behaviors. Two DUI/RDD questions were used for selection.

Demographics

Fifteen items included on this survey were developed by the researcher for the McNabb (2000) study. Five demographic questions were followed by five questions regarding car, bicycle, and motorcycle use. Three questions were included on participation in university health classes, one on sports team participation, and one regarding participants' perception of peer health behaviors (see Appendix B).

Behavior Survey

Thirty-eight items assessing health-related behaviors (see Appendix C) were adapted from the Centers for Disease Control Youth Risk Behavior Surveillance survey (Kann et al., 1997). The first 12 questions, regarding health and beauty regimes in the past month, served as distractors to keep participants blind to the purpose of the study. The next 16 questions assessed risky drinking over the past 30 days. Seven additional items measured seatbelt and helmet use. Finally, three questions asked about past history of injuries from sun exposure, sports injuries, and auto accidents. Because the Youth Risk Behavior Surveillance Survey was developed to allow for additions and deletions of this nature for state and local administration, the high reliability (.82) found previously (Kann et al., 1997) is not likely to be affected. This combination of distractor items, risky drinking questions, seatbelt and helmet use questions were administered as part of the baseline survey. Nine of these items concerning drinking, drinking and driving, riding with a drinking driver, seatbelt use, recent motor vehicle accidents, and helmet use were selected as representative of DUI-related risk behaviors. These nine items were re-administered following the intervention and each of these items were compared to the matched baseline behaviour for analysis. The nine items were labelled RDD (i.e., riding with a drinking driver), DUI (i.e., driving under the influence of alcohol), ALT (i.e., use of alternate transportation such as taxi, designated driver), Alc (i.e., alcohol consumption), CAR (i.e., alcohol consumption while in a car), Behav (i.e., behaviors and attitudes surrounding the decision to RDD), Seatbelt (i.e., use of seatbelts), Helmet (i.e., use of motorbike or bicycle helmets), and MVA (i.e., motor vehicle accidents). The reliability of this combination of items tends to be low (.40) due to the diversity of behaviors, but increases (.61) when only items specific to DUI are included such as RDD,

DUI, ALT, ALC, CAR, and Behav.

Driving Survey

Sixteen questions from the risky, non-aggressive driving subscale of the Driving Survey (Deffenbacher, 2001) and 13 from the aggressive driving subscale, were adapted to the format of the preceding questions (see Appendix D). Items were rated from 0 to 5 or more, referring to how often a given event occurred. While the original Driving Survey used a 3-month time frame, a 1-month period was used here to allow for changes over the month and a half experimental period. Test-retest reliability over a 3 month period was strong for both the risky, non-aggressive driving scale (.83 to .86) and the aggressive driving scale (.85 to .89). Internal consistencies were also strong for both the risky, non-aggressive scale (.86) and the aggressive scale (.88).

Marlowe-Crowne Scale of Social Desirability-Form C (MC-C)

A 13-item short form of the Marlowe-Crowne Scale of Social Desirability, developed by Reynolds (1982) was included to assess the degree to which participants present themselves in a socially desirable way. While it is the most widely used measure of social desirability, it more accurately measures avoidance of disapproval (Robinson, Shaver, & Wrightsman, 1991). Although several other short forms have been developed, the 13-item Reynolds Form C was found to be psychometrically comparable to the 20-item version, with internal consistencies ranging from .62 to .76 and high correlations with the original scale (.91 to .97). It has been also been studied more completely than other short forms (Reynolds, 1982; Strahan & Gerbasi, 1972). Eight items are keyed false and five are keyed true, with a score range of 0 to 13.

Importance of Appearance (IOA)

Seven questions addressing the importance of facial appearance were included next in this questionnaire (see Appendix E). While body attitude surveys abound, no questionnaires were available to assess the importance of facial rather than body/weight appearance. The seven items were therefore developed by the researcher based on surveys of overall appearance (e.g., Cash & Pruzinsky, 1990; Hillhouse et al., 2000; Thomas & Thompson, 1998). Using a five-point Likert-type scale, respondents were asked to choose from “not at all important” to “extremely important” on items such as “how important have your looks been in getting by in school?” Thus, total scores had a possible range of 0 to 45. Low scores here meant a low investment in appearance whereas high scores meant a higher investment in appearance. A pilot study of this scale with 37 college students at the University of Hartford showed it to be face valid. Focus groups, held prior to this study, generated the term “looks” as opposed to “appearance,” “attractiveness,” or “facial appearance.” A reliability analysis based on the outcome of the McNabb (2000) study revealed a Cronbach’s alpha of .81, demonstrating good internal consistency for this measure. Similar reliability was found in the current study (.78) and correlations for the IOA can be found below in Appendix O.

Michigan Alcohol Screening Test (MAST)

This 22-item survey was developed by Selzer (1971) as a measure of problematic drinking behaviors and consequences. A forced choice yes/no format was used for questions such as “Have you ever lost friends because of drinking.” Negative responses on questions 1 and 4 were allotted one point as were positive responses on all other questions. A total score of 0-2 indicated no apparent problem, 3-5 suggested early problem indicators, and a score of 6 or more was indicative of problem drinking. A score

higher than 10 suggested alcoholism. The MAST is a sensitive screen, correctly identifying 92% of 99 hospitalized alcoholics told to lie about their drinking problems. Internal consistency ranges from .83 to .95 (Pokorney, Miller, & Keglan, 1972).

Sensation Seeking Scale (SSS) Form V

This 40-item scale was developed to assess levels of risk taking, that is, the willingness to take physical, social, legal, and financial risks for the sake of having the experience (Zuckerman, 1994). It uses a forced-choice format asking respondents to choose between items describing their likes/dislikes (for example, “A. I would like to try parachute-jumping” or “B. I would never want to try jumping out of a plane, with or without a parachute”). Several words were added by this researcher to update the language used in this scale. For instance, the word “player” was added alongside “swinger” to facilitate comprehension by students. Factor analysis supports four subscales: Disinhibition (Dis), the need to look for social stimulation such as wild parties and getting high, Boredom Susceptibility (BS), intolerance for monotonous, unchanging situations such as getting bored with a previously seen movie, Thrill and Adventure Seeking (TAS), a preference for adventure sports and activities such as mountain climbing, and Experience Seeking (ES), a preference for new or unusual experiences such as sampling new foods. The total SSS score has consistently demonstrated strong internal consistency with alphas ranging from .83 to .86 and 3-week test-retest reliability of .94 (Zuckerman, 1994). Subscale reliabilities ranged from .56 to .82 with TAS having the highest reliability (.77-.82), DIS next highest (.74-.78), then ES (.61-.67) and BS (.56-.65). A summary of studies on sensation seeking and drinking and driving behavior (Arnett, 1990) found a positive linear relationship between the two. The

total SSS score has correlated more strongly with risky driving than have scores on any of the subscales (Clement & Jonah, 1984; Jonah, 1997; Zuckerman & Neeb, 1980). Of the four 10-item subscales, DIS correlated most strongly with drinking and driving behavior (Arnett, 1990). Thus, while total SSS scores were used here for secondary analysis, DIS scores were also considered. Total scores have a possible range of 0 to 40, with one point given for each sensation seeking answer endorsed. High scores (i.e., greater than 20) indicate a high propensity for sensation seeking.

Alcohol Outcome Expectancy Scale (AOES)

The 34-item AOES (Solomon & Annis, 1984) measures positive and negative expectations of drinking outcomes. Participants were asked to rate the likelihood of various experiences happening to them when they drank, on a 6-point scale from 1 (no chance) to 6 (certain to happen.) Thirty-four items on the scale include statements such as “I am more accepted socially,” “I feel guilty,” and “I am more sexually responsive.” Subfactors of positive expectancies include social facilitation, fun, sex, and tension reduction, while subfactors of negative expectancies include social, emotional, physical, and cognitive performance. Sums of scores on each subscale indicate the degree to which participants expect to experience positive and negative factors. Internal consistencies of the subfactors ranged from .88 to .94 (Leigh & Stacy, 1993). Test-retest reliability over one week was .87. Leigh & Stacy (1993) also noted good convergent and discriminant validity.

Activation-Deactivation Adjective Arousal Checklist Short Form (AD ACL)

This self-report test, developed by Thayer (1986), assesses momentary arousal states by asking participants to circle the level of arousal they presently feel on a list of 10

adjectives including “energetic,” “jittery,” and “full of pep.” The first of the two dimensions included in this checklist is energetic arousal, physical conditions affected by factors such as motor activity, nutrition, and sleep-wake cycle. The second dimension, tension arousal, is related to dangers, stressors, and threats. Four anchors are included for each adjective from 4 (definitely feel) to 1 (definitely do not feel) and the scale is scored accordingly. Energetic arousal has been found to covary with Positive Affect on the Positive and Negative Affect Scale (PANAS) while Tension Arousal covaries with Negative Affect (Thayer, 1986). The AD ACL correlated moderately (.56 to .68) with physiological measures of skin reactance and heart rate but had strong test-retest reliability (.87).

Attitudes and Subjective Norms (ASN)

This 32-item survey is based on the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and measures the ease of performing health-safe behaviors. Modified for DUI/RDD behaviors, the first four statements, concerning ease, convenience, and necessity of arranging alternate transportation, are anchored on a 10-point Likert-type scale ranging from 0 (do not believe in ease) to 10 (strongly believe). The next four questions, also gauging the ease, convenience, and necessity of alternate transportation, ask participants to rate the degree to which they favored a particular behavior is on a 7-point Likert scale from -3 (unfavorable) to +3 (favorable). Four blanks below these questions requested that participants list the names of those who influenced their decisions regarding alternate transportation. Next, participants were asked to estimate the value placed on alternate transportation by the individuals they listed above on a 7-point Likert scale ranging from -3 (should not use) to +3 (should use). Four statements on

ease, convenience, and necessity of future avoidance of DUI/RDD are anchored on a 10-point Likert-type scale ranging from 0 (do not believe) to 10 (strongly believe). As with use of alternate transportation, the degree to which they favored avoidance of DUI/RDD was rated and participants were then asked to list and rate individuals who influenced their decisions on DUI/RDD and their perceptions of avoiding it.

Behavior Survey (Abbreviated)

As stated in the unabbreviated behaviour survey description, that is, the CDC behaviour survey description, nine items taken from the initial Behavior Survey (see Appendix F) were included here as key questions relating to DUI behaviors. They were RDD (riding with a drinking driver), DUI (driving under the influence of alcohol), ALT (use of alternate transportation), ALC (alcohol consumption), CAR (alcohol consumption while in a car), Behav (behaviors and intentions surrounding RDD), Seatbelt (use of seatbelts), Helmet (use of a motorcycle or bicycle helmet), and MVA (recent motor vehicle accidents). Each of the nine behaviors were matched with the corresponding baseline item as a pre-post measure of change. As with those baseline measures, each item was rated on a seven-point ordinal scale of the number of days or relative frequency. As noted earlier, the reliability (.40) reflects the varied combination of items but when CAR, Helmet, and MVA were removed, reliability of the remaining items increased to .61.

Intervention Rating Survey

This survey was developed by the researcher to gauge the impact of the interventions on participants at follow-up (see Appendix G). The seven items on this measure assessed the impact and believability of the interventions, participants' perceptions on the graphic

nature of the photographs used, and presenter warmth and credibility. These items were presented on a 5-point Likert-type scale ranging from 0 (none at all) to 5 (extremely). The opportunity for open-ended comments on participants' impressions of the study was also included.

Procedure

Administrators

Had there been any individuals with obvious facial deformities, they would not have been selected out during the screening process to avoid distress on their part. Instead they would have been telephoned and told of the nature of the photographic alterations to provide them with the opportunity to participate or decline. No participants with this situation were found.

Three graduate-level research assistants (one female and two males) were trained in the administration of the questionnaires, in delivery of the educational and intervention portions of this study, and in provision of feedback during the follow-up. Assistants were randomized to treatment groups to control for peripheral influences on participants such as assistant attractiveness and liking. Protocols were provided for the assistants (see Appendix H) to standardize treatment across administrators at each stage of the experiment. Training included sensitivity to overt signs of distress during and following presentation of material. Assistants were instructed to inquire about levels of distress prior to dismissing each group and to ask any participant reporting unsafe practices, such as DUI with a child, to remain for further inquiry by the researcher. Standardized questions and prompts for generation of strategies to avoid a DUI (see Appendix I) allowed for flexibility within groups while maintaining a structured format. Due to

participant attrition in the first and second portions of the study, an additional graduate student was trained in the above format for recruitment and collection of additional protocols for the Crash Scene and No Photo groups.

Screening

Approximately four hundred University of Southern Mississippi undergraduate students volunteered to take a screening measure for study participation. Students in social science and education classes were approached during class time to complete the screen and were told that completion of the screen implied consent to be screened. They were informed that the study involved general health behaviors such as sun tanning, use of chemical facial products, driving habits, and participation in aggressive sports. An emphasis was placed on the time line of the study as well as the graphic nature of either information or photographs to which participants may be exposed. The potential benefits of participation were noted, including the use of class credits and coupons (valued at approximately \$20 per person) for food, entertainment, and prizes as incentives for participation in all three portions of this study. Participants were kept blind to the focus of the study, that is, exploration into prevention of driving under the influence, in an attempt to avoid demand characteristics. Only those over 18 years of age who acknowledged that they rode with a drinking driver or drove themselves after drinking in the past year were contacted for participation, although participants were still not aware of the reasons for inclusion or exclusion.

Participants were placed into one of three conditions (a no-photo control group, a crash scene comparison photo group, or a personalized-photo group) as they completed the screens. That is, students were assigned to particular groups according to when they

completed the screen. For example, the first participant to complete the screen was assigned to one group, the second was assigned to the second group and the third assigned to the third group. This ordered method continued for all participants.

