Sensation-seeking and factors related to dangerous driving behaviors among Iranian drivers

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ABSTRACT

Evidence has indicated that drivers with higher sensation-seeking scores had higher rates of risky behaviors, such as driving while intoxicated and driving at high speeds. Using a convenience sampling method, 361 car-drivers were recruited in …, Iran. To collect data in this cross-sectional descriptive study, the demographic questionnaire, Zukerman's Sensation-Seeking Scale (SSS), and the Manchester Driver Behavior Questionnaire (DBQ) were used. The results showed a significant positive relationship between sensation-seeking and dangerous driving behaviors ($r = 0.79$, $p < 0.001$). There were significant relationships between participants' dangerous driving behaviors and age, marital status, years of education, and history of accidents ($p \leq 0.05$). Our results showed that driver-related factors, including sensation-seeking, predicted dangerous driving behaviors in a population with high risks of accidents. Among the four subscales of sensation-seeking, the partial correlations between two subscales—adventure-seeking and boredom susceptibility—and dangerous driving behaviors were significant.

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Accidents are among the most significant health challenges as they frequently lead to physical, mental, and financial burdens (Qu et al., 2015a, b). In terms of traffic accident deaths, Iran has the fifth highest worldwide rank, and also ranks highest among Eastern Mediterranean countries. The yearly rate of traffic accident deaths in Iran is 34.1 deaths per 100,000 people (Bakhtiyari et al., 2014) from which car accidents are the most common reason for youth and adult deaths (Mousavi, Zarifian, Emadzadeh, & Vakili, 2015). In Iran, this rate is increasing and is estimated to be 32 times greater than in developed countries, and two to three times greater than in developing countries (Nabipour, Nakhaee, Khanjani, Zirak Moradlou, & Sullman, 2015).

In general, the major predictors of traffic accidents include factors related to environments, vehicles, and drivers (Mahdian, Sehat, Fazel, Moraveji, & Mohammadzadeh, 2015). Environmental situations are mostly related to locations of accidents, road defects, and weather conditions. Vehicle factors are related to vehicle defects, such as broken headlights and other mechanical problems (Hu et al., 2016). Among all of these factors, the most important predictors of car accidents are human- or driver-related factors, including driver's sensation-seeking, age, gender, smoking status, and driving skills and styles (Spillane et al., 2012). These factors may predict drivers' improper position in the

vehicle, distractions while driving, non-use of seat belts, operation of cell phones, reckless driving, and other risky behaviors (Mohammadzadeh, Paravar, Mirzadeh, Mohammadzadeh, & Mahdian, 2015). Factors related to sensation-seeking alone are predictors of 60% of car accidents (Mohammadzadeh et al., 2015).

Sensation-seeking is a personality trait and defined by Kopstein, Crum, Celentano, and Martin (2001) as a set of varied and complex feelings, excitements, and experiences that may lead persons to physical, social, legal, and financial risks. Sensation-seeking is not a single concept, but a construct composed of a series of intertwined concepts, including thrill- and adventure-seeking (TAS), experience seeking (ES), disinhibition (DI), and boredom susceptibility (BS) (Littlefield, Stevens, Ellingson, King, & Jackson, 2016). First, TAS is a desire for outdoor risky activities, such as skydiving and high-speed driving. Second, ES is related to a desire for new experiences in unusual ways, such as making relationships with undesirable people. Third, DI refers to favoring unruly activities, such as illegal behaviors and binge drinking. Last, BS is related to feeling bored and restless with repetitive conditions and people (Littlefield et al., 2016). Evidence has indicated that drivers with higher sensation-seeking scores had higher rates of risky behaviors, such as driving while intoxicated and high-speed driving (Bachoo, Bhagwanjee, & Govender, 2013).

While dangerous behaviors may be self-destructive, people do not intentionally tend to behave against themselves. Risky behaviors are often consequences of making choices among short-term and long-

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term benefits and costs (Dhami & Garcia-Retamero, 2012). The level of sensation-seeking and risky behaviors can be associated with individual factors, such as personality, physiological characteristics, age, and gender.

Age and gender have been shown to be among the most significant predictors of sensation-seeking. A younger age is associated with higher motivation to seek sensation. Therefore, with age, a decline in sensation-seeking is evident (Spillane et al., 2012). Compared to women, men are more likely to have higher scores of TAS and BS, as well as total scores of sensation-seeking (Dhami & Garcia-Retamero, 2012). Due to the significance of age and gender, Wilson and Daly (1985) introduced the concept of young male syndrome in related literature. Based on this concept, young drivers have higher risks of traffic accidents. Some reasons for the higher risks may include young people's developmental needs, cognitive maturity, lack of experience and exposure to the issue, and the social context (Shope, 2006). Additionally, sensation-seeking in young males is higher than women. Constantinou, Panayiotou, Konstantinou, Loutsiou-Ladd, and Kapardis (2011) stated that males are a high-risk group for road traffic accidents due to aggressive and self-serving behaviors. Other indicators of higher sensation-seeking include fewer years of driving experience and being unmarried (Goedel, Krebs, Greene, & Duncan, 2016).

