



## How reinforcement sensitivity and perceived risk influence young drivers' reported engagement in risky driving behaviors



Emma L. Harbeck, A. Ian Glendon\*

School of Applied Psychology and Behavioral Basis of Health Research Centre, Griffith University, Gold Coast Campus, Queensland 4222, Australia

### ARTICLE INFO

#### Article history:

Received 16 August 2012  
Received in revised form 14 January 2013  
Accepted 2 February 2013

#### Keywords:

Young adults  
Reinforcement sensitivity theory  
Risk perceptions  
Behavioral activation  
Behavioral inhibition  
Risky driving behaviors

### ABSTRACT

Gray's reinforcement sensitivity theory (RST), implementing Carver and White's behavior inhibition system (BIS) and behavior approach system (BAS) scales, was used to predict reported engagement in 10 risky driving behaviors: speeding (2 levels), driving under the influence of alcohol, racing other vehicles, cell phone use (hand-held and hands free), tailgating, unsafe overtaking, driving while fatigued, and not wearing a seatbelt. Participants were 165 young male and female ( $n = 101$ ) drivers aged 17–25 years who held a valid Australian driver's license. Effects of the explanatory variables and specific risk perceptions upon engagement in the reported risky driving behaviors were examined using SEM analyses. Also of interest was whether perceived risk mediated the relationship between the personality variables and reported engagement in risky driving behaviors. RST variables, negative reactivity, reward responsiveness and fun seeking, accounted for unique variance in young drivers' perceived risk. Reward responsiveness and perceived risk accounted for unique variance in young drivers' reported engagement in risky driving behaviors. Negative reactivity was completely mediated by perceived risk in its negative relationship with reported engagement. To better understand driving related risk decision making, future research could usefully incorporate drivers' motivation systems. This has the potential to lead to more tailored approaches to identifying risk-prone drivers and provide information for the development and implementation of media campaigns and educational programs.

© 2013 Elsevier Ltd. All rights reserved.

### 1. Introduction

While averaging fewer hours and kilometers than older drivers, younger drivers experience higher injury and fatal crash rates, for example being over represented in Australia's 2011 road crash fatalities (BITRE, 2012; DTMR, 2012). Australian federal and state governments are proactive in attempting to save lives and educating drivers regarding driving risks and safety. License restrictions for drivers under 25 years of age include peer passengers, nighttime driving, cell phone use, and high performance vehicles (DTMR, 2011). However, violations, such as knowingly breaking the law, self-assertive driving, and risky or reckless driving, have generated considerable debate and research (Machin and Sankey, 2008; Parker et al., 1992). Prime fatal crash antecedents: speeding, drink driving, fatigue, distraction, and not wearing a seatbelt, are sometimes referred to as the "fatal five" (Arnett, 1990; Fernandes et al., 2010; Tay, 2005). Risky and/or illegal behaviors include racing other vehicles (Brady, 2006), tailgating, unsafe overtaking (Begg

and Langley, 2004; Forward, 2006), and cell phone use (Caird et al., 2008; Goodwin et al., 2012; White et al., 2010).

Compared with younger drivers, older drivers generally have more experience and are more likely to adjust their driving behaviors to suit traffic and road conditions (Begg and Langley, 2001; Bingham and Shope, 2004; Jonah, 1990). Jonah (1990) found that drivers aged 16–24 years were more likely than an older age group to report engaging in risky driving behaviors, such as speeding, tailgating, and unsafe overtaking. Within this group, those aged 20–24 years were more likely than those aged 16–19 years to report engaging in risky driving. Notwithstanding this finding, it is the youngest driver age group's involvement in risky driving behaviors, such as speeding and driving under the influence of alcohol, which has been found to be a major contributing factor to high road crash and injury rates (Laapotti et al., 2001; Machin and Sankey, 2008; Vassallo et al., 2007; West and Hall, 1997). This finding has been replicated in studies in which being a young driver is associated with lower perceived risk, and risky driving engagement (Arnett, 1990, 1992; Begg and Langley, 2001; Hartos et al., 2000; Sarkar and Andreas, 2004; Ulleberg, 2002). It has also been established that young drivers have stronger motivations for risky driving than older drivers do (Hatfield and Fernandes, 2009).