Pre-treatment Assessment

All participants who met inclusion criteria and agreed to participate were contacted to arrange for the first of three administration dates where they were told that the purpose of the study was the investigation of health risk behaviors. At this time participants were given information and consent forms (see Appendix J). All participants were also asked to consent to having their photographs taken and altered. Assurance of the confidentiality of these photographs and their separation from survey data was outlined in their consent forms. Students were informed of the time involved in each portion of the study and told that class credits would be allotted for each portion (3 credits for pre-intervention, 2 credits for intervention, and 4 credits for follow-up). They were also notified at this time that incentive packets containing food coupons, entertainment coupons, and prizes such as pens, magnets, and sticky notes would be awarded to those who completed all three portions of the study. Delineation of sponsors of these incentives (e.g., McDonalds, Block Buster) was outlined on the consent form, as was the value of the incentives for participation at Time 2 (\$5.00) and at follow-up (approximately \$15.00) for a total value of approximately \$20.00 and 9 class credits. Participants were told that no names would be recorded on the surveys or photographs; to maintain confidentiality only identification numbers were used. Records matching the identification numbers to names were stored in a locked filing cabinet at the University of Southern Mississippi where only the researcher, her assistants, and supervisor had access to them.

Students who agreed to participate were asked to complete a packet containing the demographic questionnaire, CDC Behavior Survey, the Aggressive and Risky Driving subscales of the Driving Survey, SSS, IOA, AD ACL, MC-C, and the AOES, in that order. This portion of the study took approximately 30 to 45 minutes. Students were then scheduled for the second portion of the study, one week later, and facial shots were then taken of each participant. Before signing a participation sheet, participants were notified class credits could not be submitted until the study was completed even if they only completed one of three portions of the study.

Intervention

Each group assembled separately, approximately one week after the pre-treatment assessment, and were administered educational handouts on prevention of DUI, garnered from CDC material (Bolen, Sleet, & Johnson, 1997) and National Highway Safety Traffic Administration (NHSTA) information (McKnight et al., 1995). Each group was offered three separate possible administration times, therefore administration group sizes varied. Following distribution of the handouts, assistants read this information that included accident, mortality, and arrest statistics of incidents of DUI for their age group (see Appendix K). Participants were encouraged to generate strategies to avoid DUI. Further information, gathered by the researcher to increase self-efficacy in reducing the harm due to alcohol was discussed and distributed. These recommendations, such as nursing drinks or staggering non-alcoholic with alcoholic drinks, are included in Appendix I.

No-Photo Control Group

Immediately following the educational portion of the study participants in the no-photo control group was asked to complete the IOA and AD ACL. This portion of the study took approximately 30 minutes, including time for participants to be scheduled for the final portion of the survey, administered three to four weeks later.

Crash-Scene-Photo Group

Immediately following the educational portion of the study participants in this group were given a photograph of a car demolished in an alcohol-related accident taken from the (MADD) website (www.madd.org). They were told that the photograph was from a fatal accident of two university students who had been drinking. The possibility of this occurrence and the risks to their safety was emphasized, and a discussion followed on participants' reactions to this information. They were reminded that such consequences could be avoided by avoiding DUI/RDD behavior. At this time they were asked to complete the IOA and AD ACL. This portion of the study took approximately 45 minutes, including time for scheduling participants for the final portion of the survey, administered three to four weeks later. Counseling center information was provided in the event that information from the presentation was distressing.

Personalized-Photo Group

Immediately following the educational portion of the study, participants in this group were told of the possible consequences to appearance following DUI crashes. They were informed that their photographs were altered to reflect the bruising and scarring possible following a motor vehicle accident (MVA). All attempts were made to standardize alterations to the participants' photographs taken following baseline assessment. Alterations were made on an IBM computer with Adobe Photo-Shop 7.0 program, so that

each person in the personalized-photo group was exposed to similar stimuli. Images from actual alcohol-related motor vehicle accidents, or MVAs, (Shultz, 1998) were used as prototypes for the changes. Each photograph was altered to approximate one week post-accident scarring and bruising. Eight-by-six inch black and white copies of these altered photos were made for distribution to participants. See Appendix L for a sample photograph.

Their personalized, altered photographs were handed to them, and they were asked to report any distress to the assistant. They were informed that the prototype for the photo was a young woman who had been drinking at a university party prior to driving. The possibility of permanent scarring and disfigurement as a consequence of drinking and driving or riding with a drinking driver was emphasized. They were also reminded that avoiding DUI/RDD behavior might prevent such consequences. The IOA and the AD ACL was administered at this time. A brief discussion of participants' reactions and concerns followed. No overt distress was noticed by the assistants or reported by the participants. Should this have occurred, assistants had been instructed to discuss distress and possibly escort the participant to the university counseling center. Altered photographs were then collected and kept by the researcher. Participants were reminded that should any concerns arise from the material presented, counseling was available free of charge to students at the university counseling center with staff on call 24-7; the phone number for that agency was provided. The graduate assistants were instructed to approach any participant who appeared to be distressed, ask him/her to stay for a discussion, and if necessary escort him or her to the counseling center. This portion of the study took approximately 45 to 60 minutes, including time for scheduling participants

for the final portion of the survey, administered three to four weeks later.

Follow-up

Approximately three to four weeks after the intervention all participants in each of the three groups were asked to complete the abbreviated version of the Behavior Survey, the AOES, the ASN, and the Driving Survey in that order. Participants were debriefed as to the nature of the study (see Appendix L) and were asked to complete the intervention rating survey. They were then awarded the incentive packages. Administration of this set of questionnaires took approximately 15-30 minutes with approximately 15 minutes for debriefing. Approval of this protocol was granted by the Institutional Review Board (see Appendix N).

CHAPTER III

RESULTS

Preliminary Analyses

Four hundred and fifty-three college student volunteers were screened for possible inclusion in this study. Of those who met the inclusion criteria of prior DUI or RDD, 280 were entered into the study. One hundred and forty-seven dropped out before completing all three parts and were excluded from analyses. This attrition rate of 52.5% resulted in 133 participants who completed all three portions (i.e., baseline, intervention, and post-intervention). In the initial run of participants, 241 completed the baseline measure but only 99 completed the third portion of the study. The attrition rate was markedly different for the Photo group (36.4%) compared to the Crash Scene (66.6%) and the No Photo (72.3%) groups. An additional run of the study resulted in data for 133 participants; 47 in the Photo group, 44 in the Crash Scene group, 42 in the No Photo group.

Ages ranged from 18 to 32 (*Mdn* = 20). Sixty-six percent of participants were female. Fifty-seven percent of participants identified themselves as Caucasian and nearly 35% identified themselves as African American. Although 31 academic majors were represented (see Table 1), more than 43% of participants were psychology majors.

Table 1
Demographic Data by Conditions

Factor	Photo		Crash Scene		No Photo	
	Male	Female	Male	Female	Male	Female
Sex	15	32	14	30	16	26

Table 1 (continued)

Photo				School Year Crash Scene				No Photo			
1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th
10	8	15	14	8	14	12	10	10	9	9	14

Photo					Ethnicity Crash Scene					No Photo				
Asian/AA/Mix/Hisp/Cauc ^a					Asian/AA/Mix/Hisp/Cauc ^a					Asian/AA/Mix/Hisp/Cauc ^a				
1	17	0	3	26	0	14	2	2	26	0	15	2	1	24

^a AA = African American, Mix = Mixed Race, Hisp = Hispanic, Cauc = Caucasian

Placement of participants following the screening procedure resulted ultimately in 47 participants in the personalized photo group, 44 in the crash scene photo comparison group, and 42 in the no photo control group. A power analysis, using Gpower, found sufficient strength ($t(131) = 1.98$) to detect moderate relationships (effect size = .26) at the .05 level. Dissertation committee members were notified of this smaller-than-anticipated sample size and granted approval for proceeding with analyses.

Pre-intervention behavior percentages and frequencies are listed in Table 2. While 56% of the sample stated that they completely believed in the dangers of RDD, over 85% reported riding with a drinking driver in the month prior to the study. Over 5% reported RDD on more than 20 days in that month. Although 84.2% of participants believed that warnings against DUI were somewhat or completely true, approximately 70% reported DUI in the past month. Just over three percent reported driving after drinking more than 20 out of 30 days in the month prior to the study. In spite of this prevalence, 61% of

participants believed that it was likely, very likely, or certain that they would be less alert after drinking; 64.4% believed they would clumsy; 53.5% believed they would have problems driving (see Figure 1). More than 65% reported drinking alcohol while in a car in that month and over 48% indicated drug use prior to driving in that month. Almost 25% overestimated the number of drinks acceptable before becoming intoxicated. While 43% believed warnings they had heard of the necessity of seatbelt use, just over 17% reported consistent seat belt use.

Table 2
Pre-intervention Driving Habit Frequencies by Condition

Frequencies of Normal Driving Habits											
Photo				Crash Scene				No Photo			
Daily/Weekly/Seldom/Never				Daily/Weekly/Seldom/Never				Daily/Weekly/Seldom/Never			
45	5	1	0	38	0	0	2	37	4	1	0

Frequencies of RDD (Riding with a Drinking Driver) in Prior Month							
	0	1-2	3-5	6-9	10-19	20-29	30
Photo Group	10	18	10	6	2	1	0
Crash Scene Group	5	10	15	8	3	1	2
No Photo Group	3	4	18	11	3	3	0

Frequencies of DUI (Driving Under the Influence) in Prior Month							
	0	1-2	3-5	6-9	10-19	20-29	30
Photo Group	19	14	6	6	1	1	0
Crash Scene Group	10	10	10	5	6	0	3

Table 2 (continued)

Frequencies of DUI (Driving Under the Influence) in Prior Month							
	0	1-2	3-5	6-9	10-19	20-29	30
No Photo Group	11	15	7	5	4	0	0
Frequencies of ALC (Alcohol Consumption) in Prior Month							
	0	1-2	3-5	6-9	10-19	20-29	30
Photo Group	7	6	10	10	8	4	2
Crash Scene Group	1	6	5	17	12	3	0
No Photo Group	2	2	15	7	10	5	1
Frequencies of CAR (Alcohol Consumption While in a Car) in Prior Month							
	0	1-2	3-5	6-9	10-19	20-29	30
Photo Group	23	15	3	2	4	0	1
Crash Scene Group	9	15	3	2	4	1	1
No Photo Group	14	7	13	4	2	0	2
Frequencies of SEATBELT (Use of Seatbelts) in Prior Month							
	0	1-2	3-5	6-9	10-19	20-29	30
Photo Group	14	11	16	7	28	34	23
Crash Scene Group	1	3	5	3	12	11	9
No Photo Group	5	1	3	2	7	13	8

Both positive and negative alcohol expectancies were measured pre and post intervention using the AOES (see Figure 1). Significant differences were evident across

the three groups for both positive and negative expectancies. All groups viewed negative attitudes towards alcohol more negatively, Wilk's $\lambda = .98$, $F(1, 130) = 22.39$, $p < .01$, and viewed positive attitudes less positively following intervention, Wilk's $\lambda = .99$, $F(1, 130) = 74.56$, $p < .01$.

The MAST survey was administered at baseline. Results indicated that five of the 133 participants included in this analysis responded in a manner indicating they were alcoholics; 10 responded in a manner to suggest they currently had a problem with alcohol. All of these participants were contacted by the researcher to review their responses and suggest treatment opportunities. Four of the five who responded in a manner similar to alcoholics stated they were aware of the problem and had already sought treatment. The fifth denied the need for help with drinking. All five were given website information, addresses, and phone numbers of alcohol treatment and counseling centers. Five of the 10 participants whose MAST scores indicated a problem with alcohol denied having a problem; five acknowledged already considering the need for help. All were provided with website information, addresses, and phone numbers of counseling and treatment centers. Thirty participants responded in a manner suggesting early indicators of problems with alcohol. They were contacted by either the researcher or the graduate assistants, informed that their responses indicated a potential problem, and referred to the information sheet provided for counseling center phone numbers. Thus, 33.9% of participants indicated at least early indications of problems with

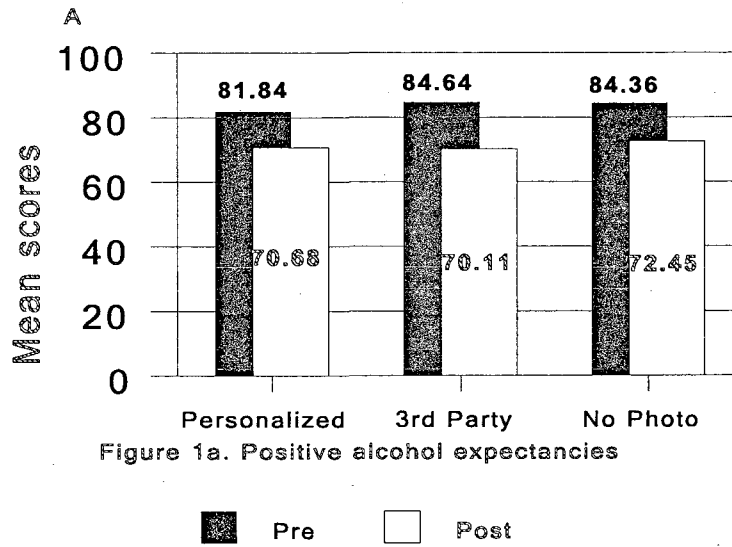


Figure 1a. Pre and post intervention means for Positive and Negative Alcohol Expectancies (AOES) by Condition.

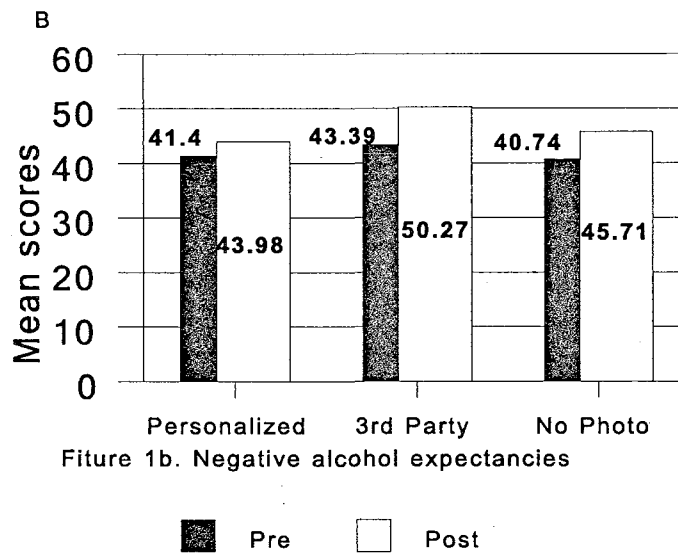


Figure 1b. Pre and post intervention means for Positive and Negative Alcohol Expectancies (AOES) by Condition

alcohol. None of the participants reported DUI practices risking the health of minors such as DUI with a child in the car, or intentional injury to others.

