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The beliefs which motivate young male and female drivers to speed:

A comparison of low and high intenders

Horvath, C¹., Lewis, I¹., & Watson, B¹.

¹Centre for Accident Research and Road Safety – Queensland (CARRS-Q), Queensland University of Technology (QUT), Kelvin Grove Campus, Kelvin Grove 4059, Australia.

* Correspondence relating to this article should be forwarded to Dr Ioni Lewis, CARRS-Q, Queensland University of Technology, Kelvin Grove Campus, Kelvin Grove 4059, Australia.

E-mail: i.lewis@qut.edu.au; Phone: +61 7 3138 4966; Facsimile: + 61 7 3138 0112.

Abstract

In Australia, young drivers aged 17 to 24 years, and particularly males, have the highest risk of being involved in a fatal crash. Investigation of young drivers' beliefs allows for a greater understanding of their involvement in risky behaviours, such as speeding, as beliefs are associated with intentions, the antecedent to behaviour. The theory of planned behaviour (TPB) was used to conceptualise beliefs using a scenario based questionnaire distributed to licenced drivers (N = 398). The questionnaire measured individual's beliefs and intentions to speed in a particular situation. Consistent with a TPB-based approach, the beliefs of those with low intentions to speed ('low intenders') were compared with the beliefs of those with high intentions ('high intenders') with such comparisons conducted separately for males and females. Overall, significant differences in the beliefs held by low and high intenders and for both females and males were found. Specifically, for females, it was found that high intenders were significantly more likely to perceive advantages of speeding, less likely to perceive disadvantages, and more likely to be encouraged to speed on familiar and inappropriately signed roads than female low intenders. Females, however, did not differ in their perceptions of support from friends, with all females reporting some level of disapproval from most friends and all females (i.e., low and high intenders) reporting approval to speed from their male friends. The results for males revealed that high intenders were significantly more likely to speed on familiar and inappropriately signed roads as well as having greater perceptions of support from all friends, except from those friends with whom they worked. Low and high intending males did not differ in their perceptions of the advantages and disadvantages of speeding, with the exception of feelings of excitement whereby high intenders reported speeding to be more exciting than low intenders. The findings are discussed in terms of how they may directly inform the content of mass media and public education campaigns aimed at encouraging young drivers to slow down.

The beliefs which motivate young male and female drivers to speed:

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1. Introduction

Young drivers are the most at risk group when it comes to being killed or injured in a road crash (Department of Infrastructure Transport Regional Development and Local Government [DITRD], 2009). In the 12 months leading up to February 2011, those aged between 17 and 25 represented 24% of fatalities (Department of Infrastructure and Transport, 2011), yet made up only approximately 13% of the population (Australian Bureau of Statistics [ABS], 2011a, 2011b). Young males, in particular, represented 76.5% of these fatalities, that is 18.33% of all fatalities (Department of Infrastructure and Transport, 2011), while only representing 6.7% of the population (Australian Bureau of Statistics, 2011a, 2011b). While there are many behaviours that may influence the increased fatalities for this age group, one of the major contributors is speeding which is especially prevalent among the younger driver cohort. Speeding not only increases the likelihood of having a crash, but also the severity of injuries sustained when a crash occurs (Fleiter, Watson, Lennon, & Lewis, 2006; Peden et al., 2004). These findings suggest a need to investigate more effective preventive measures for young drivers, particularly young males, to decrease their speeding behaviour and ultimately their risk of crash or injury. Development of such measures requires an understanding of young driver crash risk and the factors which motivate young drivers' engagement in speeding behaviour in the first place. Such understanding begins with investigation into the various and differing beliefs of both younger males and females.

Previous research in the area has shown the importance of beliefs and their influence on intentions and behaviour. For example, Forward (2009) found that the beliefs elicited within a pilot study were significantly correlated with intentions to speed and dangerously overtake. There were also significant differences in these beliefs in terms of those who intended to engage in risky driving and those who did not, as well as differences between

males and females in regards to whom they believed supported their intentions to speed. Such findings suggest that beliefs are integral to decision making when it comes to engagement in risky driving behaviours, including speeding. This observation is also supported theoretically by the Theory of Planned Behaviour (TPB) which is a decision-making model based on underlying beliefs (Ajzen, 1985).

1.1 Theoretical Perspective

According to the TPB, attitudes, subjective norms and perceived behavioural control (PBC) are the immediate antecedents of intentions, which inform behaviour; however, it is the underlying beliefs that form their foundations and thus are important in obtaining a comprehensive understanding of behaviour (Ajzen, 1985, 2002b). This deeper understanding of behaviour provides a focus for preventive measures. For example, examination of the differences in beliefs of those individuals with high intentions to speed and those with low intentions can provide a more comprehensive understanding of what motivates speeding behaviour (Forward, 2009). Similarly, a study by Walsh, White, Watson and Hyde (2007) on mobile phone use while driving, investigated the differences between those with strong intentions to drive with a mobile phone and those with weak intentions to do so. Differences in the TPB-based beliefs emerged between the two groups which indicated that strong intenders perceived more advantages associated with, more approval from others, and less inhibiting factors to, using a mobile phone while driving (Walsh et al., 2007). Such insight potentially informs the development of more relevant road safety countermeasures to encourage safer road user behaviour. For instance, Walsh and colleagues (2007) suggested, based on their analyses of the beliefs of low and high intenders (to use a mobile phone while driving), the need for campaigns to focus on messages relating to the disapproval from work colleagues and outweighing and/or challenging the (many) advantages of using a mobile phone while driving perceived by those with high intentions to engage in the behaviour.