Compared with females, males have consistently been found to engage at a greater frequency and over a wider range of risky

\* Corresponding author. Tel.: +61 7 55528964; fax: +61 7 55528291.

E-mail addresses: [e.harbeck@griffith.edu.au](mailto:e.harbeck@griffith.edu.au) (E.L. Harbeck), [i.glendon@griffith.edu.au](mailto:i.glendon@griffith.edu.au) (A.I. Glendon).

driving behaviors (Begg and Langley, 2001; Boyce and Geller, 2001; Byrnes et al., 1999; DeJoy, 1992; Fergusson et al., 2003; Jonah, 1997). Males also have higher rates of road death and injury (BITRE, 2012). Regardless of gender, younger and inexperienced drivers, measured by time since gaining a driver's license, have been found to perceive less risk and to engage in risky driving behaviors, either to gain autonomy, or because of self-enhancement/optimism bias, or to fit with desirable social groups, or in attempting to gain a more adult-like status (Arnett, 1997; Begg and Langley, 2001; Harré et al., 2005; Hartos et al., 2000; Scott-Parker et al., 2009). Young drivers engaging in one type of risky driving behavior (e.g., speeding) are more likely to engage in other types (e.g., running red lights, tailgating, unsafe overtaking; Elander et al., 1993; Sarkar and Andreas, 2004; Vassallo et al., 2007).

Shope (2006) identified young drivers' risky and non-risky driving behaviors as being linked to: personality characteristics (e.g., risk taking propensity, tolerance of deviance), developmental features (physical, psychosocial, behavioral, etc.), demographics (age, sex), driving ability, perceptions (e.g., of social norms and risk) and driving environment (e.g., road conditions, weather). The current research focuses on the influence of young drivers' perception of risk and the personality motivational systems of reinforcement sensitivity theory (RST), which may impact on whether young drivers engage in risky driving behaviors.

### 1.1. Reinforcement sensitivity theory (RST)

While much research has been undertaken on the etiology and correlates of risky driving and road deaths, relatively less has been conducted on whether motivational processes or personality traits might contribute to young drivers' risk perceptions and risky driving engagement. While personality is not a direct predictor of road crashes, it has been shown to be a distal influence through risk perceptions and risky driving engagement (Constantinou et al., 2011; Elander et al., 1993; Ulleberg and Rundmo, 2003). Research has linked personality characteristics (e.g., sensation seeking, impulsivity) with risky driving engagement (Arnett, 1990, 1994; Dahlen et al., 2005; Machin and Sankey, 2008; Schwebel et al., 2006; Zuckerman, 1979). Related to both sensation seeking and impulsivity are the motivational components derived from Gray's (1987) reinforcement sensitivity theory (RST).

RST has been used as a conceptual basis for investigating driving behaviors (Brady, 2006; Castella and Perez, 2004; Constantinou et al., 2011; Ignjatović and Todorovski, 2010; Miller et al., 2009; Voigt et al., 2009). Originally proposed with three independent systems – reward, punishment, and threat response – two important RST components regulate aversive and approach motivation. The aversive motivational system is the behavior inhibition system (BIS), also referred to as negative reactivity. The appetitive motivation system is the behavior approach system (BAS). While the terms appetitive, activation, and approach have been used interchangeably for BAS, we use “approach” throughout this paper.

These motivational systems allow for individual differences in sensitivity to cues of reward and punishment, offering one possible explanation for why some individuals engage in risky driving behaviors. BIS is sensitive to signals of non-reward, punishment, and novelty (Carver and White, 1994; Gray, 1987; Torrubia et al., 2001). BIS inhibits behavior that could lead to painful or negative consequences, allegedly being responsible for feelings of anxiety, frustration, and sadness (Smillie et al., 2006). BIS also functions as a comparator (Torrubia et al., 2001) and is related to compliance (Castella and Perez, 2004). For example, drivers high in BIS may be more aware of traffic police and the consequences of breaking the law if caught (e.g., fines, demerit points), in theory increasing compliance with road rules, inhibiting risky driving behavior, and

possibly leading drivers to perceive higher risk in engaging in such behaviors.