Table 3
Alcohol Problems Frequency Based on Michigan Alcohol Screening Test

Drinking Problems	Frequency	Percentage
None	88	66.2
Early Indicators	30	22.6
Problem Drinkers	10	7.5
Alcoholism	5	3.8

Table 4
Means for Hypothesis 4 Predictor Variables

Predictor	Mean (SD)
IOA1 (Importance of Facial Appearance for overall Looks)	3.38 (.77)
IOA2 (Importance of the Face in General Appearance)	3.44 (.81)
IOA3 (Importance of Facial Appearance in Getting Dates)	3.35 (.82)
IOA4 (Importance of Facial Appearance in Getting a Job)	3.17 (.87)
IOA5 (Importance of Facial Appearance in Meeting New People)	3.06 (.80)
IOA6 (Importance of Facial Appearance in Making Friends)	2.68 (.79)
IOA7 (Importance of Facial Appearance Overall)	3.63 (.76)
Total SSS (Sensation Seeking Scale) Score	18.87 (6.47)
AOES (Alcohol Outcome Expectancy Scale) Positive Subscale	83.58 (14.98)
AOES (Alcohol Outcome Expectancy Scale) Negative Subscale	41.85 (8.06)
MC-C (Social desirability scale) Total Score	4.35 (2.25)
Aggressive Driving Subscale from the Driving Survey	10.56 (17.64)
Risky Driving Subscale from the Driving Survey	.22 (18.44)

Means and standard deviations for pre and post behavior questions are included in

Table 5. To assess between group differences on post-intervention means, nine one-way

(Condition) Analyses of Variance (ANOVA) were conducted on ABS 1 through ABS; results are shown in Table 6. Due to the individual nature of each question, a total ABS score could not be calculated. However, this leads to the potential for Type I error is increased through analysis of the nine separate questions. LSD adjustments for multiple comparisons were used to reduce this potential, with alpha at the .05 level.

Table 5
Pre-Post Intervention Means of 9 Behaviors by Condition

ABS	Personalized		Crash Scene		No Photo	
	Pre <i>M(SD)</i>	Post <i>M(SD)</i>	Pre <i>M(SD)</i>	Post <i>M(SD)</i>	Pre <i>M(SD)</i>	Post <i>M(SD)</i>
RDD ^a	2.47(1.21)	2.19(1.04)	3.11 (1.45)	3.02(.90)	2.81 (1.35)	3.45*(1.13)
DUI	2.13(1.26)	1.68*(.86)	2.98(1.72)	2.82(1.24)	2.43(1.27)	2.57(1.25)
ALT	3.30(1.69)	3.15(1.60)	2.89(1.60)	3.23(1.20)	3.40(1.42)	3.02(1.46)
ALC	2.81(1.80)	3.60(1.47)	3.70(2.16)	3.75(1.06)	3.38(1.94)	3.81(1.35)
CAR	1.91(1.23)	2.04(1.16)	2.64(1.43)	2.50(1.13)	2.55(1.55)	2.43(1.35)
Behav	4.21(1.84)	2.60*(1.12)	5.41(1.83)	3.52*(.73)	4.69(1.88)	3.38*(.88)
Seatbelt	4.15(2.07)	5.09*(1.44)	5.07(1.62)	4.95(1.63)	4.74(2.05)	4.762(.01)
Helmet	1.47(1.00)	1.26 (.64)	1.80 (1.44)	1.66 (1.22)	1.98(1.62)	1.55(1.21)
MVA	2.87(1.78)	2.19*(1.62)	2.59(1.74)	1.75(1.24)	3.17(2.00)	2.33*(1.63)

Note. ^aRDD = riding with a drinking driver; DUI = driving under the influence; ALC = frequency of alcohol intake; CAR = frequency of alcohol while in a car; MVA = motor vehicle accident injuries.

* $p < .05$

Results of the ANOVA for riding with a drinking driver (ABS1) revealed significant differences between groups. The No Photo group means ($M = 3.45$, $SD = 1.13$) were

significantly different from those in the crash scene group and from those in the Photo group. ANOVA results for DUI (ABS2) revealed significant differences between groups. The Personalized photo group means ($M = 1.68$, $SD = .86$) were significantly different from those in the no photo group. ANOVA results for alcohol consumption while in a car (ABS5) revealed significant differences between groups. Again, the Photo group means ($M = 2.04$, $SD = 1.16$) were significantly different from both the Crash Scene group and the No Photo group. Results of the ANOVA for RDD behavior (ABS6) revealed significant differences between the Photo group ($M = 2.60$, $SD = 1.12$) and the other two groups.

Table 6
ANOVA Results for Group Differences on Behaviors ABS1 - ABS9

Variables	ANOVA <i>F</i>	partial η^2
RDD ^a	17.55**	.21
DUI	12.89**	.17
ALT	.22	.003
ALC	.32	.005
CAR	3.59*	.05
Behavior	13.20**	.17
Seatbelt Use	.40	.006
Helmet Use	1.80	.03
MVA	1.76	.18

Note. ^aRDD = riding with a drinking driver; DUI = driving under the influence; ALT = Alternate Transportation Use; ALC = frequency of alcohol intake; CAR = frequency of alcohol while in a car; MVA = motor vehicle accident injuries.

* $p < .05$; ** $p < .001$

Primary Analyses

Recall that the main purpose of this study was to measure differences between groups exposed to differing degrees of photographic/non-photographic messages deterring viewers from driving after drinking and riding with a drinking driver. Three to four weeks' time elapsed between intervention and post-intervention measurement. The three levels of the between-subjects condition variable, personalized-photo group, crash scene photo group, and no-photo group, were measured on the behavior questions across the two levels of the within-subjects trial variable, pre intervention and post intervention. Between group differences were analyzed using a 3 (Condition) x 2 (Trial) mixed Analysis of Variance (ANOVA) on each of the nine behavior questions (see Table 7). An LSD procedure with a significance level of .05 was used on pair-wise comparisons to control for family-wise error rate.

Table 7
Interaction Results for Mixed ANOVA on ABS1-ABS9

Variables	Wilk's λ	$F(2,130)^a$	partial η^2
RDD	.94	4.19*	.06
DUI	.98	1.48	.02
Alternate Transportation	.98	1.36	.02
Alcohol Intake	.99	.21	.08
Alcohol in Car	.70	.36	.07
Behavior (of RDD)	.44	.82	.01
Seatbelt Use	.96	3.04	.05
Helmet Use	.99	.71	.01
MVA Injury	.99	.05	.001

Note. ^aDegrees of freedom.

* $p < .05$.

Hypothesis 1: Participants in the personalized photo group will show a greater reduction

in DUI-related behavior than will those in the crash scene photo group.

Of the nine items tested, a significant Trial X Condition interaction was observed only on ABS1. Despite the interaction effect on the frequency of riding with a driver who has consumed two or more drinks, participants who received the no photograph increased significantly in RDD while those who viewed the personalized photographs and the crash scene photos showed a small non-significant reduction in riding with a drinking driver. Post hoc comparisons found significant mean differences for the no photo group between pre and post-intervention, $t(41) = -2.70, p < .01$. Thus, no significant differences were obtained between the personalized and crash scene photo group. Hypothesis 1 was not supported for any variable.

Hypothesis 2: Participants in the personalized photo group will show a greater reduction in DUI-related behavior than will participants in the no photo control group.

Of the nine items tested, a significant Trial X Condition interaction was observed only on ABS1, frequency of riding with a driver who consumed two or more drinks. Despite this interaction, only the no photo group showed significant changes between pre and post intervention, increasing in the frequency of RDD, while those who viewed personalized photos showed only small reductions in RDD. Post hoc comparisons found significant mean differences for the no photo group between pre and post interventions, $t(41) = -2.70, p < .01$. Hypothesis 2 was not supported for any variable.

Hypothesis 3: Participants in the crash scene group will show a greater reduction in DUI-related behavior than will those in the no photo group.

Of the nine items tested, a significant Trial X Condition interaction was observed only

on the frequency of ABS1. Despite the interaction effect on the frequency of riding with a driver who has consumed two or more drinks, the interaction revealed that participants in the no photo group increased significantly in RDD, while those who viewed the crash scene photos showed a small non-significant reduction in riding with a drinking driver. Post hoc comparisons found significant mean differences for the no photo group between pre and post-intervention, $t(41) = -2.70, p < .01$. Although significant differences were found between the crash scene photo group and the no photo group, they were in the opposite direction of the predicted hypothesis. Therefore, hypothesis 3 was not supported for any variable.

Although not included as a hypothesis in this study, a significant Trial X Condition interaction was found when social desirability was held constant. Participants who viewed the personalized photos had significant increases in seatbelt use whereas no significant changes were noted for either the crash scene photo group or the no photo group. Recall that social desirability was previously found to be a significant predictor of partner psychological abuse (Bell & Naugle, 2007) and was therefore included as a variable in this study as a potential predictor of RDD. A trend of decreased DUI was also noted in the Photo group, although again, inter-trial group changes was not included in the hypotheses.

Hypothesis 4: Scores on IOA, SSS, AOES, MC-C, Aggressive and/or Risky driving on the Driving Survey will predict follow-up behavior, regardless of pre-intervention responses.

A series of nine hierarchical multiple regressions were conducted on each of the nine post-intervention behavior questions (see Table 8). Responses to the nine pre-intervention behaviors were added as predictors in Step 1. Predictor variables IOA1 through IOA7,

SSS total scores, AOES positive and negative subscales, MC-C total scores, Risky Driving and Aggressive Driving, were added in Step 2. This permitted the examination of the predictive utility of these variables while controlling for the effects of pre-intervention behaviors. Hypothesis 4 was supported for RDD, DUI, ALC, and Seatbelt use.

As expected, significant beta values were found for sensation seeking, aggressive driving, and risky driving when predicting DUI. Importance of appearance in making friends also added significantly to the model, accounting for 27% of the variance. Similar results were found for alcohol consumption, where aggressive driving, risky driving were added significantly to the prediction equation as did the importance of appearance in making friends, meeting new people, and overall IOA. Use of seatbelts was also influenced by the combination of aggressive driving, the importance of appearance in meeting new people, and overall importance of appearance. Finally the decision to ride with a drinking driver was predicted by the combination of variables with significant beta values for risky and aggressive driving, and IOA of meeting new people and overall IOA.

Table 8
Hierarchical Regression Results using IOA, SSS, AOES, MC-C, Risky and Aggressive Driving as Predictors of DUI-related Behaviors

Criterion	Model 2		Variables	Significant Variables		
	R^2	F		Beta	partial	
RDD ^a	.13	2.75*	IOA new people	.32*	2.43	
			IOA overall.33	.21		
			aggr driving	.22*		.19
			risky driving	.30**		.27
DUI ^a	.18	2.23*	SSS	.19*	.20	
			Aggressive driving.	.24*	.22	

Table 8 (continued)

			Risky driving	.22*	.21
			IOA for friends	.27*	.22
ALT	.08	.77			
ALC	.28	3.58**	Aggressive driving	.22**	.20
			Risky driving	.31*	.29
			IOA new people	.27*	.19
			IOA for friends	.31*	.25
			IOA overall	.30*	.20
CAR	.15	1.70			
Behav ^a	.10	1.00			
Seatbelt	.17	1.97*	Aggressive driving	.21*	.19
			IOA new people	.30*	.21
			IOA overall	.33*	.21
Helmet	.14	.11			
MVA	.07	.74			

Note. ^aRDD = Riding with a drinking driver; DUI = Driving under the influence; ALC = frequency of alcohol intake; CAR = Frequency of alcohol while in a car; Behav = Behavior when RDD; MVA = motor vehicle accident injuries

* $p < .05$; ** $p < .001$

Hypothesis 5: When compared to pre-treatment arousal levels, participants in the personalized-photo group will have higher arousal levels post treatment.

A repeated measures ANOVA was conducted on measures of arousal using the Activation-Deactivation Adjective Checklist at pre-intervention and post-intervention. There was a significant main effect for trial, Wilks' $\lambda = .95$, $F(1, 130) = 7.50$, $p < .01$, partial $\eta^2 = .06$. As predicted arousal levels in the personalized photo group did increase from pre intervention ($M = 25.81$, $SD = 3.73$) to post intervention ($M = 27.68$, $SD = 3.59$). Thus, the fifth hypothesis was supported. However, it should be noted that similar

increases in arousal were noted for both the crash scene photo group ($M = 27.34$, $SD = 3.26$) and the no photo group ($M = 26.88$, $SD = 3.70$).

Secondary Analyses

It was thought that attitudes and subjective norms of self and response efficacy might predict DUI-related behavior. The Attitudes and Subjective Norms (ASN) survey, assessing self-efficacy and ability to perform alternative behaviors to DUI and RDD, was evaluated using multiple regression analyses with simultaneous variable entry. Criterion variables, the nine behavior questions (i.e., ABS1 to ABS9), were matched against the combination of predictor variables. These predictors were the participants' belief in and support of the ease, expense, necessity, and time consumption of taking alternate transportation as well as participants' belief in and support of the ease, expense, necessity, and time consumption of avoiding intoxication. The combination of variables did predict a significant amount of variance in all of the behaviors except MVA injuries (ABS9).

A significant amount of variance in RDD (ABS1) was accounted for by the predictor variables, $R^2 = .26$, $F(20, 112) = 1.92$, $p < .05$. Belief in the ease of avoiding intoxication was the only significant variable in the model.

The combination of variables accounted for a significant amount of variance in DUI (ABS2), $R^2 = .46$, $F(20, 112) = 4.78$, $p < .01$. Thus, the decision to drive after drinking was influenced by the respondent's perception of the ease, expense, necessity, and time consumption involved in avoiding intoxication. Belief in the ease of avoiding intoxication made a significant contribution to the prediction equation, as did time involved in securing alternate transportation, how participants favored the ease of

alternate transportation, how they favored the ease of avoiding intoxication, belief that avoiding intoxication would impact having a good time, how participants favored the fact that avoiding intoxication would impact their good time, and whether participants listed friends who influenced their decision to drink.