From a TPB perspective, attitudes refer to how an individual feels about the behaviour in question, that is whether it is good or bad, harmless or harmful, rewarding or disappointing. These attitudes are based on behavioural beliefs relating to the possible advantages and disadvantages of performing the behaviour and which include both instrumental benefits (e.g., getting to destination faster) as well as emotional (affective) benefits (e.g., thrill, excitement; Ajzen, 2002a; Ajzen & Driver, 1992). Subjective norms are based on normative beliefs regarding what the individual believes their significant others would want them to do based on whether or not the significant others would approve or disapprove of the behaviour. Finally, perceived behavioural control (PBC) is based on control beliefs regarding the confidence that an individual has over his or her ability to perform the behaviour based on the appraisal of internal and external factors that may facilitate or impede the behaviour. Together the TPB components have been found to significantly explain variation in intentions and behaviour for a range of road user behaviours, including speeding (explaining up to 73% of intentions; Warner & Åberg, 2008).

Using the TPB's conceptualisation of beliefs, this study first elicited a range of beliefs, via qualitative means, from young drivers in regards to speeding behaviour. This preliminary phase of the research, in acknowledging the extensive body of research available regarding the beliefs which may underpin speeding (e.g., Fleiter, Lennon, & Watson, 2007, 2010; Forward, 2009, 2010) aimed to provide support for the findings of this previous research and to ensure that any additional beliefs specific to the 17-24 year age group were identified. The research then investigated quantitatively, via a survey to a large sample of young male and female drivers, the differences in the beliefs between those reporting either lower or higher intentions to speed in a specific speed-related scenario. As has been done in other empirical investigations of the beliefs of low and high intenders in relation to TPB-based studies (e.g., Jimmieson, White, & Zajdlewicz, 2009), a median split on intentions (in

this case, intentions to speed) was conducted thus resulting in two groups of individuals termed as those with high intentions to speed (i.e., ‘high intenders’) and those with low intentions to speed (i.e., ‘low intenders’). Hypothesis 1 posited that high intenders would differ significantly from low intenders in terms of their elicited beliefs, such that, overall, high intenders would hold more favourable behavioural, more approving normative, and stronger control beliefs toward speeding than low intenders.

As previously stated, gender is particularly relevant to speeding among 17-25 year olds with males in this age group having more on-road fatalities than females (Department of Infrastructure and Transport, 2011) and a higher prevalence of speeding behaviour (Lawpoolsri, Li, & Braver, 2007). Thus, it is important to not only understand the specific beliefs of males, but also to see how such beliefs are similar to or different from females, thus, allowing a more comprehensive understanding of young driver risk and assisting in the development of more relevant preventive measures for young males and females. Therefore, this research investigated the beliefs separately for both males and females. Hypothesis 2 posited that the differences in beliefs between low and high intenders would present differently for males than for females. Based on research that shows males are more likely to speed, it was expected that the differences between low and high intending males would be less pronounced than the differences between low and high intending females.

1.2 The Current Study

The current study represents one component of a larger research study which investigated the influences of speeding behaviour in young drivers using a Theory of Planned Behaviour (TPB) perspective. According to the TPB framework, it is important for research to first establish the behavioural, normative, and control beliefs that underpin the direct precursors of intentions, namely, attitudes, subjective norm, and perceived behavioural control (PBC) (see Ajzen, 1985, 2002b). Within extant literature, not all studies which

operationalise the TPB investigate the first stage of the model (i.e., the stage involving the elicitation of the salient behavioural, normative, and control beliefs and the comparison of such beliefs between those reporting low or high intentions to engage in the particular behaviour). As previously argued, this practice potentially disregards the identification of valuable information regarding the key motivations which underpin behaviour and which may be subsequently targeted in interventions. Thus, in adhering to the methodological chronology of the framework and consistent with the aim to gain practically significant findings which may be used to inform the content of mass media interventions, the current study undertook a thorough investigation of the key beliefs which underpin young drivers' speeding within a given, controlled context (scenario) where the driver was said to be driving alone. Of note, the other component of the research (see Horvath, Lewis, & Watson, under review), aimed to identify the key predictors of speeding (including the TPB's constructs of attitude, subjective norm, and PBC) across a range of contexts/scenarios where external features of the driving context were manipulated; in particular, the driving situations varied the presence of peer passengers and the nature of the encouragement such passengers were said to provide the driver to engage in speeding (i.e., either explicit, verbal encouragement or more implicit means).

1.2.1 The current study's driving scenario

In this scenario, the individual must speed in order to overtake a slow-moving vehicle on a multi-lane highway at night. The individual is said to not be in a rush to reach his or her destination and is driving alone. The use of a specific situation fulfils Ajzen's recommendations to combine target, context, action and time ensuring the accuracy of reported beliefs and intentions (Ajzen, 2002a). The use of this specific scenario also enabled a tighter control over known extraneous variables. In particular, the driver was alone to reduce the known influence of passengers to either increase or decrease speeding behaviour

(Ouimet et al., 2010; Thomas et al., 2007) and a relaxed attitude was highlighted to reduce any perception of time constraints on the journey that may encourage speeding. Also a multi-lane highway was used to remove any increased risk associated with overtaking on a single-lane road.

While there has been previous scenario-based research (i.e., Forward, 2009) that has investigated beliefs about speeding and the differences between high and low intenders, this research is based on drivers of all ages which group young drivers with those over the age of 24 and up to the age of 75 years. The literature cited herein emphasises the differences that exist for young drivers compared with older drivers, not only in crash risk, but also intentions to speed suggesting grouping them together may result in an inaccurate representation of beliefs for young drivers. Furthermore, previous belief-based research has tended not to explore the influence of gender on beliefs for all drivers, as well as separately for low and high intenders to speed, a distinction that has also been highlighted in the literature as affecting both intentions and behaviour.