Although a large body of literature supports the relationship between sensation-seeking and dangerous driving behaviors, some research teams have found no statistically significant association between these two variables (Pearson, Murphy, & Doane, 2013; Schwebel, Severson, Ball, & Rizzo, 2006). Therefore, they proposed further investigation into dangerous driving behaviors and their potential predictors, such as sensation-seeking. Evidence indicated that sensation seeking was higher in adolescence than in adulthood (Cazenave & Paquette, 2010), which can explain part of the developmental basis of reckless behavior. To test this theory, the purpose of our study was to investigate the factors related to dangerous driving behaviors, including sensation-seeking and demographic factors, among Iranian drivers in …, Iran.

This city is one of the most ancient cities in Iran with numerous archeological and historic discoveries and sites. The environmental importance of this city is its location between two main metropolitan areas, Tehran and Isfahan. These factors are among the reasons that the city has one of the highest rates of tourists and travelers (Mahdian et al., 2015). … is 1696 mile^2 in area, and has a population of 275,325 people. The city is also among the cities with the highest rates of accidents in Iran. High risks of accidents in this city may be due to a large and growing population living or traveling in this small, densely populated area. This issue has hindered the modification of traffic rules and environments for reducing the rate of accidents. However, other indicators of traffic accidents, such as human-related factors, are also common in this area, necessitating further investigation.

1. Methods

1.1. Study design and sampling

This descriptive cross-sectional study was performed in …, Iran, from March 2014 to July 2015. A total number of 361 car drivers were selected. Using the Cochran sample size formula, the optimal sample was calculated to be 384 ($p = 0.05$, $q = 0.05$, $d = 0.01$, and $z = 1.96$). Inclusion criteria for the participants were being 20 to 60 years old, lacking physical and mental disabilities, having at least two years of driving experience, being city drivers, being able to read and write, and being willing to participate in the study. In Iran, drivers are eligible to receive a driver's license at the age of 18. Exclusion criteria for the participants included having driven without a driver's license and providing incomplete responses to the questions. A total of 23 participants were excluded due to their incomplete responses to questionnaires.

1.2. Procedure

The sampling method was convenience. In Iran, the bus transit organization is responsible for interurban bus and minibus drivers and the taxi transit organization is responsible for taxi and car services. Then data were collected from different geographic parts of the city and various places, such as bus stations, taxi stations, and automobile agencies. Also for data of private cars drivers, researchers referred to public parking lots, as well as to bank, hospital, and university parking lots. The authors observed these areas every day from the hours of 8 AM and 6 PM. The objectives of the study were explained to the participants. Drivers signed informed consent forms and met the study's inclusion criteria. The Ethics Committee of … approved the study.

1.3. Measures

Study measures included Zukerman's Sensation-Seeking Scale (SSS), the Manchester Driver Behavior Questionnaire (DBQ), and a demographic questionnaire. The sociodemographic questionnaire included age, years of driving experience, smoking status, years of smoking, marital status, years of education, and history of accidents. In Iran, two classes of drivers' license have been issued for car drivers: The commercial/truck driver's license (class 1) and the non-commercial/regular driver's license (class 2). Having a regular license is a requirement of being eligible for a commercial license. In this study, types of license were categorized class 1 (both regular and commercial licenses) and class 2 (a regular license). Having a class 1 license is a requirement of being a bus or minibus driver in Iran. We explained to the participants that the two questions about smoking only needed to be completed by those who were smokers at the time of completing the questionnaires.

1.3.1. Zukerman's Sensation-Seeking Scale (SSS)

The SSS (Zuckerman et al., 1978) consists of four subscales, including TAS, ES, DI, and BS. Each subscale has 10 items, and the total scale includes 40 items. Each item includes two contradictory choices. A sample item includes "A. I would like a job that requires a lot of traveling. B. I would prefer a job in one location." For each item, participants can only select one choice. Responses were coded 1 and 2. The total scores ranged from 40 to 80. Higher scores indicated more sensation-seeking. Amirfakhraei, Taghinejad, and Sadeghifar (2013) translated the SSS to Persian. The internal consistency of the Persian SSS and its subscales were identified 0.83 to 0.86. In the present study, the SSS measure showed a high estimate of reliability ($\alpha = 0.85$). The Cronbach's Alpha for the SSS subscales was 0.71–0.81.

1.3.2. Manchester Driver Behavior Questionnaire (DBQ)

The DBQ (Meadows, Stradling, & Lawson, 1998) consists of 50 items and four subscales, and it measures errors and violations during driving, including aggressive violations, ordinary violations, errors, and lapses. The DBQ items address how often each error or violation occurs during the last year on a scale from 0 (never) to 5 (nearly all the time). The scale's total scores range from 0 to 250. A sample question includes "On turning left, nearly hit a cyclist who has come up on your inside." The content validity of the Persian version of the DBQ was confirmed by Goudarzi and Shirazi (2005). The Cronbach's alpha for the Persian DBQ was 0.88 (Motevalian, Asadi-Lari, Rahimi, & Eftekhar, 2011). In the present study, the DBQ measure showed a high estimate of reliability ($\alpha = 0.81$).

1.4. Data analysis

The independent variables were sensation-seeking and demographic characteristics, and the dependent variable was dangerous driving behaviors. All data and variables were evaluated to assess whether they met the assumptions for parametric tests. Standard descriptive statistics were applied to describe the pattern of the data. Continuous