Not surprisingly, a significant amount of variance in use of alternate transportation (ABS3) was accounted for by the combination of ease, expense, necessity, and time involved in arranging for alternate transportation $R^2 = .30$, $F(20, 112) = 2.44$, $p < .05$. Time involvement made a significant contribution to the equation, as did belief that avoiding intoxication would stop them from having a good time, belief that avoiding intoxication is necessary, how well they favored the hassle of avoidance, and listing friends who influence the decision to drink.

A significant amount of variance in alcohol frequency (ABS4) was accounted for by the combination of predictor variables, $R^2 = .27$, $F(20, 112) = 2.05$, $p < .05$. Belief in the necessity of avoiding intoxication added significantly to the equation, as did belief in the ease of alternate transportation, the belief that avoiding intoxication would stop them from having a good time, and how they favored the fact that avoiding intoxication would be a hassle.

The combination of predictor variables accounted for a significant amount of variance in ABS5, consumption of alcohol in a car, $R^2 = .24$, $F(20, 112) = 1.80$, $p < .05$. Belief that avoiding intoxication would be a hassle and how participants favored the necessity of avoiding intoxication added significantly to the equation.

A significant amount of variance in the behavior of participants when riding with a drinking driver (ABS6) was accounted for by the combination of variables, $R^2 = .26$,

$F(20, 112) = 2.14, p < .05$. Specifically, how participants favored the ease of alternate transportation added significantly to the equation.

The combination of predictor variables added significantly to the prediction of helmet use (ABS8), $R^2 = .48, F(20, 112) = 5.07, p < .01$. Belief that arranging alternate transportation would be time consuming, how participants favored expense involved in taking alternate transportation, how they favored the necessity of alternate transportation, and whether participants listed friends who influenced them in the use alternate transportation made a significant contribution to the equation.

Ease, expense, necessity, and time consumption of taking alternate transportation and avoiding intoxication did not have any predictive ability for use of seatbelts (ABS7), $R^2 = .17, F(20, 112) = 1.12, p = ns$ or for reports of MVA injuries (ABS9), $R^2 = .17, F(20, 112) = 1.15, p = ns$.

To assess the impact of participants' perceptions of presenters and presented information on behaviors (i.e., ABS1 to ABS9), a one-way (Condition) multivariate analysis of variance (MANOVA) was conducted on the Intervention Rating Survey (IRS), which assessed facts believability, friendliness of presenters, believability of presenters, effectiveness of strategies, effectiveness of photos, graphic nature of photos, and frequency of information recall. These dependent variables were tested against the three groups, personalized photo, crash scene photo, and no photo. However, 21% of respondents did not complete this portion of the survey therefore, these results must be viewed with extreme caution. Participants' comments regarding the presenters, facts provided, strategies given, and photographs shown are included in Table 9.

Significant differences were found among the nine post-intervention behaviors on the

IRS measures, Wilks' $\lambda = .51$, $F(14, 248) = 7.16$, $p < .001$.

Post-hoc ANOVAs were conducted as follow up tests to the MANOVA using an LSD procedure at the .007 level. The only significant variables were Effective Photos, $F(2, 130) = 10.28$, $p < .001$, and Graphic Nature of the photos, $F(2, 130) = 3.84$, $p < .05$. Not surprisingly, means for both the Photo group and the Crash Scene photo group were significantly greater than those for the No Photo group.

Table 9
Participants' Comments on Study

Facts	<p>The facts were believable. Facts were presented in an interesting way and were believable. They talked about real situations. It made me think twice. I already know it's dangerous. I didn't know some of the facts I don't think it happens that much. It showed there are consequences.</p>
Presenters	<p>They were good presenters. Did a good job. They were awesome. Down to earth. Good job. They tried to relate the information to our lives. Helpful. They answered any questions. Very open. They did well explaining everything.</p>
Strategies	<p>The work in a perfect world scenario - not real. They were effective but there weren't enough. Didn't learn much. They weren't very realistic. They weren't personal enough. I put some to use. They would be better from someone who's been through it. They helped to judge how drunk you are.</p> <p>It's hard to do when you're drunk. Not easy to do. The effects wore off/forgot them after a few days.</p>
Photo Effectiveness	<p>All of them had the same scars. People laughed - didn't take it seriously. Made people think for a second. I think it's a big deterrent but the touch ups were obvious. Actual video would be better.</p>

Table 9 (continued)

	<p>Did not see any photos. They weren't personal. Thought it was a good demonstration of what happens. It would be better if an important person was in them. It was different - real. But it wasn't a shock because I work in the ER. The photos made me think twice. It was hard to see. There were no people in them.</p>
Graphic Nature of Photos	<p>Very graphic. Almost too graphic for some. Need to show cars too - not graphic enough. They were graphic but tolerable. You need to see people in them to get sympathy. They were boring. Kinda nasty. Didn't see any. Not real. They'd be better if more graphic. They were graphic enough for me. My friend's car was similar. Not believable. It wouldn't happen. They were enough to slow someone down. I gagged. I looked like Frankenstein.</p>
Further Comments	<p>I didn't like coming 3 times. Good face. More interaction would be better. Show more pictures - more than just facts. You should send it to parents, boyfriend/girlfriend. Good study but graphics should be more graphic. Interesting. I already knew a lot of it but it was helpful. Needs to be more personal. Testimonials would be better.</p>

While not included as a hypothesis, one of the research questions concerned importance of appearance. It was thought that IOA would increase from pre intervention to post intervention for those in the personalized-photo group. Importance of appearance was relatively stable across trials for all groups (see Table 10). No significant changes

were noted from pre intervention to post intervention for any of the IOA variables in the Photo group. Therefore, exposure to personalized altered images did not increase appearance importance.

Table 10
Repeated Measures Means for IOA in Personalized-Photo Group

	Pre Intervention	Post Intervention
IOA for Looks	3.49 (.80)	3.53 (.65)
Face	3.30 (.88)	3.47 (.69)
Dates	3.36 (1.03)	3.21 (.83)
Job	3.32 (.96)	3.20 (.85)
New people	3.09 (.86)	3.00 (.69)
Friends	2.77 (.84)	2.53 (.69)
Overall	3.72 (.85)	3.68 (.66)

Note. Standard deviations are in parentheses. IOA scale ranges from 1 “not at all important” to 7 “extremely important.”

Subjective impressions of reactions of the Photo group participants were noted by the researcher and assistants. Initial reactions when viewing their altered photos in a group setting may have had a contagion effect where laughter prompted a detachment or distancing from the intended personal impact. Silence within the group may have prompted a more serious consideration of the consequences of DUI. Given the varied comments garnered during the discussions following exposure to the photos as well as those provided in the IRS, it seems responses varied even within the Photo groups. Further, the pilot study conducted prior to the McNabb (2000) research found that individual experiences superseded group reactions to the photos.

CHAPTER IV

DISCUSSION

The current study was designed to extend the DUI prevention literature through the evaluation of a brief intervention for college students in which participants were exposed to salient threats to their physical appearance. The threats used here were intended to be more salient than those used in prior health research in which participants were asked to imagine what it would be like to suffer the consequences of alcohol use. In the present study, participants faced digitally altered photographs of themselves, showing the scars and bruises which might be sustained in a motor vehicle accident, along with normative information and strategies on how to avoid these consequences.

Overall, results did not support the absolute or relative efficacy of the personalized photo intervention. The hypothesis that exposure to personalized photos would yield greater behavioral change than would provision of standard information was not supported (i.e., absolute efficacy). Similarly, there was no evidence for the relative efficacy of the personalized photo intervention over a non-personalized crash scene photo. The hypothesis that the personalized photo intervention would result in greater behavioral change than exposure to a crash-scene photo was not supported. In fact, the present study failed to provide any support for either photo condition as compared with a no-photo control. The hypothesis that greater behavioral change would result for those exposed to a crash-scene photo than those given no photos was not supported.

As predicted, participants in the personalized photo group experienced greater post-intervention arousal but tension arousal was greater in all groups following intervention. This may have been due to participants' awareness at this point that the subject of study

was drinking and driving and emotions related to that topic may have been raised. It is possible that some experienced anger that they had been deceived initially as to the specific topic of interest; some participants may have been annoyed at receiving alcohol lectures they had received previously. Others may have experienced arousal due to new information concerning the risks of DUI. These suppositions cannot be supported because the measure did not query the reasons for arousal.

Although they failed to reach significance, trends towards increased seatbelt use, and decreased incidents of DUI were observed in the personalized photo group. Further, although not considered as part of the hypotheses in the current study, when social desirability was held constant, there was a significant trial by condition interaction for seatbelt use. While those exposed to the crash-scene photo group and to no photos showed no significant changes, significant increases in seatbelt use were reported by those exposed to personalized photos. Given that reliability and validity checks on some of the items and some measures were not available due to their individualized nature, it is possible that these trends were random effects. However, some support can be found when looking at these trends together with the significant attitudes and intention changes for the Photo group alone in the McNabb (2000) study. This suggests that it would be premature to abandon the use of altered photographs as a motivator for change pending additional research and refinement of the methodology. It also suggests the need for further exploration of social desirability as a potential moderator between threats to appearance and risk-reducing behaviors such as seatbelt use.

Importance of appearance (IOA) in youth was a central theory behind this study, and findings offer support for the utility of IOA as a predictor of risk behavior. IOA levels for

the personalized-photo group did not increase following intervention. In fact, IOA levels remained stable for all groups across trials. While it was expected that these levels would change following exposure to participants' altered images, the stability provides test-retest reliability. Further, the reliability analysis in this study provided comparable results to those in the McNabb 2000 study. Further, the importance of appearance in meeting new people, making friends, and overall IOA added to the prediction of riding with a drinking driver, driving under the influence of alcohol, alcohol consumption, and seatbelt use. While other variables in the combination of predictors have been discussed previously in research (Clement & Jonah, 1984; Fernandes et al., 2004; Jonah, 1997; Presley et al., 2002; Zimbardo et al., 1997) however, the IOA is a new scale previously unused in behavior change research. Given that IOA of meeting new people and overall IOA added significantly to the prediction of four of the nine behaviors, further support is lent for a primary tenant in this study, that is, that appearance is a factor important enough to youth to influence their decision making. Thus, appearance-based appeals hold promise as potential motivators in behavior change.

Supplementary findings on the value of attitudes and subjective norms in the prediction of DUI-related behaviors supported results from prior research (Cooke, Sniehotta, & Schuz, 2006). Support of friends in decision making, belief that fun would be stopped if drinking is limited, and the ease and necessity of alternate transportation all added to participants' decisions to DUI and RDD. Consideration of the ease and necessity of alternate transportation seems to support the need for safe ride or designated driver programs. There is potential support for further investigation into appearance-based interventions from the finding that participants' attitudes to DUI are weighted by their

perceptions of friends support for that behavior. It is possible that friends' reactions to the altered images may mirror those of participants and so help to enhance the trends noted in the personalized group for increased seatbelt use and reduction of other DUI-related behaviors.

In the Snyder & Blood (1992) study, the authors concluded that the health warnings served only to increase participants' perceptions of the benefits of alcohol and decrease their perceptions of risk. In this study, the opposite was true. Following intervention all groups perceived the negative consequences of drinking more negatively and viewed the positive attributes less positively. Past research found that positive expectancies were related to drinking in college students. The value of the educational portion of the study cannot be dismissed. It is possible that reinforcement of information concerning the consequences of DUI behaviours and strategies to avoid these risks prompted a shift in alcohol expectancies across groups. It is also possible that outcome expectancy changes were chance occurrence or the due to potential confounds. During data collection, a student was involved in a fatal motorcycle accident, so students may have reacted to this MVA by viewing risky behaviors less positively. It is also possible that the initial placement of participants across groups divided groups of friends. Although participants in the personalized photo group were asked not to discuss the intervention with others in the study, it is possible this did occur, stimulating discussion about the physical consequences of DUI. If this were true, it might account for the changes in alcohol expectancies. It may also account for the shifts in RDD behavior (ABS6) where participants across groups reported more negative attitudes towards RDD. An alternate explanation for this latter finding is discussed further under the Question Structure

section below.

Theoretical Implications

The Extended Parallel Process Model in Persuasive Appeals

The EPPM was developed to identify the factors necessary for a successful fear appeal (Witte, 1994; Witte & Morrison, 2000). Since highly arousing images are central to fear appeals (Sheer, 1995; Witte, 1994), arousal levels were expected to increase for the personalized group because health threats were made more personal by altering participants' own facial photographs and made severe through vividness of the altered images. The images used in this study were sufficiently graphic that participants reported wanting to avoid them. However, as stated previously, tension arousal levels in this study increased across all groups following intervention. All groups then were potentially primed for behavior change although personal relevance was directed only to the personalized group. According to the EPPM, once a health threat is salient and personally relevant, a change strategy needs to provide an effective alternative to the risk behavior that can easily be performed. This study attempted to do so by increasing response efficacy through generation and provision of avoidance strategies, and increasing self-efficacy during the information session. While comments regarding the strategies to avoid DUI confirmed that they would help prevent the risks, thus providing increased response efficacy, participants questioned their self-efficacy in using these strategies when out drinking. It seems that self-efficacy may have been too low to promote behavior change however, the trends toward change noted in DUI and seatbelt use suggest that self-efficacy may been achieved at least on a small level. Prior studies on drinking refusal self-efficacy (Young & Knight, 1989; Young, Connor, Riccardelli, &

Saunders, 2006) suggested the need for stress management and peer pressure training. Future research should then focus on increasing self-efficacy, perhaps through role play or teaching “no” phrases that would help minimize discomfort by the speaker and disapproval by peers.