2. Method

2.1 Phase 1 – Qualitative, Elicitation Study: Participants, methods, procedure

As noted previously, the preliminary phase of the research involved a small qualitative study to ensure behavioural, normative, and control beliefs identified in extant speeding behaviour-related research were relevant to the current population, as is recommended by Ajzen and Fishbein (1980). The participants were a convenient sample of five female and three male university students aged 17-22 years of age, all of whom held a current provisional or open driver's licence. These participants formed three, 50 minute guided discussion groups concerning their beliefs and experiences in regards to speeding. From their responses, the most commonly held beliefs were identified (i.e., the top beliefs expressed by at least three participants across at least two groups) as recommended by Ajzen

(2006) and considered in conjunction with previously identified beliefs (from the extant literature) to form the behavioural, normative, and control beliefs to be explored within the subsequent, main phase of the study (i.e., the quantitative questionnaire). The scenario used in the questionnaire was also finalised based on discussion within the focus groups in terms of relevance to the sample, likelihood of the scenario occurring, and details that may or may not have encouraged speeding in the situation (e.g., number of lanes). The final scenario retained for use in the questionnaire was:

It's Saturday night and the weather and road conditions are fine. You are driving on a multi-lane highway to a party **by yourself**. The party goes all night so you don't care what time you arrive. On your way there you follow a car for a few minutes which is driving quite a bit under the speed limit. It is frustrating so you decide to overtake. As you change lanes and speed up the car in front also speeds up and now you must exceed the posted speed limit if you are to continue to overtake.

Participants found this scenario to occur frequently and, thus, it was considered to be a relevant speed-related driving scenario for young drivers.

2.2 Phase 2 – Quantitative survey: Participants

The questionnaire was first piloted on 19 students prior to the distribution of four hundred and forty-eight questionnaires to undergraduate psychology students as well as students from other various years and faculties from a large Australian university. All participants held a provisional or open drivers licence and were aged between 17 and 24 years. Course credit was offered to psychology students in exchange for participation, other participants received a small incentive (e.g., a chocolate). Of the distributed questionnaires, 91% were returned, however, ten cases were removed from this sample due to inadequate completion or failure to meet selection criteria (e.g., less than 50% complete, holding a learner licence). The final sample consisted of 398 students (265 females) with a mean age

of 19.32 years ($SD = 1.79$) with the majority (75%) holders of a provisional licence (25% open licence).

2.3 Questionnaire

Of relevance to the current study, the first section of the questionnaire recorded demographic items, while the remainder of the questionnaire assessed the TPB-based beliefs, as well, as an indication of speeding intentions all in relation to the speeding-related scenario.

2.3.1 TPB Measures

All TPB measures were answered in relation to the scenario on a 7-point Likert type scale where 1 = strongly disagree and 7 = strongly agree. Consequently, once negatively scored items were reversed, high scores indicated more of the construct.

Intentions. Two items were used to measure intentions to speed, “I intend to engage in speeding in the next 12 months if a situation such as this arises” and “It is very likely that I will engage in speeding in the above situation within the next 12 months”. These items were adapted from Terry, Hogg, and White (1999) and Elliott, Armitage and Baughan(2007) and were set to a time frame as recommended by Ajzen and Fishbein (1980).

All beliefs were based on previous research findings (e.g., Fleiter et al., 2010; Forward, 2010) and the findings from the current study’s elicitation study.

Behavioural Beliefs. Behavioural beliefs were measured with seven items. One item reflected affective aspects of speeding and the remaining items reflected instrumental aspects of speeding (e.g., “it is exciting to drive just a little faster than the speed limit” and “driving fast will help me get to my destination quicker”).

Normative Beliefs. Five items were used to measure normative beliefs and, given the focus on younger drivers, only same aged peers were used as normative referents; “my closest mates would think I should speed”, “the friends I often drive with would not want me to speed”.

Control Beliefs. Control beliefs were measured using five items; “I would be encouraged to speed if the road was familiar” and “I would be less likely to speed if I was near a school”.

Consistent with TPB convention (see Ajzen, 1991) scales were not computed for the intended analyses given that some items would be positively valued while others would be negatively valued and an aim was to identify whether there were differences between low and high intenders in regards to particular motivations. As such, similar to other TPB-belief based investigations (e.g., Hyde & White, 2007; Jimmieson et al., 2009) the mean scores reported by low and high intenders were compared in relation to each individual belief item.

3. Results

3.1 Preliminary Data Analysis and Checks

A bivariate correlation was run between gender and intentions to speed, which showed these two constructs to be significantly, negatively correlated, $r(395) = -.103, p < .05$, indicating, as expected, that males reported higher intentions to speed than females. Independent sample *t*-tests confirmed this finding revealing males scored on average significantly higher on intentions to speed ($M = 4.95, SD = 1.85$) than females ($M = 4.58, SD = 1.65$), $t(395) = 2.06, p < .05$. Further independent *t*-tests were conducted to test the difference between males and females intentions to speed separately for low and high intenders. These tests revealed the mean score of intentions to speed for high intending males ($M = 5.86, SD = .901$) differed significantly from high intending females ($M = 5.49, SD = .904$), $t(283) = 3.29, p < .001$ with (high intending) males more likely than (high intending) females to report an intention to speed, while low intending males ($M = 2.11, SD = .982$) and females ($M = 2.48, SD = .905$) did not significantly differ in their reported intentions to speed, $t(110) = -1.92, p = .058$. Such findings support the decision to look at the beliefs of high and low intenders to speed separately for males and females, to help understand the

factors that influence males' greater intentions to speed, specifically and in isolation from, females.

3.2 Difference in Beliefs of Low and high Intenders by Gender

A series of MANOVA's were conducted to test the differences in behavioural, normative, and control beliefs between low and high intenders to speed. As noted previously, as has been done in other empirical investigations of low and high intenders in relation to TPB beliefs (e.g., Jimmieson et al., 2009), the independent variable was created using a median split on intentions to speed in the given scenario thus generating a dichotomous variable of low ($M = 2.38, SD = .94$) and high ($M = 5.62, SD = .92$) intenders. The dependent variables for each of the MANOVA's were either the behavioural, normative or control belief items. Each MANOVA was split by gender to look at the differences between beliefs of low and high intenders separately for males and females.

Due to a number of homogeneity breaches within the MANOVAs of the behavioural and control beliefs (Levene's $p < .05$), the overall analyses were evaluated using Pillai's Trace and each breached item was evaluated at a more stringent alpha level of $p < .001$ (Tabachnick & Fidell, 2007).

