



# Alcohol-impaired driving behavior and sensation-seeking disposition in a college population receiving routine care at campus health services centers

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## ARTICLE INFO

### Article history:

Received 1 August 2008

Received in revised form 25 October 2008

Accepted 14 December 2008

### Keywords:

Sensation seeking

College students

Alcohol

Impaired driving

## ABSTRACT

Accidents stemming from alcohol-impaired driving are the leading cause of injury and death among college students. Research has implicated certain driver personality characteristics in the majority of these motor vehicle crashes. Sensation seeking in particular has been linked to risky driving, alcohol consumption, and driving while intoxicated. This study investigated the effect of sensation seeking on self-reported alcohol-impaired driving behavior in a college student population while adjusting for demographics, residence and drinking locations. A total of 1587 college students over the age of 18 completed a health screening survey while presenting for routine, non-urgent care at campus health services centers. Student demographics, living situation, most common drinking location, heavy episodic drinking, sensation-seeking disposition and alcohol-impaired driving behavior were assessed. Using a full-form logistic regression model to isolate sensation seeking after adjusting for covariates, sensation seeking remains a statistically significant independent predictor of alcohol-impaired driving behavior ( $OR = 1.52$ ;  $CI = 1.19-1.94$ ;  $p < 0.001$ ). Older, white, sensation-seeking college students who engage in heavy episodic drinking, live off-campus, and go to bars are at highest risk for alcohol-impaired driving behaviors. Interventions should target sensation seekers and environmental factors that mediate the link between sensation seeking and alcohol-impaired driving behaviors.

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## 1. Introduction

The detrimental consequences of alcohol-impaired driving are the leading cause of injury and death among college students. In 2001, there were more than 1700 U.S. college alcohol-related injury deaths, of which 78% were alcohol-impaired traffic fatalities (Hingson et al., 2005). Research studies have consistently implicated drivers' personality characteristics as factors associated with vehicular accidents and have called for a closer examination of the role personality plays in traffic safety (Lewin, 1982a,b; Schwebel et al., 2007). Personality characteristics such as aggressiveness, impaired risk perception, hostility, disinhibition, susceptibility to boredom, and sensation seeking are linked to negative driving outcomes (Burns and Wilde, 1995; Furnham and Saip, 1993; Greene et al., 2000; Iversen and Rundmo, 2002; Jonah, 1997; McMillen et al., 1991; Wells-Parker et al., 2002).

Sensation-seeking disposition in particular, viewed as part of a global risk-taking behavior pattern (Jessor, 1987), has been impli-

cated in risky driving (Dahlen et al., 2005; Patil et al., 2006; Iversen and Rundmo, 2002), alcohol drinking (Nagoshi et al., 1991; Yanovitzky, 2006; Hittner and Swickert, 2006; Trimpop and Kirkcaldy, 1997) and driving under the influence (DUI) of alcohol (Johnson and White, 1989; Jonah, 1997; Arnett, 1990). The sensation-seeking trait is defined by "the seeking of varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experience" (Zuckerman, 1994, p.27). Eight out of 13 studies in the general population and three studies of high school students that assessed the relationship between sensation seeking and drinking and driving found a positive association (see Jonah, 1997, for a review).

Information is relatively limited on the exact contribution of sensation seeking to alcohol-impaired driving among college students, who may differ in terms of predictors of risky driving (Fernandes et al., 2007). McMillen et al. (1992) studied 132 college students ages 18–24, enrolled in general psychology classes. Students who drank heavily and scored high on the sensation-seeking scale (Zuckerman, 1971) were more likely to be apprehended for driving while intoxicated. Another study by McMillen et al. (1991) assessed 188 college students age 18–21. Drivers from this sample apprehended for DUIs in a stakeout or roadblock had higher sensation-seeking scores than drivers who did not engage in drinking and driving. Jonah et al. (2001) studied 279 students who

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drove in the past 12 months. Participants who scored high on the sensation-seeking scale were more likely to engage in alcohol-impaired driving. Sensation seeking is reported to have a direct effect on DUI behavior among young males while controlling for drinking (Stacy et al., 1991).

A major limitation of some of the previous studies that assessed the relationship between sensation seeking and alcohol-impaired driving in college populations is their reliance on DUI citations as a measure of alcohol-impaired driving. Although DUI records are used to identify intoxicated drivers, this method does not include the drunk drivers who were not identified by law enforcement. In 2005, the Department of Justice reported arresting 1.4 million people for driving under the influence of alcohol (U.S. Department of Justice, 2005); however that is less than one percent of the 159 million self-reported episodes of alcohol-impaired driving among US adults each year (Quinlan et al., 2005). An additional limitation is the small sample size employed by many of the earlier studies.

