

# Individual difference factors in risky driving: The roles of anger/hostility, conscientiousness, and sensation-seeking

David C. Schwebel<sup>a,\*</sup>, Joan Severson<sup>b</sup>, Karlene K. Ball<sup>a</sup>, Matthew Rizzo<sup>c</sup>

<sup>a</sup> Department of Psychology, University of Alabama at Birmingham, 1300 University Blvd., CH 415, Birmingham, AL 35294, United States

<sup>b</sup> Digital Artefacts, LLC, Iowa City, IA, United States

<sup>c</sup> Department of Neurology, University of Iowa, United States

Received 16 August 2005; received in revised form 1 November 2005; accepted 8 February 2006

## Abstract

Motor vehicle crashes claim the lives of more Americans than any other cause of injury. One factor long recognized as relevant to predicting dangerous driver behavior is the driver's personality. This study examines the independent and combined roles of three personality traits – sensation-seeking, conscientiousness, and anger/hostility – in predicting risky driving behavior. Seventy-three participants completed personality and driving history questionnaires, and also engaged in a virtual environment (VE) task designed to assess risk-taking driving behavior. Each facet of personality was correlated to risky driving behavior in independent univariate analyses. In multivariate analyses, sensation-seeking emerged as the best predictor of self-reported driving violations. Anger/hostility and the interactive effect of anger/hostility by sensation-seeking also emerged in a multivariate analysis predicting one measure of self-reported driving violations. No personality trait predicted risky driving in the VE in multivariate analyses. Results are discussed with respect to previous work in the field, challenges involved in measuring the constructs of interest, and implications to prevention. © 2006 Elsevier Ltd. All rights reserved.

**Keywords:** Risky driving; Personality; Conscientiousness; Sensation-seeking; Anger and hostility; Virtual environments

## 1. Introduction

Motor vehicle crashes claim the lives of over 42,000 Americans annually, more than any other cause of injury (National Safety Council, 2004). Although both traffic engineering and legislation over automobile safety devices have contributed to a reduction in the rate of death and disability due to motor vehicle crashes over the past several decades, motor vehicle crashes remain a leading cause of fatality in the United States and a topic of vital public health concern (National Center for Injury Prevention and Control, 2002).

Safe management of a motor vehicle is influenced by a wide range of individual difference variables in the driver. One set of traits long recognized as relevant to predicting dangerous driver behaviors is the driver's personality (Tillmann and Hobbs, 1949; Fine, 1963; Arthur et al., 1991). Recent literature reviews (Beirness, 1993; Jonah, 1997) and empirical studies (e.g., Dahlen et al., 2005) summarize empirical findings on the topic and target three individual difference constructs of par-

ticular interest as predictors of risky driver behavior: sensation-seeking, conscientiousness, and anger/hostility.<sup>1</sup> This paper considers those three constructs.

### 1.1. Individual difference factors of interest

Sensation-seeking is defined as the desire for and engagement in varied, novel, complex, and arousing sensations and

<sup>1</sup> Semantic issues complicate efforts to conceptualize individual differences contributing to risky driving. Constructs of interest are frequently labeled with various names, and are conceptualized slightly differently in different studies, but they generally fall into the three broad constructs outlined in this paper. Psychopathological factors such as depression also are known to contribute to risky driving, but are not considered in the present study. Perhaps the trickiest construct conceptually is "conscientiousness". Some researchers label conscientiousness using a construct from the opposite tail, such as "impulsivity". The term "impulsivity" is complicated because it is defined and used in widely varying ways by different researchers. Historically, "impulsivity" was considered part of the broader factors of "extraversion" (e.g., Eysenck and Eysenck, 1963 [who later changed their placement of the construct]; McCrae and Costa, 1985). More recently, theorists have placed impulsivity into the "neuroticism" (e.g. Costa & McCrae's NEO-PI-R, Costa and McCrae, 1992) or "conscientiousness" (e.g., Rothbart et al., 2001; Zuckerman, 1993) factors. We use the latter schema in the present paper.

\* Corresponding author. Tel.: +1 205 934 8745; fax: +1 205 975 6110.  
E-mail address: schwebel@uab.edu (D.C. Schwebel).

experiences (Zuckerman, 1984, 1994) and is consistently linked to risky driving behavior in empirical research (see Jonah, 1997, for a review). Early studies linking sensation-seeking with risky driving relied on self-report measures and found moderate correlations between self-reported sensation-seeking and crash involvement among small samples (e.g., Loo, 1979). More recent studies replicate earlier findings using more sophisticated methodology. Burns and Wilde (1995), for instance, found links between sensation-seeking and risky driving on the job among a sample of almost 80 professional taxi drivers. Others used larger samples – for example, 279 college students (Jonah et al., 2001), 120 young men in the community (Trimpop and Kirkcaldy, 1997), and over 2500 randomly sampled drivers licensed in Norway (Iversen and Rundmo, 2002) – and reported correlational links between self-reported sensation-seeking and risky driving behaviors. Research with adolescent samples suggests sensation-seeking is related to risky driving practices among young drivers (e.g., Arnett, 1990, 1996, 1997). A case-control study comparing drivers convicted and not convicted of offenses such as speeding or reckless driving also yielded significant differences in sensation-seeking measures among the two groups (Furnham and Saipe, 1993).

