



Age, gender and deterrability: Are younger male drivers more likely to discount the future?



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ARTICLE INFO

Keywords:

Deterrence
Age
Gender
Speeding
Discounting the future

ABSTRACT

Utilizing the Classical Deterrence theory and Stafford and Warr's (1993) reconceptualized model of deterrence, the current study examined whether age, gender, and discounting the future tendencies influence perceptions of being apprehended for speeding offences. Licensed motorists ($N = 700$; 57% female) in Queensland (Australia) were recruited to complete a self-report questionnaire that measured perceptual deterrence, speeding related behaviors and discounting the future tendencies. Data were analyzed utilizing descriptive, bivariate and multivariate regressions. Significant (albeit weak) positive correlations were found between age and perceptions of apprehension certainty. Males were significantly more likely to report higher incidences of speeding (including while avoiding detection) compared to females. In contrast, females were more likely to perceive high levels of apprehension certainty and consider impending penalties to be more severe. At a multivariate level, discounting the future tendencies (in addition to being male, reporting lower levels of perceptual severity and swiftness, and more instances of punishment avoidance) were predictive of lower perceptual certainty levels. This study is one of the first to reveal that being male and having a tendency to discount the consequences of the future may directly influence drivers' perceptual deterrence levels.

1. Introduction

Younger drivers (aged 17–25 years) are over represented in crash-related injuries and fatalities. In Australia for instance, land transport accidents are the second leading cause of death (after suicide) (Australian Institute of Health and Welfare, 2016), with 227 young driver fatalities on Australian roads in 2015 (Bureau of Infrastructure, Transport, and Regional Economics [BITRE], 2016). It has been suggested that age and inexperience are two predominant factors contributing to the over representation of young drivers in road crashes (Deery, 1999). In regards to age, cognitive brain development and risk taking propensities are often proposed as the aetiology of younger motorists' aberrant behaviors. That is, younger individuals are more likely to experience difficulties recognizing and responding appropriately to risk (Albert and Steinberg, 2011), and these tendencies have been linked to the on-going development of the prefrontal cortex beyond the age of 18 (Lebel and Beaulieu, 2011). More specifically, the pre-frontal cortex is responsible for higher-order processes such as decision making, impulse control, and planning as well as effectively judging the negative consequences associated with their risk-taking behavior (Steinberg, 2007). A sizeable body of research has also indicated young male

drivers voluntarily engage in high-risk behaviors and situations (Clarke et al., 2005; Williams, 2003) and this has been proposed as a reason for their overrepresentation in crashes (Laapotti and Keskinen, 2004). In addition, research has also demonstrated that risk perception can have a significant influence on crash susceptibility, as participants who have crashed underestimate the risk of crashing (e.g., Dixit et al., 2014) and that younger motorists have a higher level of risk aversion compared to older drivers in simulator research (Dixit et al., 2015). As a result, graduated licensing systems in Australia often attempt to compensate for such tendencies by enforcing strict rules (for newly licensed drivers) to reduce risks associated with some driving environments (e.g., curfews, passenger restrictions, mobile phone use constraints).

In regards to recognizing (and responding appropriately to risk), a sizeable body of scientific evidence also indicates that males are more likely to take risks compared to females (Apicella et al., 2008; Byrnes et al., 1999; Evans and Hampson, 2014). A number of factors have been proposed for this finding, including: increased testosterone levels (Apicella et al., 2008), under developed prefrontal cortex (Pharo et al., 2011; Powell, 2006), genetic variants (Amstadter et al., 2012), differential reactions to stress (Stankovic et al., 2014) as well as elevated responses to positive and negative reinforcement (Amstadter

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et al., 2012). Regardless of the aetiology, at a meta-analytic level, research continues to demonstrate gender differences exist in both direction and strength of correlations between engagement in risk taking behaviors and brain imaging data (Cazzell et al., 2012).

Within the current context, speeding is one of the primary causes of crashes among younger motorists (Cestac et al., 2011; Lam, 2003). Previous research has reported that speeding behaviors not only increases the likelihood of a crash occurring, but also increases the severity of the crash (e.g., Liu et al., 2012). Of concern is that speeding is still perceived (by some younger drivers) to be an acceptable form of behavior (Fleiter et al., 2006). Not surprisingly compared to older drivers, young drivers are more likely to report speeding behaviors (Fleiter et al., 2006), particularly young male drivers (Horvath et al., 2012).

1.1. Classical deterrence theory

While a range of road safety countermeasures have been introduced to reduce the problem of speeding, the majority are underpinned by deterrence mechanisms that remain central to most criminal justice policies (Piquero et al., 2011). Deterrence theory asserts that individuals will avoid committing offences if they fear the perceived negative consequences of an act (Homel 1988; Von Hirsch et al., 1999). Most commonly referred to as the Classical Deterrence theory, the framework was originally developed by two 18th century utilitarian philosophers named Bentham and Beccaria who proposed that offending behaviors are inversely related to the certainty, severity and swiftness of sanctions (Homel, 1988). Classical Deterrence theory consists of two processes; general deterrence and specific deterrence. General deterrence focuses on the community at large. For example, a driver may be less inclined to speed if he/she is aware of high police enforcement and/or observing others being apprehended and punished. In contrast, specific deterrence focuses on the direct experience of the individual after apprehension and punishment. For instance, a driver may be less inclined to speed if they have received a previous speeding sanction, and thus, may fear further punishment.