Illusion of Invulnerability

While youth have recognized the threats to life and limb for others who DUI, they have reported not recognizing the personal risk (Denscombe & Drucker, 1999). This Illusion of Invulnerability (Elkind, 1967) suggests that youth in particular ignore obvious risks and are overly optimistic for a positive outcome. Not surprisingly then, theories behind this include the Optimistic Bias (Weinstein, 1980), and the Illusion of Control (Langer, 1975). Relating the Optimistic Bias to DUI, the theory suggests that youth perceive that the possibility of getting caught or being injured is lower for themselves than for their peers. Thus, they recognize that consequences happen, but do not believe they will happen to themselves. Langer’s theory posits that a predominantly chance outcome is attributed to skill. Extending this to DUI, the individual takes the risk several times without repercussions and attributes his or her luck to driving skill, alcohol tolerance, or intelligence in outwitting police and so continues to DUI, feeling invulnerable to the consequences. The present study attempted to break these illusions by presenting personally relevant consequences to participants. However, as stated in the above paragraph, this may have failed due to lack of self-efficacy to perform the suggested alternative behaviors. This study focussed on behavior change. Had post-intervention perceptions of risk been queried, more information could have been garnered on potential shifts in their illusions of invulnerability. While results from only two of nine

behaviors must be viewed with caution, the trend towards decreased DUI and increased seatbelt use in that group compared to the other two groups suggests the illusion may have been cracked, if not broken. It may be that the Photo group participants recognized their personal vulnerability while riding with a drinking driver and decided to change at least one health behavior by buckling up. Even if these individuals felt pressure to RDD or DUI, they may have recognized that the risk existed.

Risks of Normative Appeals

Risk may become less apparent to some. According to a study on social norms interventions (Werch et al., 2000), the numbers of drinkers and drivers became more salient through presentation of normative information. Participants who had already engaged in DUI or those who were in the preparation stage to DUI saw the normative numbers as supportive of their intentions rather than recognizing the relatively low number of students who DUI. If this was the case in the current study, participants may have perceived DUI as normative rather than seeing non-DUI as normative. Further, participants may have ignored the norms concerning alcohol-related accidents and deaths because, as stated earlier, they likely were already familiar with much of the information presented. It is possible then that their attention was instead focussed on the ratio of young adults who report DUI and RDD without injury compared to the lesser number who report DUI and RDD with injury. This suggests that future research needs to increase efforts to make risk norms more salient than DUI norms. In the current study it was hoped that attention would be specifically, graphically focused on the physical detriments of DUI for participants in the personalized photo group. Trends in that direction for that group suggest the need for further study on appearance-based appeals as

well as the necessity of assessing normative perceptions to counter any erroneous assumptions regarding the safety of DUI-related behaviors.

Question Structure

The shift in behavior when riding with a drinking driver (ABS6) for all groups meant that respondents' reports changed from enjoying the ride with a drinking driver, or not caring one way or the other, to riding reluctantly. The results suggest a change towards safer transportation choices for all groups. Changes in RDD behavior may have been due to the notion that simply asking the question and providing the range of responses primed respondents for a change in RDD behavior. A study on health behavior questions (Williams, Fitzsimmons, & Block, 2006) found that simply asking questions promoted either healthy or unhealthy behaviors. The authors reported that when participants were asked about a socially normative behavior such as exercise, that behavior increased and when asked about a socially non-normative behavior such as illicit drug use, that behavior also increased. They posited that exercise was viewed as a socially positive behavior, thus promoting increased exercise. They further suggested that drug use might actually have been considered normative and positive within respondents' social circle, thus leading to a behavioral increase. This theory seems to align with the normative research reviewed in the paragraph above. According to the Williams et al. study, asking questions rather than suggesting change likely slips beneath an individual's defences and may then be more effective in promoting behavior change than actually suggesting change.

It is possible that shifts in other behaviors may have been present yet were left untested due to traditional framing of questions. Inclusion of multi-choice scales for all

behaviors may have elicited other attitude shifts. For example, when asking about DUI behavior, the question could have included anchors from “I thought about the consequences of DUI so chose not to do it” to “I never gave it a second thought.”

Importance of Appearance

Physical attractiveness centers on both the body and face. Prior studies using threats to appearance to promote change have focused on both aspects of beauty (Jones & Leary, 1994; Gibons, Gerrard, Lane, Mahler, & Kulik, 2005). No readily available measures separated importance of facial appearance from the importance of figural appearance. This may be due to western society’s preference for a lean, young-looking figure as central to attractiveness. Extensions of this type of study are reviewed in the Future Directions section. The inclusion of several of the components of the IOA measure in the prediction equation for DUI-related behaviors suggests that importance of facial appearance should be explored further and considered as a potentially influential concept in deterrence of DUI behavior in a young population. The stability of IOA across trials for the personalized-photo group may be due to the fact that IOA rather than altered IOA was queried. A different outcome may have been reached if participants were asked to complete the IOA while looking at their altered image and imagining it was a mirror.

Practical Implications

First it is important to note that the following implications are based on the potential of personalized photographs in deterring risky behaviors, based on the limited support found in the current study. Therefore, the following suggestions for the practical use of appearance-based studies should be viewed in light of the need for follow up research. Below are examples of research and treatment studies that might provide support for this

study's findings.

The relative lack of attrition found in the Photo group suggests that individuals were personally invested in staying with the study. Adaptations to include personal aspects of participants may help to retain larger numbers of participants, particularly in longitudinal research. One possible example could involve anger studies where photos or videos of an individuals' anger cues such as tensing of hands, lips, shoulders or reddening of the face and neck could be taken. These pre-treatment measures could then be viewed alongside post-treatment photos or videos as both teaching tools and research measures. These individuals could be encouraged to find and label their own cues making them more salient and thus more readily addressed.

Individual motivational interviewing sessions for at-risk students could make use of altered photographs to review the very real and immediate dangers of DUI, text messaging or cell phone use while driving, speeding, and more. Motivation interviewing has made use of opportunistic moments when vulnerabilities are up and defenses down. The emergency department studies (Monti et al., 1999) were successful in reducing DUI and alcohol use. Such opportunities, are fortunately rare in comparison to the numbers of students who DUI and do not end up in the emergency rooms. In fact, social norms feedback studies showing the inversion of risk rates by young adults (Werch et al., 2000) suggest that the dangers can easily be ignored. Presenting individuals with personalized photos while in a counseling session may provide a potential consequence that is not as easily ignored as statistics. Therapists could generate discussions on the reactions from strangers, potential employers, and important others to the scars. Results from this study suggest that discussion surrounding the IOA in meeting new people and overall IOA

would provide the best outcome. Dyad therapy sessions could also be helpful in reducing DUI risk. In-vivo reactions of romantic partners or a parent may increase the salience of the social impact of such consequences.

Studies in press using the Persuasive Mirror may support the concept of appearance-based persuasion for risk reduction. While those studies use personal image projections of wrinkled skin and obesity 10 to 20 years in the future, the altered images used here are immediate and so potentially more impactful for a young population. The concept would be easily adaptable for those captivity studies and could be varied more quickly and easily based on an individuals' level of risk.

Limitations

Measures

In an attempt to keep participants blind to the purpose of the study, the majority of health-related questions did not surround alcohol use. Only a few questions were included regarding DUI and RDD behaviors. This decreased the impact of any results found from the Behavior survey. Further, these individual items could not be summed to a total score to provide stronger support for the results. Analyzing nine individual items increased the risk of Type I errors, thus any of the inferences made from these results need to be viewed cautiously. Future studies should consider the use of established DUI questionnaires to increase content validity and enhance the potential for cross comparisons.

The psychometric reliability and validity of some of the measures used may have impacted the results of this study. The IOA was used previously with an internal consistency of .81, comparable to a Cronbach's alpha of .79 found in this study.

However, it was designed by the researcher due to the lack of facial appearance measures available, thus has been used only twice. When compared to a validated measure such as a measure of attractiveness, included in the follow-up protocol of this study but not included as a measure for analysis, only negative correlations were evident. However, the attractiveness measure is similar to most measures of appearance and does not focus on the face alone. Therefore, further research into the reliability and validity of the IOA needs to be done prior to inclusion in future appearance-based research.

This study relied on self-report measures. This may have impacted the reliability and validity of the information gathered. Memory may be an issue when participants are asked to recall behavior frequency over the span of a month, particularly when alcohol is involved. Use of daily or weekly logs may have provided more accurate reports.

Objective measures of alcohol intake and DUI have inherent difficulties but have been used in prior studies by collecting BAC levels at on-campus bars and fraternity parties thus could be included in future appearance-based prevention studies. Intent to drive and intent to RDD could be collected at the same time. Although these would be self-reports on intentions, they would be more immediate measures of intent than laboratory surveys. Riding with a drinking driver could also be measured using taxi discount cards. This potential objective measure will be discussed in the Future Directions section of this paper.

Although not central to this study's hypotheses, copying errors resulted in omissions of pre-intervention normative estimation questions concerning participants' beliefs on the regularity of drinking, DUI, and RDD among fellow students. As part of the baseline measures, these questions would have established participants' DUI-related beliefs that

may impact their own behaviors. Inclusion of these questions would have added a comparative factor to other prevention studies but more importantly may have indicated whether participants were using the norms erroneously to support their DUI-related behaviors. It would also have provided another measure of risk assessment in that participants whose behaviors were above their normative estimations could potentially be classified as risk-takers.

Inclusion of other measures would have added to the survey length but would have provided potentially valuable information. The link between alcohol use and depression (Lewis & O'Neill, 2000) suggests the need for mood measures. Further, alcohol front-loading, that is, drinking prior to going to a bar or a party where alcohol will be consumed, is one way individuals try to relieve social anxiety (Glindemann, Ehrhart, Maynard, & Gellar, 2006). Thus, measures of these health issues might have aided in identifying the varying impact of the intervention and might also have helped to explain attrition. Given that importance of facial appearance in meeting new people was one of the equation factors predicting DUI behavior, those already experiencing social anxiety may have different responses than individuals who are not socially anxious.

Survey Length and Attrition

Although participants were offered incentives to complete the study, one hundred and forty-seven participants who agreed to participate completed only the first or first two portions of the study. While it is likely that the length of the baseline measure discouraged individuals from returning, other factors may have accounted for this rate of attrition. Phone calls to schedule participants for follow-up sessions included inquiries if participants stated they were not returning, however, responses tended to be vague. Data

for these respondents were not entered with study completers. Without these data potential differences between those who remained and those who dropped out could not be made.

Asking participants to return for three sessions is another possible cause for much of the attrition. Given that the study, from screening to follow up, took approximately one and a half to two months, students were likely experiencing time pressure common towards the end of a semester. It is interesting to note however, that attrition was significantly less for participants of the personalized photo group. It is likely that the altered photographs engaged these participants in the study more so than the other interventions. No mention of attrition differences was noted in prior studies where individual UV photographs were used. However, as stated previously, there is a scarcity of this type of literature. This finding alone would be worthy of future testing to increase rates of response.

It is possible that cognitive dissonance (Festinger, 1957) led to this attrition. Individuals not completing the study may have differed on the extent of potential competing beliefs regarding drinking or drinking and driving. It is possible that these individuals attempted to ease the discomfort raised by the dissonance by avoiding the discomfort trigger and dropping out.

Environmental Factors

Hattiesburg, MS is a small city with few taxi cabs and buses available as alternate transportation. This may limit students' perceptions of alternatives to DUI or RDD. Further, there are no on-campus drinking establishments. Thus, unless attending fraternity or house parties, students must travel some distance in order to imbibe. Similar

research in larger centers where public transportation is available or drinking establishments are within walking distance may provide vastly different outcomes. Due to the inclusion of only students who reported past DUI or RDD, comparison rates to cities of varying size across the country was not possible.

Photo Quality

While many of the post-intervention comments suggested that participants found the photocopies of personalized photographs graphic enough in nature, actual photographs may have resulted in stronger intervention effects. Also, the images were altered by hand and thus some variance was evident. Computerized alteration would help to standardize the graphics. Several comments stating that the photographs did not look real may have been a valid comment on the quality of the photocopy, the quality of the alteration, or may have been one way of distancing oneself from the threat to appearance. Increased photo quality would help to distinguish if the latter suggestion has merit.

Future researchers who might benefit from the current study may wish to consider these limitations in their designs. In spite of these drawbacks this study holds promise for both theoretical and practical directions in prevention literature. Future studies may enhance the factors used here to continue such efforts.

Future Directions

The results of the present study add to existing literature on fear appeals, the importance of appearance in persuasive appeals, captology, cognitive dissonance, the illusion of invulnerability, social norms techniques, and prevention of drinking and driving, and riding with a drinking driver. Replication of the current study with a larger sample size may provide added support for the notion of using appearance threats in

health prevention appeals. Careful consideration of the limitations outlined in the previous section would help in making additional improvements. Other possible study ideas are suggested below.

One component of this appearance-based appeal that was originally designed as part of the current study was eliminated due to the limited sample size. Repetition of visual information increases recall (Dewhurst & Conway, 1994); therefore, a visual reminder of the participants' risks was to be included by encasing the altered photograph in a picture key chain to be carried by a subgroup of the personalized photo group throughout the intervention period. As one respondent commented, recalling the photo and information while walking to class was easier than recalling them while in a bar.

Comments from predominantly male respondents stating that the graphics were not severe enough open the possibility for varying the level of facial trauma. The template for the alterations in the current study was taken from the least dramatic photograph of auto accident injuries available. Using a wider range of facial injuries and severities is possible in future research. Color photographs or photographs mimicking emergency room photos could be used rather than black and white follow-up visit photos such as the one used in this study. In response to participants who stated the altered photographs were not real or that the facial damage could not happen, researchers could present an actual photo of facial disfigurement due to an alcohol-related accident.

Including an objective measure of alternate transportation use would further add to the validity of results. One-night-only taxi discount cards, provided by researchers following BAC tests at campus bars to all participants, would allow for greater tracking of alternate transportation and greater internal validity for measurement of group

differences.

Adding questions specific to participants' own altered appearance immediately following viewing of altered images would potentially provide additional information regarding the importance of appearance. Because appearance has been shown to be important in social settings and job success, participants could be asked to gauge their chances of success in getting a job or a date if they looked like their altered image. The IOA scale, included in post-intervention questions, asked about the importance of their appearance, not the importance of their altered appearance. Adding questions pertaining to their altered images might enhance the salience of the intervention, providing a stronger persuasive aspect. Current technological studies are ongoing to market mirror technology (A. C. Andresdevalle, personal communication, February 5, 2009) that superimposes altered images of viewers onto an actual mirror. Suggested therapeutic uses for this tool include weight management programs and smoking cessation however, it could easily be adapted for DUI prevention.