Conscientiousness, one of the “Big Five” personality traits, is defined as the tendency to be disciplined, responsible, and reliable (McCrae and Costa, 1987). Some researchers in the driving literature conceptualize conscientiousness using other labels – often from the opposite tail using labels such as impulsivity (e.g., Beirness, 1993; Dahlen et al., 2005) – but all conclude that higher levels of conscientiousness are associated with reduced risky driving behaviors. Arthur and Doverspike (2001), for instance, found a correlation between conscientiousness and self-reported crashes over the past 3 years among a sample of 48 college students. In a larger study, Arthur and Graziano (1996) found Conscientiousness was the only one of the Big Five personality traits to predict crash involvement in two samples of over 200 drivers each.

Anger and hostility are constructs measured both as stable emotional patterns and as transient dispositional states. Whether considered as states or traits, the tendency toward hostile, frustrated, and angry behavior is repeatedly linked to risky driving (e.g., Deffenbacher et al., 2001, 2002; Iversen and Rundmo, 2002). The link appears robust and has been reported in large representative community samples (e.g., Iversen and Rundmo, 2002) as well as samples of college students (e.g., Deffenbacher et al., 2001, 2002). For example, in a study of over 2500 randomly sampled Norwegian drivers, Iversen and Rundmo (2002) reported a significant correlation between a brief self-report measure of risky driving and the short form of the driver anger scale (Deffenbacher et al., 1994).

Together, existing research suggests sensation-seeking, conscientiousness, and anger/hostility are consistent and moderate independent predictors of risky driving. However, most of the research designed to examine those links has been conducted independently—that is, one laboratory examines links between sensation-seeking and risky driving while a different laboratory considers the links between anger and risky driving. This approach has merits, but is somewhat limiting because it fails to

consider how the traits might function together to predict risky driving. A recent study by Dahlen et al. (2005) demonstrated the value of considering multiple traits within the same sample. In that report, 224 young drivers (median age = 19) were recruited to complete self-report measures of driving anger, sensation-seeking, impulsiveness, and driving history. A series of multiple regression equations predicted aggressive driving, risky driving, and history of poor driving (including moving tickets and crashes). Anger emerged as the most powerful and consistent predictor of all measures of poor driving, with sensation-seeking also predicting a large portion of the driving behaviors measured.

Along with the scarcity of studies examining how sensation-seeking, conscientiousness, and anger/hostility might work together in the same sample to predict risky driving, the field faces methodological challenges. Early research relied primarily upon self-report measures to assess risky driving. Such methods suffer from problems with recall bias, purposeful or unintentional misreporting of driving behavior, and shared method variance with other self-report measures (Boyce and Geller, 2002; Kirk-Smith, 1998). With recent advances in the technology of virtual reality, simulation offers a new alternative for researchers to assess risky driving behavior.

The present study therefore assessed three individual difference factors of interest – sensation-seeking, conscientiousness, and anger/hostility – within the same sample, and also asked the participants to complete a measure of risky driving within a computer-simulated virtual environment. The study had three primary objectives. First, we sought to replicate previous findings independently linking risky driving with sensation-seeking, conscientious, and angry/hostile behavior patterns. Second, building off the results of Dahlen et al. (2005), we tested whether anger/hostility might be a stronger predictor of risky driving than sensation-seeking or conscientiousness when placed together in regression equations. Finally, we considered how sensation-seeking, conscientious, and angry/hostile behavior patterns might interact with each other to predict risky driving. That is, we tested whether an individual who is both high in sensation-seeking and anger/hostility might have particularly high levels of risky driving compared to individuals scoring high on just one of those traits.

To test our hypotheses, we used a combination of self-report and behavioral measures. All individual difference constructs were tested through multiple instruments. Measuring constructs of interest through multiple measures permits more precise measurement of the construct through aggregation of the multiple measures (Epstein, 1983; Rushton et al., 1983). Risky driving was assessed both through traditional self-report measures and through a computerized virtual environment (VE) driving task.

## 2. Methods

### 2.1. Participants

Seventy-three college students from introductory psychology courses at the University of Alabama at Birmingham volun-

Download English Version:

<https://daneshyari.com/en/article/573946>

Download Persian Version:

<https://daneshyari.com/article/573946>

[Daneshyari.com](https://daneshyari.com)