3.2.1 Behavioural Beliefs

Female Behavioural Beliefs. Pillai's Trace revealed female low and high intenders to speed in the given scenario to significantly differ in relation to their behavioural beliefs, $F(7, 246) = 8.67, p < .001$. Closer inspection of the between-subjects effects, as shown in Table 1, revealed low intending females to significantly differ from high intending females on all but one behavioural belief (when evaluated with an adjusted level alpha level of $.007^1$), such that high intending females were more likely to agree with positive instrumental and affective

¹ Adjusted according to the rule $\alpha = 1 - (1 - \alpha_1)(1 - \alpha_2) \dots (1 - \alpha_p)$ for the number of dependent variables (Tabachnick & Fidell, 2007)

speeding statements and disagree with negative speeding statements than low intending females.

Male Behavioural Beliefs. Pillai's Trace also revealed males with low and high intentions to speed to significantly differ in regards to their behavioural beliefs, $F(7, 125) = 6.14, p < .001$. Between-subjects effects of low and high intending males revealed only one significant difference at the .007 level for the affective based item, such that high intending males found it more exciting to drive faster than the speed limit than low intending males. Males of low and high intention to speed (in relation to the given scenario) did not differ on any of the instrumental behavioural beliefs such that all males agreed speeding would get to destination quicker, reduce time spent in the car, and would not likely result in a crash, but would also cost more money, result in being caught by police and is more dangerous than driving at the speed limit.

Insert Table 1 about here

3.2.2 Normative Beliefs

Female Normative Beliefs. Pillai's Trace found normative beliefs to differ between females with low and females with high intentions to speed, $F(5, 252) = 9.58, p < .001$. High intending females differed from low intending females at the .01 alpha level¹ on three of the five statements, such that low intending females were more likely to perceive disapproval from peers than high intenders. However, closer inspection of the means revealed that despite the significant difference, the belief trend was in the same general direction, that is, all females perceived some level of disapproval from peers.

Male Normative Beliefs. Pillai's Trace revealed that normative beliefs also differed between males with low intentions and males with high intentions to speed, $F(5, 121) = 7.01,$

$p < .001$. Further investigation of the between-subjects effects revealed that high intending males differed significantly from low intending males on all statements at the adjusted alpha level of $.01^1$, such that high intending males are more likely to perceive support to speed from peers than low intending males.

3.2.3 Control Beliefs

Female Control Beliefs. Pillai's Trace found females with low and high intentions to speed significantly differed in relation to their control beliefs, $F(5, 253) = 8.46, p < .001$. Low and high intenders to speed differed significantly at the adjusted alpha level of $.01^1$ on three of the five statements such that high intending females were more likely to be encouraged to speed than low intenders in situations where the road context was more familiar to them. In relation to the influence of inappropriate speed signs and road conditions, while high intenders were significantly more likely to be encouraged to speed by such road features than low intenders, inspection of the means revealed that low intenders also reported being encouraged by such features (i.e., scored well above the mid-point of the 7-point scale) though not to the same extent as high intenders.

Male Control Beliefs. Pillai's Trace revealed males with low intentions to speed significantly differed from males with high intentions in their control beliefs, $F(5, 125) = 7.19, p < .001$. Results for males was similar for that of females in that intenders differed on the same three of the five statements at the adjusted alpha level of $.01^1$, with high intenders being more likely to be encouraged to speed than low intenders particularly in situations where the road was familiar. In relation to inappropriate speed zones and road conditions, inspection of the means revealed that low and high intending males tended to score in the same general direction in terms of higher agreement that such features would encourage intentions to speed. That is, all males agreed to some extent that inappropriate speed signs and road conditions would affect the decision to speed.

4. Discussion

The aim of this study was to enhance the current understanding of young driver speeding behaviour through examination of the beliefs that likely influence speeding intentions of young male and female drivers in relation to a speeding-related driving scenario considered a rather relevant and everyday situation by young drivers. Overall, the current findings indicate that high intenders (to speed) differ from low intenders on a number of beliefs considered in this study and that this effect is further influenced by gender. Specifically, as expected, high intenders were found to have more positive behavioural beliefs about speeding, perceived more support from friends, and had higher beliefs of control over speeding than low intenders; however, as suggested, the particular beliefs which differed between low and high intenders were also found to vary according to gender. These findings will be discussed in more detail below. Of note, the salient beliefs derived from the elicitation phase together with consideration of the beliefs identified within existing evidence were used to inform questionnaire items for the comparison of beliefs between low and high intenders to speed and, thus, the range of beliefs elicited will not be discussed specifically, but generally in relation to each hypothesis.

4.1 Preliminary Data Analysis and Checks

The initial analyses compared differences in intentions to speed between males and females revealing males to have higher intentions to speed than females, as has been shown in previous research (Lawpoolsri et al., 2007). Such findings support the decision to look at the beliefs of high and low intenders to speed separately for males and females, in order to better understand the factors that influence young males' (greater) intentions to speed, specifically and in isolation from, females. However, the further analyses separating low intenders to speed from high intenders found a more complex interaction between gender and speeding intentions. While high intending males were found to report more speeding

intentions that high intending females, there was no difference between low intending males and low intending females. Given the tendency for males to have higher sensation seeking scores (Arnett, Offer, & Fine, 1997; Roth, Schumacher, & Brähler, 2005) and be more likely to engage in risky behaviours (Oltedal & Rundmo, 2006) it is perhaps unsurprising that high intending males scored higher than females on intentions to speed; however, it is uncertain why this distinction did not remain between males and females with low speeding intentions (i.e., low intenders). Furthermore, closer inspection of the means for low intenders indicated a trend for females to score slightly higher on intentions to speed than males, however, this finding was not significant.

The finding of a non-significant difference in the intention scores between male and female low intenders (to speed) may indicate that the differences in intentions and behaviour previously reported between males and females is merely an indication of the strength of intention for males with high intentions to speed, suggesting a particular group of high risk road users. Thus, the preliminary checks conducted within the current study provide further support for the need to understand more about the beliefs underpinning young males' speeding intentions.