As well as future alcohol studies, the current design elements could be used in prevention studies for sun tanning. Use of ultra violet photographs (Gibons, Gerrard, Lane, Mahler, & Kulik, 2005) has provided promising results in that area. The addition of projected skin damage on actual photographs of the individuals in addition to the UV photos would likely enhance current research in that area. This type of appeal also holds promise for prevention of automobile accidents, including decreased speeding, and decreased cell phone use in cars. As with any of the above suggestions, these potential studies could be tested in high school students given that driving, drinking, and other health risk behaviors are formed earlier than college for most individuals.

The results of this study may be of use to local campus health care providers, who design and administer alcohol-related questionnaires and to the planners of the On Campus Talking About Alcohol (OCTAA) class. Rates of DUI-related behaviors were similar for the 23 participants who reported taking the OCTAA class to those who stated they had not taken the class. Although these numbers are low, they may be reflective of broader results. Given the potential consequences for DUI and the resource expenditure involved in running the OCTAA class, a review of this literature may prove helpful in future planning. One potential use of this intervention within the OCTAA class would be to provide a subset of that class with personalized altered photos. Weekly follow up reminders of the risk to facial appearance might enhance the impact of the intervention. Comparisons could then be made with the standard OCTAA class. Further, this class may want to ensure that normative information is being correctly interpreted by students and not used to support illusions of invulnerability.

A potential campus-wide DUI prevention program independent of the OCTAA class could stem from the field of captology (Fogg, 2003). An introduction to DUI risks for USM students could be followed by an interactive generation of prevention strategies. Using the model of online continuing education courses required by many hospitals for all employees, all students could then be required to read brief educational passages on DUI risks and complete mini-quizzes, on a weekly basis. Students would need to pass the quizzes with a grade of 100% or be forced to repeat the educational portion and the quiz until they make the grade. Computer generated variations of quiz questions would eliminate copying from other students and promote reading of the material. Once all sections and quizzes from the education portion have been completed, students could

then call up their student ID photograph and see variations of facial scarring and bruising common to alcohol-related MVAs. In the final portion of this program, students would once again complete quizzes and generate prevention strategies that would reduce their risk. E-signatures with their personal email passwords would be required in order to complete this program. Links to prevention websites such as NHTSA and MADD would be provided, as would those of various mental health clinics, the campus health center, and the counseling center. Students would have been advised initially that failure to complete this semester-long prevention program would result in their inability to register for the next semester.

The brief nature and the portability of this intervention would allow for broader use of appearance-based persuasive appeals. A DUI prevention RV could be equipped with a computer to take this program to high schools, inner-city recreation programs, concerts, and festivals to target high-risk youth. The altered personal photos, taken by the web cam, could be either shown on screen or printed and taken by participants as reminders of the potential risks. To increase the appeal of this intervention, informational quizzes could be designed as competitive interactive games where high scorers would receive key chain breathalyzers or altered-image key chains.

Current use of virtual reality driving simulators to explore DUI conditions (Montgomery, Leu, Montgomery, Nelson, Sirdeshmukh, 2006) could be adapted for an appearance-based persuasive appeal. Following DUI crashes, participants could virtually see the facial consequences of such risky behavior. Interactive prevention efforts using technological advances appeal to a young population and may then reduce the attrition rates experienced in the current study. Support for this notion comes from the relative

lack of attrition in the personalized group is discussed in the following section.

Conclusions

Alcohol education programs in colleges, alcohol-free campus activities, alcohol-free living quarters, and increased campus enforcement have typically been ineffective in curbing alcohol-related problems for students (Vik, Culbertson, & Sellers, 2000). Therefore, alternative forms of brief, low-cost interventions are needed. The current study attempted to enhance fear appeals using the Extended Parallel Process Model (Witte, 1994) with appearance-based injuries as the vivid, personal threat.

The emphasis on appearance in today's youth intuitively seems to be a tool for enhancing safety. This theory was tested successfully in sun tanning literature, thus use of this appeal in alcohol prevention seems to be a logical extension. Although finding limited support in the current study, use of appearance-based threats in alcohol risk studies may prove to be useful in persuading young adults that DUI is a personal threat than can be avoided.

APPENDIX A

SCREENING QUESTIONNAIRE

If you are interested in volunteering for a psychology experiment on health risk behaviors, please complete the following questions. Upon completion of this screen, you may be contacted to participate in a **three-part study** where you will be asked to complete similar questions **over the next 1½ months**. Class credits (up to 9) and entertainment, food, and prize vouchers (valued up to \$20) will also be awarded upon completion of the second and third portions of the study. (Please note: no credits or vouchers will be awarded for completion of this screen.)

*Information gathered here is for **research purposes only** and is completely confidential. The bottom portion of this form, with names and contact information, will be kept separately from any data gathered and will be held securely in a locked file where only the researcher and her supervisors have access.*

Answer the following questions as honestly as possible by checking the appropriate box.

In the past month:

1. How many hours per week did you sun tan (naturally or in a tanning bed)?
 0 hrs 1-2 hrs 3-5 hrs 6-9 hrs 10 or more hrs

2. How many times per week did you play aggressive sports?
 0 times 1-2 times 3-5 times 6-9 times 10 or more times

3. How many times per week did you drink alcohol (or take drugs)?
 0 times 1-2 times 3-5 times 6-9 times 10 or more times

4. How many times per week did you drive after drinking or ride with a driver who had been drinking?
 0 times 1-2 times 3-5 times 6-9 times 10 or more times

5. How many times per week did you drive (ride) without using a seatbelt (or ride a motorcycle without using a helmet)?
 0 times 1-2 times 3-5 times 6-9 times 10 or more times

Contact Information for Psychology Study

By M.T. McNabb, M.A.

Please **print** the following information that will be used to contact you to schedule participation times.

NAME: _____ AGE: _____

Please circle your preferred method of contact (You may circle several or all if you have no preference).

EMAIL: _____

HOME PHONE #: _____

CELL PHONE #: _____

WORK PHONE #: _____

APPENDIX B

DEMOGRAPHICS

1) Age: _____

2) Sex: (Check One) Male: Female:

3) School Grade: (Check One)

Freshman Sophomore Junior Senior 4) Ethnicity: (Check One) Asian African American Mixed Race Caucasian (of Hispanic decent) Caucasian (no Hispanic decent) Other

5) Major: _____

6) How many years have you been driving? _____

7) Do you drive a car?

Daily Weekly Once in a while Never

8) Do you drive a motorcycle?

Daily Weekly Once in a while Never

9) On average, how many miles do you drive a week? _____ (miles)

10. Do you ride a bike? Daily Weekly Once in a while Never 11) Do you currently play on a sports team? Yes: No: 12) Have you taken the HPR Class at USM? Yes: No: 13) Have you taken the PE/First Aid class at USM? Yes: No: 14) Have you taken the OCTAA class at USM? Yes: No:

15) What percentage of students do you think regularly (at least once a week):

0-10% 11-25% 26-50% 51-75% 76-100%

a) sun tan for an hour or more

0-10%	11-25%	26-50%	51-75%	76-100%
b) play aggressive sports				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) act aggressively to others				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) drink to intoxication (feel tipsy)				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) drink & drive				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) ride with a drinking driver				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX C

BEHAVIOR SURVEY

The following questions concern your health behaviors in the past month. Please circle one of the responses below each question.

1. During the past 30 days how often have you sun tanned in natural sunlight for more than 30 minutes.

- A. 0 days
- B. 1 or 2 days
- C. 3-5 days
- D. 6-9 days
- E. 10-19 days
- F. 20-29 days
- G. All 30 days

2. During the past 30 days how often have you sun tanned under a tanning lamp for more than 30 minutes?

- A. 0 days
- B. 1 or 2 days
- C. 3-5 days
- D. 6-9 days
- E. 10-19 days
- F. 20-29 days
- G. All 30 days

3. During the past 30 days how often have you used chemical tanning products?

- A. 0 days
- B. 1 or 2 days
- C. 3-5 days
- D. 6-9 days
- E. 10-19 days
- F. 20-29 days
- G. All 30 days

4. During the past 30 days how often have you used UV sunscreen with SPF of 15 or over?

- A. 0 days
- B. 1 or 2 days
- C. 3-5 days
- D. 6-9 days
- E. 10-19 days
- F. 20-29 days
- G. All 30 days

5. During the past 30 days how often have you used chemical peels on your face?

- A. 0 days
- B. 1 or 2 days
- C. 3-5 days
- D. 6-9 days
- E. 10-19 days
- F. 20-29 days
- G. All 30 days

6. Has anyone ever mentioned the dangers of tanning to you?

- A. never
- B. once
- C. occasionally
- D. frequently
- E. all the time

7. Has anyone ever tried to stop you from tanning as long as you wanted?

- A. never
- B. once
- C. occasionally
- D. frequently
- E. all the time

Were they successful?

Yes

No

8. I believe that the warnings of those dangers are:

- A. completely false
- B. somewhat false
- C. don't know
- D. don't care
- E. somewhat true
- F. completely true

9. During the past 30 days how often have you participated in aggressive sports where the chance of injury to self or other players is high?

- A. 0 days
- B. 1 or 2 days
- C. 3-5 days
- D. 6-9 days
- E. 10-19 days
- F. 20-29 days
- G. All 30 days

10. Has anyone ever mentioned the dangers of aggressive sports to you?

- A. never

- B. once
- C. occasionally
- D. frequently
- E. all the time

11. Has anyone ever tried to stop you from playing aggressive sports?

- A. never
- B. once
- C. occasionally
- D. frequently
- E. all the time

Was that person(s) successful? Yes No

12. I believe that the warnings of those dangers are:

- A. completely false
- B. somewhat false
- C. don't know
- D. don't care
- E. somewhat true
- F. completely true

13. It is acceptable to:

- A. It is never acceptable to be verbally or physically aggressive to another opponent
- B. verbally threaten violence against a sports opponent
- C. physically threaten violence against another opponent
- D. physically injure an opponent when the intent was to threaten
- E. physically injure an opponent to let him/her know you are serious about the game
- F. physically injure an opponent to remove him/her from the game

14. During the past 30 days, on how many days did you have at least one drink of alcohol?

- A. 0 days
- B. 1 or 2 days
- C. 3-5 days
- D. 6-9 days
- E. 10-19 days
- F. 20-29 days
- G. All 30 days

15. The most you can drink in 2 hours before becoming intoxicated is:

- A. Don't know
- B. 1-2 beers
- C. 1-2 beers plus 1 "hard" drink
- D. 3-4 beers
- E. 3-4 beers plus 1 "hard" drink

- F. more than 3-4 beers plus 1 "hard" drink
- G. 6-7 beers plus 1 "hard" drink
- H. 8 or more beers plus 1 "hard" drink

16. Has anyone ever mentioned the dangers of drinking more than 5 beers (or its equivalent) on one occasion to you?

- A. never
- B. once
- C. occasionally
- D. frequently
- E. all the time

17. Has anyone ever tried to stop you from drinking more than 5 beers (or its equivalent) on one occasion?

- A. never
- B. once
- C. occasionally
- D. frequently
- E. all the time

Was that person(s) successful?

Yes

No

18. I believe the warnings of those dangers are:

- A. completely false
- B. somewhat false
- C. don't know
- D. don't care
- E. somewhat true
- F. completely true

19. During the past 30 days how often did you *ride in* a car or other vehicle driven by someone who had been drinking alcohol/taking drugs?

- A. 0 days
- B. 1 or 2 days
- C. 3-5 days
- D. 6-9 days
- E. 10-19 days
- F. 20-29 days
- G. All 30 days

20. During the past 30 days, how often did you *drive* a car or other vehicle when you had been drinking alcohol/taking drugs?

- A. 0 days
- B. 1 or 2 days
- C. 3-5 days
- D. 6-9 days

- E. 10-19 days
- F. 20-29 days
- G. All 30 days

21. Has anyone ever mentioned the dangers of driving/riding with someone who has been drinking/taking drugs?

- A. never
- B. once
- C. occasionally
- D. frequently
- E. all the time

22. Has anyone ever tried to stop you from driving/riding with someone who has been drinking/taking drugs?

- A. never
- B. once
- C. occasionally
- D. frequently
- E. all the time

Was that person(s) successful?

Yes

No

23. I believe that the warnings of the dangers are:

- A. completely false
- B. somewhat false
- C. don't know
- D. don't care
- E. somewhat true
- F. completely true

24. During the past 30 days, after you have been drinking, how often did you use alternate methods of transportation (e.g. walk, take a cab, use a designated driver)?

