Driver prototypes and behavioral willingness: Young driver risk perception and reported engagement in risky driving☆

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A B S T R A C T

Introduction: This study aimed to explore perceived risk and reported willingness to engage in risky driving in a sample of young Australian drivers. The study also considered the influence of gender, driving experience, and risky driver prototypes on willingness to engage in risky driving. Within this context, a prototype is a social image of the type of person who engages in specific risk behaviors. In the prototype willingness model (PWM), willingness accounts for motivations that do not directly rely on planning or goal formation. *Methods:* The PWM was applied to a sample of 554 drivers (aged 17-25 years) to explore how risky driver prototypes: similarity (extent of identification with the prototype), favorability (how positive is the image), and behavioral willingness, may influence their perceived risk and reported engagement in risky driving behaviors. Drivers holding an Australian driver's license (Provisional 1, Provisional 2, or Open) anonymously completed an online survey measuring: 1) driver prototypes and behavioral willingness to engage in risky driving behaviors, 2) perceived risk of driving-related behaviors, and 3) the Behavior of Young Novice Drivers Scale transient and fixed violations subscales. *Results:* Path analysis explored relationships between prototypes and willingness variables, perceived risk, and reported driving engagement. Goodness-of-fit statistics supported the conceptual model. Behavioral willingness showed the strongest relationship with perceived risk (negative) and reported driving violation engagement (positive). *Conclusions:* Risky driver prototypes and behavioral willingness, as well as driver's sex and driving experience, may help to explain individual differences in perceived risk, and young driver reported risky driving engagement. *Practical applications:* Identifying relevant factors that could be amenable to change, such as driver prototype and willingness variables, may contribute to improved road safety initiatives, and provide information and support to counter factors that might otherwise facilitate young drivers' risk perceptions and risky driving engagement.

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1. Introduction

Typically over-represented in international road injury and death tolls (BITRE, 2017; WHO, 2013), while young drivers (aged 17–25 years) are 10–15% of licensed drivers, they and their passengers represent approximately 25% of Australian road deaths (ATC, 2011). A prominent explanation is their engagement in risky driving behaviors, such as the fatal five (speeding, drink-driving, seatbelt use, fatigued driving, distracted driving[1]), which inter alia, have been predicted by

driving inexperience, poor risk perception, peer influence, and personality (Fernandes, Hatfield, & Job, 2010; Harbeck & Glendon, 2013; Hartos, Eitel, & Simons-Morton, 2001; Scott-Parker, Watson, King, & Hyde, 2012a).

Australian states have implemented graduated driver licensing (GDL) programs aimed at reducing novice drivers' motor-vehicle crash involvement. Adopting a stepwise approach, these programs are designed to improve novice driver safety by extended supervision and driving experience over time (Scott-Parker, Bates, Watson, King, & Hyde, 2011; Williams & Shults, 2010). GDL programs typically involve a 3-stage approach: (1) learner period (minimum 1 year), (2) provisional license (minimum 2 years), and (3) open license. As well as adhering to all traffic and licensing regulations, GDL license holders must also conform with special restrictions and criteria at each stage (Williams & Shults, 2010). In 2007, the Queensland Government implemented a new GDL system (Learner, Provisional 1 – P1, Provisional 2 –

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[1] See information on the fatal five from https://www.police.qld.gov.au/EventsandAlerts/campaigns/fatalfive.htm.

P2, and Open License), which included introducing minimum age requirements for P2 and Open licenses of 18 and 20 years, respectively.[2] For reviews of Australian GDL systems, see Senserrick (2009), and Scott-Parker and Rune (2016).

A 17-year-old driver with a P1 license is four times more likely to be involved in a fatal crash than is a driver aged over 26 years (ATC, 2011). Compared with an older age group, drivers aged 16–24 years have reported higher engagement in risky driving (Jonah, 1990). In an 11-study review, it was reported that although novice 16-year-old drivers had higher crash fatality and injury risk rates than novice 17-year-old drivers did, there were no differences in crash rate between 17-year-old and 18-to-19-year-old novice drivers (McCartt, Mayhew, Braitman, Ferguson, & Simpson, 2009). The 17–19-year age range aligns with the transitional period from a P1 to P2 license in Australia. While evidence suggests that driving experience is more important than driver age for reducing crash risk, controlling for length of licensure McCartt et al. (2009) found that, compared with older drivers, particularly aged 25 and older, younger drivers still had consistently higher crash rates.

Regardless of age, inexperienced drivers detect hazards less holistically, more slowly, and less efficiently than more experienced drivers do, while underestimating traffic crash risk (Deery, 1999; Machin & Sankey, 2008; Wang, Zhang, & Salvendy, 2010). These findings were supported by McEvoy, Stevenson, and Woodward (2006), who demonstrated that lack of driving experience was a stronger predictor of crash risk or near-crash events than was driver age. However, Harbeck, Glendon, and Hine (2017) reported that driver age, rather than length of licensure, was associated with young driver perceived risk and reported engagement in risky driving, noting that a threshold effect may occur in young driver experience, regardless of age. What was unclear was whether differences between young driver license types (P1, P2, Open) occurred in their perception of risk and subsequent reported risky driving engagement, especially as open license drivers are considered experienced due to being older, with longer licensure, and more extensive driving experience.