The relative contribution of demographic variables (e.g. gender) and environmental factors (e.g. residence, living arrangements, drinking location) to the relationship between sensation seekers and alcohol-impaired driving among college students has not been fully explored. While some studies argue that the relationship between sensation seeking, drinking and driving is stronger for men than for women (Stacy et al., 1991; Johnson and White, 1989), other researchers do not find gender to play a differential role in the link between driving under the influence and sensation seeking (Fernandes et al., 2007; Schwebel et al., 2007). Situational factors (e.g. rural residence, geographical location, family living structure) are reported to affect alcohol-involved driving and riding (O'Malley and Johnston, 1999; Poulin et al., 2006), but little is known about how environmental variables (e.g. living arrangement, residence and drinking location) affect sensation seeking and alcohol-impaired driving among college students. Clearly, more research is needed to define the link through which sensation-seeking impacts alcohol-impaired driving.

Furthermore, being a drunk driver is not the only way to be injured in an alcohol-related motor vehicle accident. Riding with an alcohol-impaired driver is recognized as a high-risk driving behavior (Poulin et al., 2006; Dellinger et al., 1999). The National Highway Traffic Safety Administration defines a motor vehicle crash to be alcohol related if at least one driver, passenger, or non-occupant (pedestrian or cyclist) involved in the crash is found to have had a positive blood alcohol concentration (BAC) value (U.S. Department of Transportation, 2002). Eighty percent of passengers in alcohol-related traffic fatalities have BACs greater than zero (Isaac et al., 1995). Pairs of drivers and passengers admitted to a trauma center after a motor vehicle crash have been found to be alcohol-impaired at similar rates, with 43% drivers and 41% passengers having positive BACs (Soderstrom et al., 1996). Dellinger et al. (1999) argues that asking passengers about riding with an alcohol-impaired driver may be an alternative way to measure impaired driving, because the respondents may be more forthcoming about this behavior which is not against the law. Therefore, it may be important to evaluate sensation seeking in relation to students' driving behavior either as drivers or as passengers.

The purpose of this paper is to fill the gap in the literature on the effect of sensation seeking on alcohol-impaired driving behavior in college students using data from the College Health Intervention Projects (CHIPs), a randomized controlled trial of brief physician alcohol intervention delivered at campus health services centers. The objective of this cross-sectional research is to examine the significance of sensation-seeking dispositions with respect to alcohol-impaired driving behavior (i.e. drunk driver or passenger of drunk driver) with and without adjusting for alcohol use and various subject characteristics in a college student population. Our findings will serve injury prevention efforts by offering a better

understanding of the role alcohol and sensation seeking play in alcohol-impaired driving and will inform alcohol safety programs aimed at reducing deaths and injuries from vehicle crashes among college students.

## 2. Methods

### 2.1. Study sample

The data analyzed in this paper come from screening participants of the College Health Intervention Projects (CHIPs), a randomized control trial (RCT) to test the efficacy of brief intervention on reducing alcohol use and alcohol related harm among college students. Students provided data at one of three participating university sites: (1) a medium-size university in the US Midwest (12,000 students enrolled), (2) a large university in the US Midwest (40,000 students enrolled), (3) a large university on the US West Coast (42,000 students enrolled). The University of Wisconsin Health Sciences Institutional Review Board, and the IRB of record at each of the other sites, approved the study.

Between 30 October 2004 and 15 February 2007, all enrolled students 18 years and older with non-urgent and primary care appointments at their university's student health services were asked to complete one of two health screening surveys for the CHIPs RCT (HSS-A and HSS-B) (Fleming et al., 1999; Fleming et al., 1997). Both the HSS-A and HSS-B were presented to subjects with an informed consent form. Subjects had three options for completing the HSS-A and HSS-B: (1) mark the circle at the bottom of the survey cover stating, "I do not want to complete this questionnaire" ending their participation; (2) complete the survey and decline to provide name and contact information, bowing out of any further participation in the study; (3) complete the survey and provide name and contact information, in which case those who screened eligible would be invited to participate in the RCT. The fact that subjects could complete the surveys without a link to their name on either the consent form or the survey (if they so chose), may have allowed for increased participation and forthcoming responses from those who otherwise may have been uncomfortable doing so. Students filled the screening tool while waiting for their appointment and returned the completed questionnaire to a locked box. Students were volunteers and were not compensated for their participation. The data from the HSS-B, an extended screening instrument given to every fifth student, are analyzed in this report.

### 2.2. Heavy episodic drinking measure

The frequency of heavy episodic drinking was measured with the question: "In the last 30 days, how many times have you had five or more regular drinks (average-size glass of beer, a small glass of wine, a shot of gin, vodka, rum, brandy, whiskey or other hard liquor) on one occasion?" Possible answers were "Zero," "1 time," "2 times," "3 times," "4 times," or "5 or more times."

### 2.3. Sensation-seeking measure

Sensation-seeking disposition was evaluated with a brief sensation-seeking scale (BSSS) that has a proven reliability and validity record (Hoyle et al., 2002). BSSS is a brief self-report measure suitable for evaluating sensation seeking among young adults. It has the same basic content as the SSS-V (Zuckerman et al., 1978; Zuckerman, 1994) and utilizes a Likert-type response format. Subjects are asked how strongly they agree or disagree with the following eight items: (1) "I would like to explore strange places"; (2) "I get restless when I spend too much time at home"; (3) "I like to do frightening things"; (4) "I like wild parties"; (5) "I would like to take off on a trip with no pre-planned routes or timetables"; (6) "I prefer

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