The behavior approach system (BAS), which operates independently of BIS, has three subsystems: drive, which enables goal pursuit; reward responsiveness, encompassing openness to reward; and fun seeking, the desire for new and potentially rewarding experiences (Carver and White, 1994; Smillie et al., 2006; Voigt et al., 2009). BAS is thought to control impulsivity, elation, hope and happiness, being sensitive to cues of reward, non-punishment, and escape from punishment. Its principal function is to initiate incentive-motivated, goal-directed behavior (Smillie et al., 2006) and it has been found to be related to traffic violations (Castella and Perez, 2004; Constantinou et al., 2011; Scott-Parker et al., 2013). For example, drivers high in BAS may be more likely to commit driving violations due to a goal pursuit (e.g., needing to get somewhere quickly), through impulsive behaviors (e.g., tailgating), or to gain a reward (e.g., establish autonomy). This system is theorized to activate the response to engage in the behavior and to decrease perceived risk. BIS and BAS processes correspond with neuropsychological features subject to developmental changes during adolescence that relate to driving (Glendon, 2011).

Research has found that applied to behaviors such as drinking, gambling and driving, individuals who are low in BIS and high in BAS-reward responsiveness perceive less risk (Castella and Perez, 2004; Miller et al., 2009). As it has been suggested that RST can play a key role in explaining individual differences in risk perception (Peters et al., 2004), the current study aims to further explore the link between the BIS/BAS motivation systems, perceived risk of, and reported engagement in, risky driving behaviors. Previous findings on the contribution of BIS/BAS to understanding risky driving behaviors have been mixed.

While studies have found that BAS-drive has no influence on driving behaviors (Voigt et al., 2009), BAS-fun seeking has been found to contribute to risky driving behaviors (Brady, 2006; Miller et al., 2009; Voigt et al., 2009). BAS conceptualized as reward sensitivity through Torrubia et al.'s (2001) sensitivity to punishment and sensitivity to reward questionnaire (SPSRQ), has been found to contribute to traffic violations (Constantinou et al., 2011) and risky driving in males only (Scott-Parker et al., 2012a). BIS has also been found to contribute to reported behaviors, although effect sizes are small (Miller et al., 2009; Voigt et al., 2009), which is contrary to Constantinou et al.'s (2011) research findings where sensitivity to punishment (BIS) was not associated with engagement in risky driving. Castella and Perez (2004) reported that drivers high in sensitivity to punishment (BIS) and low in sensitivity to reward (BAS) reported fewer traffic violations.

As previous studies (e.g., Brady, 2006; Miller et al., 2009; Voigt et al., 2009) have not focused exclusively on driving behaviors, or have used a different measure to conceptualize RST (Castella and Perez, 2004; Constantinou et al., 2011; Scott-Parker et al., 2013), predictions regarding the direction of possible relationships, especially with the Carver and White (1994) BIS and BAS measures, may be problematic. Nevertheless, research has indicated associations between RST variables and risky driving behaviors. It is also possible that perceived risk mediates the relationship between personality and reported engagement in risky driving (Fernandes et al., 2010).

### 1.2. Study aims

The overarching aim of this study was to examine the influence of the BIS and BAS motivation systems on the perceived risk of, and reported engagement in, risky driving behaviors within a sample of young Australian drivers. The focus was drivers aged 17–25 years holding a valid Australian license. The risky driving behaviors examined were: speeding (2 levels), driving under the influence of alcohol, racing other vehicles, cell phone use (hand-held and

Download English Version:

<https://daneshyari.com/en/article/572517>

Download Persian Version:

<https://daneshyari.com/article/572517>

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