- A. I have not had a drink/not traveled anywhere after drinking
- B. Never used alternate methods
- C. Rarely used alternate methods
- D. Sometimes used alternate methods
- E. Used alternate methods most of the time
- G. Always used alternate methods

25. During the past 30 days, how often did you/driver consume alcohol/take drugs while in a motor vehicle?

- A. 0 days
- B. 1 or 2 days
- C. 3-5 days
- D. 6-9 days
- E. 10-19 days

- F. 20-29 days
- G. All 30 days

26. The last time you rode in/drove a car or other motor vehicle where the driver had been drinking/taking drugs you:

- A. I have never been in that situation
- B. I have refused to do so regardless of having no other transportation
- C. I have refused to do so when I could call a taxi
- D. I have refused to do so when I could find other free transportation
- E. I have done so reluctantly after checking the reflexes/intoxication level of driver
- F. I have done so reluctantly without checking the driver
- G. I have not cared one way or other
- H. I have enjoyed the ride
- I. I encouraged the drive

27. It is acceptable to drive after drinking:

- A. 0 alcoholic drinks
- B. 1-2 alcoholic drinks
- C. 3-4 alcoholic drinks
- D. 5-6 alcoholic drinks
- E. 7-8 alcoholic drinks
- F. 9-10 alcoholic drinks
- G. more than 10 alcoholic drinks

28. It is acceptable to drive after taking drugs:

- A. never
- B. rarely
- C. sometimes
- D. most of the time
- E. always

29. The worst thing that has happened to me/someone close to me when I/they have driven while intoxicated was:

- A. nothing
- B. got a police warning/ticket
- C. my/their parents found out
- D. got license suspended or was arrested
- E. damaged the car
- F. received cuts and bruises
- G. broke a bone
- H. received facial or body disfigurement
- I. death

30. In the past 30 days how often did you wear a seatbelt when riding in/driving a car:

- A. 0 days
- B. 1 or 2 days

- C. 3-5 days
- D. 6-9 days
- E. 10-19 days
- F. 20-29 days
- G. All 30 days

31. Has anyone ever mentioned the dangers of not wearing a seatbelt?

- A. never
- B. once
- C. occasionally
- D. frequently
- E. all the time

32. Has anyone ever tried to stop you from driving/riding without a seatbelt?

- A. never
- B. once
- C. occasionally
- D. frequently
- E. all the time

33. I believe the warnings of those dangers are:

- A. completely false
- B. somewhat false
- C. don't know
- D. don't care
- E. somewhat true
- F. completely true

34. In the past 30 days how often did you wear a helmet when riding a motorcycle/bicycle?

- A. I did not ride a motorcycle/bicycle in the last 30 days
- B. Never wore a helmet
- C. Rarely wore a helmet
- D. Sometimes wore one
- E. Most of the time I wore one
- G. Always wore one

35. Has anyone ever mentioned the dangers of driving/riding without wearing a helmet?

- A. never
- B. once
- C. occasionally
- D. frequently
- E. all the time.

36. I believe the warnings of those dangers are:

- A. completely false

- B. somewhat false
- C. don't know
- D. don't care
- E. somewhat true
- F. somewhat false

For each of the following, circle one answer and list the year of occurrence (i.e., when it happened).

37. Someone close to me (or myself) who has had skin cancer suffered the following:

- A. No one close to me has ever had skin cancer
- B. Only minor surgery – no scarring (year: _____)
- C. Minor scarring (year: _____)
- D. Disfigurement/Deformity (year: _____)
- E. Amputation/Major removal of tissue (year: _____)
- F. Death (year: _____)

38. Someone close to me (or myself) who has been injured in a sports-related accident suffered the following:

- A. No one close to me has been injured in a sports-related accident
- B. Only minor bruising (year: _____)
- C. Broken bones or injured muscles that healed (year: _____)
- D. Disfigurement/Deformity (year: _____)
- E. Crippling injuries (year: _____)
- F. Death (year: _____)

39. Someone close to me (or myself) who has been injured in a motor-vehicle accident suffered the following:

- A. No one close to me has been injured in a sports-related accident
- B. Only minor bruising (year: _____)
- C. Broken bones or injured muscles that healed (year: _____)
- D. Disfigurement/Deformity (year: _____)
- E. Crippling injuries (year: _____)
- F. Death (year: _____)

APPENDIX D

DRIVING SURVEY

The following questions concern your driving behaviors in the past 3 months. Please circle one of the responses below each question.

1. In the past **3 months**, how many times have you broken or damaged a part of a vehicle (e.g., pulled knob off the radio, kicked the fender)?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

2. In the past 3 months, how many times have you had an argument with a passenger while you were driving?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

3. In the past 3 months, how many times have you had a verbal argument with the driver of another vehicle?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

4. In the past 3 months, how many times have you had a verbal argument with the driver of another vehicle?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- G. 5 or more times

5. In the past 3 months, how many times have you had a physical fight with the driver of another vehicle?

- A. 0 times
- B. 1 time

- C. 2 times
- D. 3 times
- E. 4 times
- G. 5 or more times

6. In the past 3 months, how many times have you made an angry gesture at another driver or pedestrian?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

7. In the past 3 months, how many times have you swore at or called another driver or pedestrian names?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

8. In the past 3 months, how many times have you flashed your headlights in anger?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

9. In the past 3 months, how many times have you honked your horn in anger?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

10. In the past 3 months, how many times have you yelled at another driver or pedestrian?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times

F. 5 or more times

11. In the past 3 months, how many times have you drove while being very angry?

A. 0 times

B. 1 time

C. 2 times

D. 3 times

E. 4 times

F. 5 or more times

12. In the past 3 months, how many times have you lost control of your anger while driving?

A. 0 times

B. 1 time

C. 2 times

D. 3 times

E. 4 times

F. 5 or more times

13. In the past 3 months, how many times have you driven up close behind another driver in anger?

A. 0 times

B. 1 time

C. 2 times

D. 3 times

E. 4 times

F. 5 or more times

14. In the past 3 months, how many times have you cut another driver off in anger?

A. 0 times

B. 1 time

C. 2 times

D. 3 times

E. 4 times

F. 5 or more times

15. In the past 3 months, how many times have you driven without using your seat belt?

A. 0 times

B. 1 time

C. 2 times

D. 3 times

E. 4 times

F. 5 or more times

16. In the past 3 months, how many times have you drank alcohol and driven?

A. 0 times

B. 1 time

- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

17. In the past 3 months, how many times have you been drunk and driven?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

18. In the past 3 months, how many times have you driven 10-20 mph over the limit?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

19. In the past 3 months, how many times have you driven 20+ mph over the limit?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

20. In the past 3 months, how many times have you passed unsafely?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

21. In the past 3 months, how many times have you tailgated or followed another vehicle too closely?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

22. In the past 3 months, how many times have you changed lanes unsafely?

- A. 0 times

- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

23. In the past 3 months, how many times have you drifted into another lane?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

24. In the past 3 months, how many times have you switched lanes to speed through slower traffic?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

25. In the past 3 months, how many times have you gone out of turn at a red light or stop sign?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

26. In the past 3 months, how many times have you made an illegal turn (e.g. illegal right turn on red light)?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

27. In the past 3 months, how many times have you driven recklessly?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times

- E. 4 times
- F. 5 or more times

28. In the past 3 months, how many times have you run a red light or stop sign?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

29. In the past 3 months, how many times have you entered an intersection when the light was turning red?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

30. In the past 3 months, how many times have you used a cellular phone while you were driving?

- A. 0 times
- B. 1 time
- C. 2 times
- D. 3 times
- E. 4 times
- F. 5 or more times

APPENDIX E

IMPORTANCE OF APPEARANCE (IOA)

Please circle *one* of the options below each question.

1. People comment on my looks
a) never b) not often c) sometimes d) often e) always
2. On a daily basis, my facial appearance is
a) not at all important b) not very important c) somewhat important
d) very important e) extremely important
3. How important have your looks been in getting dates?
a) not at all important b) not very important c) somewhat important
d) very important e) extremely important
4. How important have your looks been in getting a job?
a) not at all important b) not very important c) somewhat important
d) very important e) extremely important
5. How important have your looks been in meeting new people?
a) not at all important b) not very important c) somewhat important
d) very important e) extremely important
6. How important have your looks been in making friends?
a) not at all important b) not very important c) somewhat important
d) very important e) extremely important
7. Overall, my looks are
a) not at all important to me b) not very important to me c) somewhat important to me
d) very important to me e) extremely important to me

APPENDIX F

ABBREVIATED BEHAVIORS SURVEY

The following questions concern your health behaviors in the past month. Please circle one of the responses below each question.

1. During the past 30 days how often did you ride in a car or other vehicle driven by someone who had been drinking alcohol (2 or more drinks)?

- A. 0 times
- B. 1 time
- C. 2 or 3 times
- D. 4 or 5 times
- E. 6 or more times

2. During the past 30 days, how often did you drive a car when you had been drinking alcohol (2 or more drinks)?

- A. 0 times
- B. 1 time
- C. 2 or 3 times
- D. 4 or 5 times
- E. 6 or more times

3. During the past 30 days, after you have been drinking (2 or more drinks), how often did you use alternate methods of transportation (e.g. walk, take a cab, use a designated driver)?

- A. I have not had a drink/not traveled anywhere after drinking
- B. Never used alternate methods
- C. Rarely used alternate methods
- D. Sometimes used alternate methods
- E. Used alternate methods most of the time
- F. Always used alternate methods

4. During the past 30 days, on how many days did you have at least one drink of alcohol?

- A. 0 days
- B. 1 or 2 days
- C. 3-5 days
- D. 6-9 days
- E. 10-19 days
- F. 20-29 days
- G. All 30 days

5. During the past 30 days, how often did you consume alcohol/take drugs while in a motor vehicle?

- A. 0 times
- B. 1 time

- C. 2 or 3 times
- D. 4 or 5 times
- E. 6 or more times

6. When you rode in/drove a car where the driver had been drinking/taking drugs you:

- A. I have never been in that situation
- B. I have refused to do so
- C. I have done so reluctantly
- D. I have not cared one way or other
- E. I have enjoyed the ride
- F. I encouraged the drive

7. In the past 30 days how often did you wear a seatbelt when riding in/driving a car:

- A. Never
- B. Rarely
- A. Sometimes
- B. Most of the time
- C. Always

8. In the past 30 days how often did you wear a helmet when riding a bicycle?

- A. I did not ride a bicycle in the last 30 days
- B. Never wore a helmet
- C. Rarely wore a helmet
- D. Sometimes wore one
- E. Most of the time I wore one
- F. Always wore one

9. Have you or anyone close to you been severely injured in a motor vehicle accident?

- A. No never
- B. Yes, but long ago
- C. Yes, leaving that person handicapped
- D. Yes, leaving that person disfigured
- E. Yes, fatally injuring that person

APPENDIX G

INTERVENTION RATING SURVEY

THANK YOU for participating in this study. I am sincerely interested in **your honest reactions** to it. Please complete the following questions by circling the appropriate answers. There is space below each question where you may make comments in your own words.

1. How believable were the FACTS given to you regarding drinking and driving/riding with a drinking driver?

Not at all Not very Believable Very Extremely
 -----+-----+-----+-----+-----+-----+-----

Comments on the FACTS:

2. How believable were the presenters of this information?

Not at all Not very Believable Very Extremely
 -----+-----+-----+-----+-----+-----+-----

3. How friendly do you think the presenters were?

Not at all Not very Friendly Very Extremely
 -----+-----+-----+-----+-----+-----+-----

Comments on the presenters:

4. How effective do you think the strategies presented are for avoiding alcohol-related accidents?

Not at all Not very Effective Very Extremely
 -----+-----+-----+-----+-----+-----+-----

Comments on the strategies:

5. How effective do you think the photographs presented were in helping people avoid

alcohol-related accidents?

Not at all	Not very	Effective	Very	Extremely
-----+	-----+	-----+	-----+	-----+

Comments on the effectiveness of the information/photographs:

6. How graphic was the information and photographs presented?

Not enough graphic	Not very	Graphic	Very	Too
-----+	-----+	-----+	-----+	-----+

Comments on the graphic nature of information/photographs:

7. How often did you remember the information and photographs presented when you were planning to go drinking?

Never	Once in a while	Sometimes	Most of the time	Every time
-----+	-----+	-----+	-----+	-----+

Further comments on this study:

APPENDIX H

ASSISTANT PROTOCOLS

SCRIPT FOR SCREENING

“Hello, my name is _____ and I am a second-year master’s level student in psychology, working for M.T. McNabb who has requested your help in completing her dissertation on health behavior attitudes, intentions, and behaviors.”

“I will be distributing a brief questionnaire that should take you 2 minutes to complete. It asks you about some of your health regimes and habits this PAST WEEK. Please read over the questions before consenting to participate in the full-length experiment that will take approximately three hours total over the next month, complete the contact portion of the screening form prior to answering the questions. We ask that you provide a phone number and/or email address so that we may contact you to schedule a time for you to complete the first portion of the study. You must also print and sign your name in the spaces provided. **Your answers to these questions and any data collected later in the study will be separated from any identifying information and only the researcher and her supervisor will have access to them.**”

“As outlined on the top of the screen, you will be reimbursed for your participation with class credits. Food and entertainment coupons worth approximately \$20.00 will also be distributed for completion of **all three** portions of the study. If you do not wish to participate in this study, you may pass the blank forms in as you leave.”

PROTOCOL FOR EDUCATION & STRATEGIES

ALL GROUPS:

- A. Introduce yourself.
- B. Let them know that the session will take approximately one hour and that you will start by talking to them for approximately 15-20 minutes, asking them to participate in a brief discussion.

SAY: “As you many of you probably guessed, the real focus of this study is not on acne cream or aggressive sports, but on drinking and driving, or driving with a drinking driver.”

“We, as a scientific community have researched the effects of alcohol and drug use, both positive and negative. And YES! There are positives to alcohol use, **so I’m not here to tell you to stop drinking or even to cut down on your drinking.** What I’m here to do today is to let you know what we’ve learned about the negative consequences of drinking and driving or riding with a drinking driver. If you only listen to one thing this term, listen to this.”

- C. Hand out the pink FACTS sheet as you say:

“I’m handing out some facts taken from the Centers for Disease Control.”

- D. Begin reading the highlighted FACTS.

- E. Draw the alcohol effects curve on the blackboard and begin telling them about the effects of increasing amounts of alcohol on mood, saying:

“What we know is that your mood generally starts to go up as you begin drinking. You relax a little and you may start to socialize more and see things as fun or funny. Life is good.”

START DRAWING THE UPWARD CURVE ON THE GRAPH

“A lot of people drink to become more relaxed socially – to have some fun. If you’re one of these people, the optimal number of drinks per hour is one to two. That’s one to two beers per hour OR one to two shots per hour (not both)!”

START DRAWING THE DOWNWARD CURVE ON THE GRAPH

“BUT, what we also know is that the more alcohol you consume, the more your mood decreases. So you start losing that happy place of relaxation and you’re likely to start feeling things more intensely (and not in a good way). Some of you may start to feel a little depressed or may start feeling teary. Ever see one of your friends at a party becoming really quiet or just start crying? They’ve likely gone over the *two drinks per*

hour mood limit.”

“Others may become more aggressive. This is the person who may just be fooling around and pushing people to the limits either verbally or physically – just kidding around.”

“So, the next time you drink, how do you think you’d be able to keep your drinking level at one to two alcoholic beverages per hour to keep that good mood in place?”