4.2 Differences in beliefs of low and high intenders by gender.

The hypothesis that high intenders would have more favourable behavioural, normative, and control beliefs than low intenders was generally supported in that significant differences emerged between low and high intenders for most beliefs and the effects were in the expected direction with high intenders indicating greater agreement with the influence of specific beliefs. However, inspection of mean scores revealed that the direction of the effect was sometimes similar for high and low intenders (e.g., both reported high agreement with a particular belief in terms of both groups scoring well above the mid-point of the 7-point scale) albeit high intenders reported significantly greater agreement.

4.2.1 Behavioural Beliefs

Female Behavioural Beliefs. In relation to behavioural beliefs, female high intenders were more likely to see quicker arrival at the destination, reducing time spent in the car, and the excitement of speeding as advantages of engaging in speeding behaviour but, were less likely to see being involved in a crash as a disadvantage. Furthermore, female high intenders also reported a greater belief that speeding was not more dangerous than driving at the speed limit and would not result in apprehension. It is acknowledged that overall agreement with these latter beliefs by all females was relatively low; however, to the extent that high intenders were less likely to regard detection and danger as disadvantages of speeding, it suggests that initiatives attempting to reach those at greatest risk (i.e., high intenders), may have the greatest potential of success if they were to focus on emphasising that detection is likely and the nature of the dangers associated with speeding. Indeed, supporting this suggestion, research evidence in relation to anti-speeding campaigns has reported that females report being influenced by and having a greater intention to adopt the recommendations of messages when such messages focus on the physical threats of death and injury (see Lewis, Watson, & Tay, 2007).

Male Behavioural beliefs. Low and high intending males only differed in their behavioural belief that speeding was exciting, where high intenders were inclined to agree, while low intenders did not that speeding was exciting. All males, regardless of intentions, agreed that getting to the destination faster and reducing the time spent in the car were advantages and being caught by the police, costing more money and increasing risk of danger were disadvantages (i.e., as indicated with mean scores well above the mid-point for the former and below the mid-point for the latter). All males were less likely to see crash involvement as a disadvantage. Given that few significant differences in behavioural beliefs between low and high intending males were found suggests that, for males, there appears to

be agreement on the perceived instrumental benefits of speeding, that is the more practical advantages and disadvantages of speeding (e.g., getting to the destination faster, or increasing the chances of police detection). It appears that the only difference in behavioural beliefs between low and high intending males occurs for the emotional elements, that is the affective advantage of speeding (i.e., thrill).

As such, if a mass media message or public education initiative was to be devised, based on the key behavioural beliefs underpinning speeding and targeting those most likely to engage in the behaviour (i.e., the high intenders), the current results would suggest that a potentially effective message may be one that in some way challenges the positive feelings males associate with speeding. To the extent that the current findings in relation to behavioural beliefs also revealed that all males were less likely to agree that crashing was a disadvantage of speeding (presumably because such an outcome was perceived as unlikely to occur to them), challenging such positive feelings will unlikely be achieved by emphasising the negative consequences of speeding (e.g., crashing) as has tended to be the approach traditionally (e.g., Tay, 2002; Tay & Ozanne, 2002). Rather, an alternative approach may be to recognise the role that positive feelings play in influencing speed choice and work towards highlighting ways that young males may still experience positive affect by choosing not to speed. For instance, initiatives which highlight that a young male may experience more enduring and valued positive feelings, such as pride, self-worth, and respect from others whenever they may choose to drive safely (and not speed) rather than the more self-oriented and transient 'thrill' associated with the act of speeding, positive feelings may still influence speed choice. In order to devise such an approach, consideration regarding whom a young male driver may aspire to receive respect and approval from would be needed. Evidence from the mass media and public education messages field has suggested that males may respond more positively (report less intention to speed) following exposure to a message that displays

the positive rewards they can receive from driving safely and not speeding, such as greater appreciation from important others like girlfriends (see Lewis, Watson, & White, 2008). The normative beliefs explored in the current study (and to be discussed shortly) provide some insight into this issue.

4.2.2 Normative Beliefs

Female Normative Beliefs. In terms of normative beliefs, overall females' perceptions of others' approving one's speeding was quite low, although there was perceived to be support from particular groups. High intending females were more likely to perceive support to speed from their closest mate than females with low intentions to speed, with the latter females reporting strong disagreement and the former females reporting agreement with the statement, 'My closest mate would think I should speed'. Also high intending females were less likely to perceive disapproval from important friends and friends often driven with than low intenders. However, the mean scores in relation to these latter two groups of friends indicate that all females agreed to some extent that these latter friends would not want them to speed (albeit the high intenders agreed significantly less so than the low intenders). Furthermore, all females perceived approval for speeding from male friends, but did not perceive support from work friends (i.e., no significant differences in relation to low and high intenders in relation to these two groups of 'others'). The approval that all females perceived from males may be a reflection of stereotypes that suggest males are more likely to enjoy and engage in risky behaviours including speeding and this notion has been supported by empirical evidence (Conner, Smith, & McMillan, 2003; Ferguson, 2003). This finding suggests that, for females there is a common belief that speeding behaviour would gain approval from males and, thus, may represent an aspect that mass media messages and public education strategies could address/challenge. For instance, females could be encouraged to value their ability to drive their own drive and not allow themselves to be influenced by

individuals from a high risk road user group (i.e., young males). In terms of targeting females more likely to engage in speeding (i.e., high intenders), we would suggest further investigation would be needed to further understand the normative referents for female drivers given that there were quite discrepant findings between low and high intenders in relation to the influence of one's closest mate and the friend who is most important to them. For the latter normative referent group, both low and high intenders agreed that these friends would not want them to speed. Thus, further research may be needed to help define "one's closest mate" versus "the friend who is most important to me".