1.1. Perceived risk

In traffic psychology, perceived risk is a subjective judgment about a specific risk's severity and characteristics (Deery, 1999), which can influence decision-based behaviors (e.g., speed selection). Perceived risk has been reported as being negatively associated with self-reported engagement in risky driving (Harbeck et al., 2017; Harbeck & Glendon, 2013; Machin & Sankey, 2008), although conflicting results have been found (e.g., Hatfield & Fernandes, 2009; Ivers et al., 2009; Ulleberg & Rundmo, 2003). As a predictor of risky driving engagement (Harbeck & Glendon, 2013; Rhodes & Pivik, 2011), perceived risk has been used in safety campaigns to promote young driver safety (Deery, 1999; Hassan & Abdel-Aty, 2013; Shope, 2006). Changes in perceived risk have been linked with comparisons being made between the self and an "other," often an unrealistic stereotype who engages in the risky behavior at a higher level than does the self (Thornton, Gibbons, & Gerrard, 2002). This may lead to a change in perceived personal vulnerability and increased engagement in the risky behavior. Such social influences have been modeled in the prototype willingness model (PWM) framework.

1.2. Prototype willingness model

Grounded in social learning theory, the PWM was created to improve the predictive value of health behavior theories that addressed youth decision making in risky health-related behaviors (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008; Gibbons & Gerrard, 1995; Thornton et al., 2002). The PWM proposes that risky behavior may be engaged in impulsively in response to situations that generate risk.

This impulsivity is relevant to young adults in the process of creating their identity, opinions, and values (Cestac, Paran, & Delhomme, 2011). Young adults are also considered more sensitive to social influences than are older adults (Gibbons & Gerrard, 1995; Todd, Kothe, Mullan, & Monds, 2016). The PWM has been applied to understand a number of youth-engaged risky driving behaviors, including speeding, aggressive driving, substance use, distractions, moving violations, driving through flooded routes, and cell phone use (Cestac et al., 2011; Gibbons & Gerrard, 1995; Pearson & Hamilton, 2014; Rivis, Abraham, & Snook, 2011; Rozario, Lewis, & White, 2010; Schmidt, Morrongiello, & Colwell, 2014; Scott-Parker, Hyde, Watson, & King, 2013).

Prototype willingness is a modified dual-processing model represented by two decision-making paths: a reasoned path, and a social reaction path (for reviews, see Gerrard et al., 2008; Gibbons & Gerrard, 1995). The current study focuses on the second decision-making path, social reaction, which attempts to explain unplanned and unintended behaviors in certain situations (e.g., an unsupervised party where alcohol and drugs are available and having to drive home; Gerrard et al., 2008). This path contains two important factors, the risk image or prototype, and behavioral willingness.

Prototypes, or risk images, are the "…cognitive representations or social images of the type of person who engages in specific risk behaviors" (Gerrard et al., 2008, p. 36). Within the PWM these images represent a typology rather than a description of the physical appearance of the type of person (Gerrard et al., 2008; Gibbons & Gerrard, 1995). Two aspects of prototype perception influence risk decisions: prototype similarity, and prototype favorability (Gerrard et al., 2008; Rivis et al., 2011). These two aspects interact so that the more strongly a person identifies with a prototype (prototype similarity), the more positively the image is viewed (prototype favorability). The combination of these two aspects influences how willing a person is to engage in the behavior defined by the prototype image (e.g., safe or unsafe driver; Gerrard et al., 2008; Gibbons & Gerrard, 1995; Rivis et al., 2011). Changed engagement in risky behavior is thereby linked with changes in a person's favorability of prototype perception (positive = more engagement, negative = less engagement; Rivis et al., 2011; Thornton et al., 2002).

The more favorable the prototype, the more willing the person is to accept the social consequences associated with the behavior, for example, being seen by others as someone who engages in the behavior (Gerrard et al., 2008). In a study of risky driving in a U.S. university student sample, Gibbons and Gerrard (1995) found that perceptions of the typical "risky driver" prototype could predict changes in participants' self-reported engagement in risky driving. However, Rivis et al. (2011) found that prototype evaluation (positive or negative, through its interaction with prototype similarity) predicted older, but not younger, males' willingness to drink and drive. This finding might suggest that prototypes are more influential for youths' than for older peoples' risky behaviors (Gerrard et al., 2008; Rivis et al., 2011). Scott-Parker et al. (2013) also found evidence countering earlier research, such that prototypes and intentions did not significantly predict speeding for novice drivers. However, for females, greater willingness to speed as a learner driver did predict speeding as a provisional driver (Scott-Parker et al., 2013).

While a driver's intentions have been considered to be a good predictor of engaging in risky behaviors, especially when these are impulsive or socially undesirable, Gibbons and Gerrard (1995) argued that these behaviors are better measured by behavioral willingness, rather than intentions. Behavioral willingness has been defined as "…recognition that one would be willing to engage in the behavior under some circumstances" (Gibbons & Gerrard, 1997, p. 79). An individual's willingness accounts for motivations that do not directly rely on planning or goal formation, and although engaging in risky behaviors is usually volitional by youth (e.g., drag racing, drink-driving, illegal maneuvers), sometimes it is neither planned nor intentional (e.g., speeding, driving while distracted, tailgating; Gerrard et al., 2008;

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[2] For Queensland State licensing criteria, see: http://www.tmr.qld.gov.au/licensing.aspx.