- D. Encourage generation of strategies. If no one begins after 2 or 3 minutes, mention some of the strategies listed on the SAFE DRINKING sheet and encourage them to think of more. Write them on the blackboard as they are generated or have one or two of them write them for you.
- E. When their participation slows, HAND OUT the green SAFE DRINKING sheet. Review any similarities or discrepancies from their list to the sheet. Tell them to look at the last suggestion on the sheet and to take a minute now to write down the names of 2 people who would drive them home safely if they were to call.
- F. Refer now to the appropriate protocol below for your group.

No-Photo Control Group:

- G. SAY: “I’m going to hand out the next set of questionnaires. They should only take approximately 10 minutes to complete. When you are finished, please bring the questionnaire to the desk and I will schedule you for the last (and shortest) portion of the study in one week’s time.”
- H. Collect the questionnaires, schedule their next session and give them credit slips and incentive packets. Stress that they will receive the bulk of the incentives when they return for the final portion.

Crash Scene Photo Group:

- I. SAY: “Many of you said that you think you’re a good enough driver after you’ve had a few drinks: so did they.”
- J. SHOW PHOTO OF CRASH & explain that this was the car of two university students who had been at a party drinking.
SAY: “They hadn’t had much but just enough to dull the driver’s reflexes. The passenger died at the scene of the crash and his friend, the driver, now faces manslaughter charges. If you want to hear about more incidents like this, check out the website for Mothers Against Drunk Driving ([www. MADD.com](http://www.MADD.com)).
Remember, you can avoid this type of consequence by avoiding drinking and driving or riding with a drinking driver.”
- K. SAY: “If any of you are disturbed by any information discussed in this study, please let me know that you would like to talk. If you do not wish to talk now, but

become upset at a later time, please feel free to call the Counseling Center. Services there are free to students and I will be giving each of you a card with their phone number and intake hours as you leave.”

“Now I’m going to hand out the next set of questionnaires. They should only take approximately 10 minutes to complete. When you are finished, please bring the questionnaire to the desk and I will schedule you for the last (and shortest) portion of the study in one week’s time.”

- L. Collect the questionnaires, schedule their next session and give them credit slips and incentive packets. Stress that they will receive the bulk of the incentives when they return for the final portion.

Personal-Photo Group:

M. SAY: “This is where things get a little more graphic. If anyone at this point or at any point in this session becomes distressed enough to want to stop, please raise your hand and I will talk to you in the hall. It’s not going to be too bad, but it’s important that I let you know that there are other consequences to DUI/RDD that we haven’t talked about. In alcohol-related car crashes, glass breaks and may cut you or you may break the glass yourself by being forced through the windshield.”
 “Remember on the FACTS sheet that research into these accidents has found that people who have been drinking tend to use seat belts less than when they have not been drinking. The principle investigator for this study did research in the ER of a large hospital and saw young adults whose faces had been cut right across almost ear to ear.” DEMONSTRATE
 “What we have done to give you a better idea of what might happen if you drink and drive or drive with a drinking driver is to take your photographs, scan them into a computer, and morph them to look like a real person who was in an alcohol-related accident. PLEASE REMEMBER, If you do not wish to see your altered photograph, let me know.”

- N. DISTRIBUTE PHOTOGRAPHS ONE AT A TIME. Try to hand them out so that Only the individual sees his/her own photo. They may share them if they wish.
- O. Inform them that the scarring and bruising seen on their photographs was taken from a real person, a student, and that this was the least disturbing of the photographs available.
- P. Check faces/body posture for overt signs of distress.
SAY: Remember, you can avoid this type of consequence by avoiding drinking and driving or riding with a drinking driver.”
- Q. SAY: “If any of you are disturbed by any information discussed in this study, please let me know that you would like to talk. If you do not wish to talk now, but become upset at a later time, please feel free to call the Counseling Center. Services there are free to students and I will be giving each of you a card with their phone number and intake hours as you leave.”

“Now I’m going to hand out the next set of questionnaires. They should only take approximately 10 minutes to complete. When you are finished, please bring the questionnaire to the desk and I will schedule you for the last (and shortest) portion of the study in one week’s time.”

- R. Collect the questionnaires along with their altered photographs, schedule their next session and give them credit slips and incentive packets. Stress that they will receive the bulk of the incentives when they return for the final portion.

PROTOCOL FOR DEBRIEFING AND INTERVENTION RATING SURVEY

- S. Following administration of the follow-up questionnaire, **DISTRIBUTE** and **READ** the debriefing sheet. Tell them that they will now be asked to complete a very brief survey where they may give their reactions to this experiment.
SAY: “When everyone has completed the survey, feel free to share your reactions with this group. You may also wish to stay to discuss your reactions further with me, but it would be helpful if you wrote your reactions in the space provided.”
- T. Thank them for their participation and distribute class credit slips and incentive packets.

APPENDIX I
INFORMED CONSENT FORM – ALL PARTICIPANTS

ID # _____

Purpose of Study:

The purpose of this study is to investigate health attitudes, intentions, and behaviors of young adults. *Participants must be over age 18.* You will be asked to complete questionnaires at three points over the next month and a half. You will have a 31% chance of being placed in a control group or in one of two intervention groups where you will be exposed to various health-related initiatives. You have a 6% chance of being placed in an exploratory group where you will be asked to use health-related material between questionnaire periods.

What you will be asked to do today:

Today you will be asked to complete a survey that should take *45 to 60 minutes*. All of your answers are completely confidential. Identification numbers will be matched to names only on this form, which will be kept in a closed file. Other study information will be marked only with an identification number. You will be asked to consent to having your photograph taken and then be scheduled to return in approximately one week.

What you will be asked to do when I return in approximately one week:

At this time you will be given health risk and behavior change information. You will then complete a brief survey of approximately 10 minutes. Those who complete this portion of the study will be given incentives in the form of entertainment and food coupons (approximate value - \$5.00). Total time for this second session will be approximately *30-45 minutes*. You will then be scheduled to return one more time, in approximately three weeks.

What you will be asked to do when I return in approximately one week:

At this time you will be asked to complete a brief survey of approximately 15 minutes. Those who complete this final portion of the study will be given incentives in the form of entertainment and food coupons (approximate value - \$15.00). Total time for this final session will be approximately *15 minutes*.

Risks and Benefits:

Photographs or information presented may be graphic. Please inform the researcher or her assistants of any discomfort due to information presented. You will, however, help in continuing research on health behavior intentions and attitudes. Your participation is completely voluntary and you may quit the experiment at any time without repercussion (should you feel uncomfortable). Should you complete all three portions of this study (total approximate time = 2 hours) you will be given class credit (6 credits) as well as entertainment and food coupons or prizes valued at approximately \$20.00. These coupons/prizes may include: coupons for McDonald's, McAlister's Deli, Outback Steakhouse, Blockbuster video bucks, Odeon cinema tickets, stationary supplies, and Pick-a-mood magnets.

Assurance of Confidentiality:

All information is confidential. Names are initially required for contact information and to allot research credits, however, this information and your photographs will be kept separately from questionnaire data, which will be marked only with identification numbers. Only the researcher and her supervisor will have access to this material.

For More Information:

I understand that if I have any concerns about this study I may contact M.T. McNabb in the Psychology Dept. at 601-266-5103 or by email at <<mt.mcnabb@usm.edu>> or Dr. Eric Dahlen at 266- 4608. If any important or uncomfortable feelings have arisen and I need to talk to someone on a confidential basis, I may contact the USM Counseling Center in Kenard-Washington Hall (phone: 266-4829). This project and this consent form have been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the Chair of the Institutional Review Board at (601) 266-6820.

If you agree to participate in this study, please sign then print your name below.

Sign Name _____ Witness _____

Print Name _____ *Date* _____

APPENDIX J

THE FACTS

- When adolescents/young adults drive after drinking alcohol or consuming drugs, they are more likely than adults to be in a crash – **even when drinking less than adults**. Possible reasons for this include inexperience with driving, less tolerance for alcohol or drugs, sense of invulnerability (thinking that nothing bad will happen to you), risk taking is higher in youth than older adults.
 - In 1997, 14% of drivers aged 16-20 years and **26% of drivers aged 21-24 years who were involved in fatal crashes were legally drunk** (BAC of .10 g/dL or more).
 - MS law has a Blood Alcohol Concentration limit of .08 - that is 1 shot per hour per hour.
 - In 1997 **BAC of those in fatal traffic accidents was between .01 and .09** (i.e. under the legal limit) in 16,189 cases whereas it was .10 or greater for 12,704 cases.
 - Adolescents/young adults cause a disproportionate number of deaths among nonadolescent drivers, passengers, and pedestrians.
 - **Alcohol is involved in about 35% of adolescent/young adult driver fatalities.**
 - 50% of fatal teenage motor vehicle crashes involve the use of alcohol or other drugs.
 - **Each year** in the U.S. there are **over 120 million episodes of impaired driving** among adults. About 1.4 million arrests are made (1 in every 123 licensed drivers).
 - In 1996, 21% of the 2,761 traffic fatalities among children aged 0-14 years involved alcohol.
 - Drugs other than alcohol (e.g. marijuana and cocaine) have been identified as factors in 18% of deaths among motor vehicle drivers. Drugs are most commonly used in conjunction with alcohol.
 - Drivers aged 21-34 who have been arrested for DUI are over four times as likely to eventually die in a crash involving alcohol than those who have not been arrested.
 - **The highest intoxication rates among drivers in fatal crashes in 1997 were for those 21 to 24 years old (26.3%) followed by 25 to 34 year olds (23.8%).**
 - **Some progress** is being made. The 16,189 alcohol-related traffic fatalities in 1997 represent a **32% reduction** from the 23,641 alcohol-related traffic fatalities in 1987.
 - There was a **6% decrease** from 1996 to 1997 among all age groups.
- This data is from the Centers for Disease Control and Prevention, Atlanta, GA.*

APPENDIX K

SAFE DRINKING STRATEGIES

The following have been found to be helpful in reducing the harm due to alcohol:

- nursing drinks or staggering alcoholic with non-alcoholic drinks keeps the buzz going but reduces your risk of problems due to alcohol - binge drinking or drinking alcohol quickly (more than one shot or two beers per hour) will intoxicate you, bringing on negative effects like melancholy, tearfulness, or aggression & increases the risk of alcohol-related problems.
- taking a limited amount of funds and no cash/ATM card was recommended to avoid drinking to intoxication when driving could not be avoided.
- plan for their drinking by adding to a pool of money regularly, as motivation for a designated driver to stay sober.
- decide upon going to a local bar within walking distance & plan for overnights – when one or more of the group has had too much to drink.
- if the person who drove you becomes intoxicated then ask if anyone present is a sober designated driver (could be that hot guy/girl you've never talked to before).
- include the designated driver in drinking games without drinking alcohol (e.g. try having him/her repeat the "Pheasant Plucker" rhyme with increasing amounts of marshmallows in his/her mouth
- local bars and restaurants often pay for patrons who are too intoxicated to drive safely.
- monitor their sobriety through tongue twisters (saying RUBBER BABY BUGGY BUMPER three times fast) and motor coordination.
- Think now of 2 people you could contact by phone who would pick you up if you needed a safe ride home.

APPENDIX L



Figure 2. Altered Photograph of Participant

Note. Permission for use in research publication granted by participant.

APPENDIX M

DEBRIEFING STATEMENT

Appearance-based Fear Appeals

Thank you for participating in this study. The main objective of this experiment was to investigate whether risks to appearance would affect the attitudes/intentions of young adults toward driving under the influence (DUI) or riding with a drinking driver (RDD). Self-reports from this population have listed appearance as a primary personal concern whereas the possible consequences of driving under the influence that are typically used as deterrents (arrest, death, etc.) are not seen as being personally relevant. Standard information and media appeals have therefore had limited success with this group. The aim of this experiment was to make the consequences of DUI personally relevant by altering photos of participants to reflect the possible scarring due to alcohol-related car accidents. It was hypothesized that the group given their altered photographs would be more likely to report changes in attitudes and intentions than would students given standard appeals on the risks of driving under the influence such as photographs of car accidents and written information on risks. Attitude, intention, and behavior change, is supported by increases in self-efficacy towards a new behavior. It was hoped that by supplying students with methods of avoiding driving after drinking, they would feel more prepared to make changes should they chose to do so in the future.

Should you wish to learn about the results of this study, you may contact the researcher, M.T. McNabb <<mt.mcnabb@usm.edu>>. Any questions or concerns regarding this study may be addressed to the researcher or to Dr. Eric Dahlen, Rm. 202, Owings-McQuaggue Hall, 266-4608.

If this study raised any personal questions or concerns for you, the USM Counseling Center in Kenard-Washington Hall (266-4829) is available to students for individual therapy free of charge.

Again, thank you for your time.

APPENDIX N

IRB FORM



The University of
Southern Mississippi

Institutional Review Board

118 College Drive #5147
Hattiesburg, MS 39406-0001
Tel: 601.266.6820
Fax: 601.266.5509
www.usm.edu/irb

**HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE
NOTICE OF COMMITTEE ACTION**

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 25011002

PROJECT TITLE: Scarred Images: Using Appearance as a Motivator to Avoid DUI

PROPOSED PROJECT DATES: 01/01/04 to 08/10/05

PROJECT TYPE: Dissertation or Thesis

PRINCIPAL INVESTIGATORS: M. T. McNabb

COLLEGE/DIVISION: College of Education & Psychology

DEPARTMENT: Counseling Psychology

FUNDING AGENCY: N/A

HSPRC COMMITTEE ACTION: Expedited Review Approval

PERIOD OF APPROVAL: 01/04/05 to 01/03/06

Lawrence A. Hosman

Lawrence A. Hosman, Ph.D.
HSPRC Chair

1-11-05

Date

APPENDIX O

IMPORTANCE OF APPEARANCE ITEM CORRELATION

Correlations for IOA items

	Looks	Job	New people	Friends	Dates	Face	Overall
Looks							
Job	.30						
New people	.13	.33					
Friends	.06	.26	.59				
Dates	.01	.23	.19	.17			
Face	.16	.25	.24	.16	.50		
Overall	.22	.32	.32	.37	.07	.71	

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