Male Normative Beliefs. For males, the findings indicated that, as expected, high intenders perceived greater support from friends/peers to speed than low intenders and, overall, there were significant differences between low and high intenders in relation to all of the normative beliefs explored supporting the potentially significant role of normative influences in relation to young male speeding behaviour. Male high intenders perceived greater support from their closet mate, and male friends in general to speed than low intending males (i.e., high intenders were more likely to agree with the likely influence of these normative referents while low intenders were more likely to disagree with their influence). In contrast, low intenders perceived greater disapproval from important friends, friends they often drive with, and work friends than high intenders. However, the mean scores revealed that the disapproval from work friends perceived by low intenders also existed for high intenders, albeit to a lesser extent.

When comparing the results obtained for males and females in relation to normative beliefs, the beliefs explored appeared to differentially influence low and high intending males more so than females. In terms of potential advertising messages, the results highlight the importance of targeting perceptions of support from all friends for males, as these perceptions appear to greatly influence intentions (except work friends who appear to function more

similarly in their influence for both high and low intenders). In contrast, for females, challenging the perceived approval of males would most likely would represent the more effective normative-based message to target the speeding intentions of young female drivers. It also appears that deconstructing the risky male stereotype through media campaigns could benefit all young drivers.

4.2.3 Control Beliefs

In relation to the control beliefs, significant differences between low and high intenders on the same particular beliefs, was apparent between the findings for males and females. Overall, these findings supported expectations that higher control beliefs would be associated with those who had reported higher intentions to speed. Specifically, the results indicated that all high intenders (i.e., both males and females) were more likely to be encouraged to speed when driving on familiar roads and on roads regarded as inappropriately signed. Presumably, these results relate to one's increased confidence on more familiar roads, and a belief that on 'inappropriately signed roads' exceeding the signed limit would not compromise safety or the driver's control, for all young drivers. In addition, high intenders were significantly more likely to agree that the road condition would affect their decision to speed, although again low intenders agreed with this item to a high extent also (i.e., well above the mid-point of the scale). This particular item is difficult to interpret due to its somewhat ambiguous nature in relation to the phrase "affect their decision to speed" in that it is uncertain whether the effect is to increase or decrease the likelihood of speeding; however it does suggest that all young drivers do acknowledge the impact of road condition on their control over speeding. Low and high intenders did not significantly differ in their beliefs that school zones and poor weather would highly discourage speeding. This finding may suggest that all drivers recognise these particular situations as instances where speeding would be inappropriate. Consequently, preventive measures for all young drivers, both male

and female, should consider challenging the belief that familiar roads increase control and that individual perceptions of inappropriate speed signs indicate a greater personal control over the road, thus, discouraging speeding behaviour.

4.3 Strengths and Limitations

The current study has provided insight into the beliefs that influence young drivers' attitudes, subjective norms and PBC in relation to speeding which in turn influence their speeding-related intentions. The research, based upon a well-validated theoretical framework and upon a large sample (N = 398) of young drivers, has helped further contemporary understanding of the key factors underpinning the speeding intentions of young male and female drivers. This understanding is significant to the extent that it may inform the development of more targeted advertising and public education interventions to reduce speeding by young drivers.

As often is the case with questionnaire based studies, the current findings are limited by the reliance on intentions without follow-up behavioural data. However, within road safety research, behavioural data is often difficult to obtain and, thus, there is reliance upon intentions (e.g., Conner et al., 2003; Warner & Åberg, 2008). Theoretical and empirical research, however, supports intentions being consistent and reliable predictors of subsequent behaviour (Ajzen, 1985).

It is also acknowledged that the findings were based upon participants' responses to a specific speeding-related scenario. Although this scenario was checked for realism and relevance to young drivers, and confirmed as being realistic and relevant, it is one particular scenario of speeding-related behaviour. However, in accordance with the TACT principle (see Ajzen, 1991), the TPB's explanatory power is enhanced with the provision of greater specificity of contextual features and is consistent with other belief-based empirical investigations evident in the literature (e.g., Forward, 2009). Further, the beliefs explored

herein were informed both from beliefs identified within the extant speeding literature (e.g., Fleiter et al., 2010; Forward, 2009) as well as being confirmed by the preliminary, qualitative phase of the current research. As such, the range of beliefs explored could be expected to have generalisability to young drivers' speeding intentions more broadly. Even if one does not accept the argument that the beliefs may generalise to young drivers' speeding intentions more broadly, to the extent that the scenario examined was considered as a relevant speeding-related situation by young drivers (that they may experience), it would suggest that there would be value in messages/campaigns contextualising speeding behaviour occurring in such a risky overtaking situation. Further, such a message/campaign could then challenge some of the beliefs that this research has shown motivates speeding in such a situation. That is, the scenario may function to provide message/campaign designers with further information regarding appropriate, relevant content.

Finally, it is acknowledged that the sample, although comprised of licenced drivers of the required age group (i.e., young drivers aged between 17 and 24 years), was based on a convenience sample of university students thereby making it unclear the extent to which the findings are generalisable to the broader young driver context. However, checks on the data, such as the finding that males within the sample reported higher intentions to speed than their female counterparts, which is consistent with available evidence, does suggest that the characteristics of this study's sample appear to align with what would be expected in relation to speeding intentions of this age group.

5. Conclusion

In summary, the results suggest that, in terms of behavioural beliefs, mass media messages and/or public education interventions which highlight detection and danger certainty and the potential for delays caused by speeding (i.e., behavioural beliefs) may influence the speeding intentions of the most at risk young females (i.e., high intenders).