At an aggregate level, deterrence-based enforcement practices have proven effective at reducing the prevalence of offending behaviors, particularly drink driving due to random breath testing (Harrison et al., 2003; Henstridge et al., 1997; Watson et al., 2005; Wilson et al., 2010). Researchers have postulated that the most powerful effect on offending behavior is produced by the perceived threat of certainty of apprehension (Decker et al., 1993; Homel 1988; Nagin and Pogarsky 2001), as individuals are unlikely to engage in an aberrant behavior if they perceive the likelihood of apprehension as high. However, in regards to self-reported speeding behaviors, some counterintuitive results have been reported. Australian speeding-based studies have demonstrated that greater levels of perceived certainty of punishment actually predicted more frequent speeding (Fleiter et al., 2009; Fleiter and Watson, 2006). Similarly, speeding penalties are not always perceived as particularly harsh (Fleiter et al., 2009) and the third aspect of Classical Deterrence (e.g., swiftness of sanctions) has historically received little attention (Babor et al., 2003; Nagin and Pogarsky 2001).

1.2. Stafford and Warr's reconceptualization of deterrence

A number of theorists have expanded the scope of the Classical Deterrence theory, due to a general recognition that penalties are not applied within a social vacuum (Berger and Snortum, 1986; Sherman, 1993). While a range of non-legal sanctions have been proposed (e.g., social and internal factors), arguably one of the most prominent expansions of deterrence theory was proposed by Stafford and Warr (1993) who proposed four prominent deterrent processes: (i) direct experience of punishment, (ii) direct experience of punishment avoidance, (iii) indirect experience of punishment, and (iv) indirect experience of punishment avoidance. One notable feature of Stafford and

Warr's (1993) reconceptualization of deterrence theory is that it distinguishes punishment (e.g., direct punishment for speeding behavior) from punishment avoidance (e.g., exceeding the posted speed limit without experiencing the associated negative consequences). This feature is particularly important in the road safety context given that the chance of being apprehended (or perceived probability of apprehension) for some driving-related offences remains relatively low in some circumstances.

There has been considerable support for Stafford and Warr's (1993) reconceptualization of deterrence (e.g., Armstrong et al., 2005; Fleiter and Watson, 2006; Fleiter et al., 2013; Piquero and Paternoster, 1998). For instance, Piquero and Paternoster (1998) found that personal and indirect experiences were both predictors of self-reported intentions to drink and drive. Similarly, indirect and direct punishment avoidance showed significantly moderate-strong associations with self-reported drug driving behaviors (Armstrong et al., 2005). For speeding behavior, Fleiter and Watson (2006) reported that previous experiences of punishment avoidance was a significant predictor of speeding behavior. In a more recent study, Fleiter et al. (2013) found that the extended deterrence variables proposed by Stafford and Warr (1993) accounted for an additional 15.1% of variance in the frequency of speeding behavior over and above that which could be explained by the classical deterrence factors of risk apprehension, certainty, severity and swiftness. This body of research indicates that a range of extended deterrence variables (particular punishment avoidance) may influence risky driving behaviors.

1.3. Age and deterrence

Despite the heavy focus on the effectiveness of deterrence principles, there has been a lack of research focusing on the differential impact of deterrent threats by age. Given the under-developed higher order cognitive abilities of younger adults (Steinberg et al., 2008) and that this population group are more susceptible to engage in speeding behaviors compared to older adults (e.g., Fleiter et al., 2006), this may be considered a significant oversight. More specifically, are younger drivers less influenced by the threat of future sanctions? To the best of the authors' knowledge, only two published studies have examined the impact of deterrent threats by age (Bushway et al., 2013; Sampson and Cohen, 1988). Sampson and Cohen (1988) investigated the deterrent effects of police presence on crime and found that the threat of police deterred adults more than juveniles in relation to criminal activity. A more recent study by Bushway et al. (2013) examined the effect of age on speeding behavior in relation to the reduction of speed enforcement resources in Oregon, U.S.¹ (e.g., a lower probability of being apprehended for speeding behavior). The study revealed that compared to the pre-layoff period, there was an increase in speeding behavior across all age groups in the post-layoff period. Furthermore, there was some evidence suggesting that older and more egregious offenders may have been more aware of the changes in enforcement, suggesting that deterrent threats may be affected by age. These two studies highlight that deterrence may be influenced by age, and thus, support the need for additional research in this under studied area.

1.4. Discounting the future

While deterrence-based approaches continue to be heavily utilized in the road safety arena, a consistent problem is that the framework does not account for a large proportion of the variance associated with self-report offending behaviors in regression models (Freeman et al., 2015). That is, it appears that a range of additional factors may be influencing the relationship between perceptions of punishment and subsequent offending behaviors. While criminological theorists have

¹ There was a 35% reduction in the size of the State police force due to a budget crisis.

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