While for young males, given the extent to which positive affect may influence speeding intentions of high intenders more so than for low intenders, there may be value in messages/interventions highlighting other possible positive affect that may be associated with choosing not to speed and driving safely. As opposed to the thrill that one may receive during the act of engaging in speeding, more meaningful and enduring positive affect associated with heightening one's self-worth and receiving respect from important others when choosing not to engage in speeding may represent an innovative and effective message to disseminate to young male drivers. In terms of normative beliefs, for females, the current findings suggest that further exploration may be needed to understand more about the defining of relevant referent groups of "closest mate/s" and "those friends most important to me". There does appear to be a need to deconstruct the idea of male approval of speeding, particularly for females, who may perceive the act of speeding to increase approval from the opposite sex. Beyond other male friends, normative influences appeared to play a significant role in influencing young males' intentions. Finally, in relation to control beliefs, the results highlight the need for campaigns to challenge beliefs that familiar roads and individual perceptions of inappropriate speed signs indicate greater personal control over the road for all young drivers as these beliefs tended to be higher for those with high intentions to speed.

This research has enhanced current understanding of young driver speeding behaviour through an investigation of underlying beliefs. The findings have not only highlighted the complexity of the influences on young driver speeding behaviour but, also the importance of considering the intended audience when devising media campaigns and the beliefs held by members of that audience. In particular, the findings support the importance of considering differences in the beliefs that motivate the behaviour of low and high intenders (to speed) as well as to be most cognizant of the differences in the beliefs held by males and females.

References

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg: Springer.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I. (2002a). Constructing a TPB questionnaire: Conceptual and methodological considerations. Retrieved 10 July, 2009, from <http://people.umass.edu/aizen/tpb.html>
- Ajzen, I. (2002b). Perceived behavioral control, self-efficacy, locus of control, and theory of planned behavior. *Journal of Applied Social Psychology*, 32, 665-683.
- Ajzen, I. (2006). Behavioural interventions based on the theory of planned behavior. Retrieved 10 July, 2009, from <http://www.people.umass.edu/aizen/index.html>
- Ajzen, I., & Driver, B. L. (1992). Application of the theory of planned behavior to leisure choice. *Journal of Leisure Research*, 24(3), 207-224.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. New Jersey: Prentice-Hall.
- Arnett, J. J., Offer, D., & Fine, M. A. (1997). Reckless driving in adolescence: 'State' and 'trait' factors. *Accident Analysis & Prevention*, 29, 57-63.
- Australian Bureau of Statistics. (2011a). *Estimated resident population by single year of age, Australia*: Australian Bureau of Statistics.
- Australian Bureau of Statistics. (2011b). *Population Change, Summary - Australia ('000)*: Australian Bureau of Statistics.
- Conner, M., Smith, N., & McMillan, B. (2003). Examining normative pressure in the theory of planned behaviour: Impact of gender and passengers on intentions to break the

speed limit. *Current Psychology: Developmental, Learning, Personality, Social*, 22, 252-263.

Department of Infrastructure and Transport. (2011). *Road deaths Australia, February 2011*.

Canberra, ACT: Department of Infrastructure and Transport.

Department of Infrastructure Transport Regional Development and Local Government.

(2009). *Road deaths Australia 2008 statistical summary*. Canberra, ACT: Department of Infrastructure Transport Regional Development and Local Government.

Elliott, M. A., Armitage, C. J., & Baughan, C. J. (2007). Using the theory of planned behaviour to predict observed driving behaviour. *British Journal of Social Psychology*, 46, 69-90.

Ferguson, S. A. (2003). Other high-risk factors for young drivers--how graduated licensing does, doesn't, or could address them. *Journal of Safety Research*, 34(1), 71-77.

Fleiter, J., Lennon, D. A., & Watson, B. (2010). How do other people influence your driving speed? Exploring the 'who' and the 'how' of social influences on speeding from a qualitative perspective. *Transportation Research Part F: Traffic Psychology and Behaviour*, 13(1), 49-62.

Fleiter, J., Watson, D. B., Lennon, D. A., & Lewis, I. (2006). *Significant others, who are they? - Examining normative influences on speeding*. Paper presented at the 2006 Australasian Road Safety Research Policing Education Conference, Gold Coast.

Forward, S. E. (2009). An assessment of what motivates road violations. *Transportation Research Part F*, 12, 225-234.

Hyde, M. K. & White, K. M. (2007). Young Australian adults' knowledge and beliefs about organ donation. *Progress in Transplantation*, 17(3), 220-227.

- Jimmieson, N. L., White, K. M., & Zajdlewicz, L. (2009). Psychosocial Predictors of Intentions to Engage in Change Supportive Behaviors in an Organizational Context. *Journal of Change Management*, 9(3), 233 - 250.
- Lawpoolsri, S., Li, J., & Braver, E. R. (2007). Do speeding tickets reduce the likelihood of receiving subsequent speeding tickets? A longitudinal study of speeding violators in Maryland. *Traffic Injury Prevention*, 8(1), 26-34.
- Lewis, I., Watson, B., & Tay, R. (2007). Examining the effectiveness of physical threats in road safety advertising: The role of the third-person effect, gender, and age. *Transportation Research Part F: Traffic Psychology and Behaviour*, 10, 48-60.
- Lewis, I., Watson, B., & White, K. M. (2008). An examination of message-relevant affect in road safety messages: Should road safety advertisements aim to make us feel good or bad? *Transportation Research Part F: Traffic Psychology and Behaviour*, 11, 403-417.
- Oltedal, S., & Rundmo, T. (2006). The effects of personality and gender on risky driving behaviour and accident involvement. *Safety Science*, 44, 621-628.
- Ouimet, M. C., Simons-Morton, B., Zador, P. L., Lerner, N., Freedman, M., Duncan, G. D., et al. (2010). Using the U.S. National Household Travel Survey to estimate the impact of passenger characteristics on young drivers' relative risk of fatal crash involvement. *Accident Analysis & Prevention*, 42, 689-694.
- Peden, M., Scurfield, R., Sleet, D., Mohan, D., Hyder, A. A., Jarawan, E., et al. (2004). *World report on road traffic injury prevention*. Geneva: World Health Organization.
- Roth, M., Schumacher, J., & Brähler, E. (2005). Sensation seeking in the community: Sex, age and sociodemographic comparisons on a representative German population sample. *Personality and Individual Differences*, 39(7), 1261-1271.

- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson Education.
- Tay, R. (2002). Exploring the effects of a road safety advertising campaign on the perceptions and intentions of the target and non-target audiences to drink and drive. *Traffic Injury Prevention, 3*, 195-200.
- Tay, R., & Ozanne, L. (2002). Who are we scaring with high fear road safety campaigns? *Asia Pacific Journal of Transport, 4*, 1-12.
- Terry, D. J., Hogg, M. A., & White, K. M. (1999). The theory of planned behaviour: Self-identity, social identity and group norms. *British Journal of Social Psychology, 38*, 225-244.
- Thomas, J., Kavanagh, J., Tucker, H., Burchett, H., Tripney, J., & Oakley, A. (2007). *Accidental injury, risk-taking behaviour and the social circumstances in which young people (aged 12-24) live: a systematic review*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.
- Walsh, S. P., White, K. M., Watson, B., & Hyde, M. K. (2007). *Psychosocial factors influencing mobile phone use while driving* (No. RSRG 2007-06): Australian Transport Safety Bureau.
- Warner, H. W., & Åberg, L. (2008). Drivers' beliefs about exceeding the speed limits. *Transportation Research Part F, 11*, 376-389.

Table 1

Comparison of Low and high Intenders on Behavioural, Normative and Control Belief Items Split by Gender

Dependent Variable		Low Intenders Mean (SD)	High Intenders Mean (SD)	F	Sig.	Partial η^2
Behavioural Beliefs	Male					
	1. Driving fast will help me get to my destination quicker.	4.56 (1.95)	5.21 (1.52)	3.783	.054	.028
	2. I feel that speeding is no more dangerous to myself and others than driving at the speed limit.	2.47 (1.7)	3.36 (1.65)	6.908	.010	.050
	3. My speeding in this situation would likely result in a crash.	3.59 (1.95)	2.70 (1.61)	6.704	.011	.049
	4. I am likely to be caught by the police if I speed.	4.75 (1.44)	4.02 (1.64)	5.082	.026	.037
	5. Speeding would allow me to reduce the time I spend in the car.	4.00 (1.88)	4.85 (1.44)	7.286	.008	.053
	6. It is exciting to drive just a little faster than the speed limit.	3.09 (1.75)	4.81 (1.39)	32.61	.000*	.199
	7. Speeding would cost me more money.	5.25 (1.41)	4.75 (1.52)	2.602	.109	.019
	Female					
	1. Driving fast will help me get to my destination quicker.	3.74 (1.95)	5.02 (1.55)	31.285	.000*	.110
	2. I feel that speeding is no more dangerous to myself and others than driving at the speed limit.	2.00 (1.5)	2.83 (1.56)	15.521	.000*	.058
	3. My speeding in this situation would likely result in a crash.	4.19 (1.66)	3.22 (1.52)	20.760	.000*	.076
	4. I am likely to be caught by the police if I speed.	5.10 (1.46)	4.44 (1.39)	11.924	.001*	.045
	5. Speeding would allow me to reduce the time I spend in the car.	3.75 (1.71)	4.63 (1.42)	18.052	.000*	.067
6. It is exciting to drive just a little faster than the speed limit.	3.10 (1.78)	3.93 (1.63)	12.903	.000*	.049	
7. Speeding would cost me more money.	5.01 (1.48)	4.58 (1.54)	4.429	.036	.017	
Normative Beliefs	Male					
	1. My closest mate would think I should speed.	3.55 (1.90)	5.01 (1.73)	15.251	.000*	.109
	2. The friend who is most important to me would think I should not speed.	5.28 (1.91)	3.77 (1.75)	16.061	.000*	.114
	3. My male friends would want me to speed in this situation.	3.59 (1.57)	4.88 (1.60)	14.782	.000*	.106
	4. The friends I often drive with would not want me to speed.	4.97 (1.48)	3.67 (1.36)	19.415	.000*	.134
5. My work friends would encourage my decision to speed.	2.72 (1.28)	3.98 (1.55)	15.760	.000*	.112	

Comparison of Low and high Intenders on Behavioural, Normative and Control Belief Items Split by Gender Cont...

Dependent Variable		Low Intenders Mean (SD)	High Intenders Mean (SD)	F	Sig.	Partial η^2
Normative Beliefs Female	1. My closest mate would think I should speed.	2.80 (1.78)	4.06 (1.75)	28.266	.000*	.099
	2. The friend who is most important to me would think I should not speed.	5.24 (1.48)	4.39 (1.66)	13.554	.000*	.050
	3. My male friends would want me to speed in this situation.	4.42 (1.57)	4.26 (1.6)	0.562	.454	.002
	4. The friends I often drive with would not want me to speed.	5.10 (1.61)	4.33 (1.37)	15.566	.000*	.057
	5. My work friends would encourage my decision to speed.	2.63 (1.52)	3.25 (1.41)	10.088	.002	.038
Control Beliefs Male	1. I would be less likely to speed if I was near a school.	5.52 (1.93)	6.06 (1.48)	2.758	.099	.021
	2. I would be encouraged to speed if the road was familiar.	4.10 (1.66)	5.48 (1.21)	25.654	.000*	.166
	3. The condition of the road would affect my decision to speed.	5.00 (1.79)	5.98 (1.16)	12.749	.001*	.090
	4. I'd be less likely to speed in this situation if the weather was poor.	5.61 (1.80)	6.10 (1.13)	3.228	.075	.024
	5. It would be harder to avoid speeding if I believed the speed signs were inappropriate.	4.26 (1.39)	5.19 (1.34)	11.266	.001*	.080
Control Beliefs Female	1. I would be less likely to speed if I was near a school.	5.82 (1.45)	6.15 (1.14)	3.817	.052	.015
	2. I would be encouraged to speed if the road was familiar.	3.99 (1.71)	5.10 (1.38)	30.556	.000*	.106
	3. The condition of the road would affect my decision to speed.	5.04 (1.94)	5.94 (1.37)	18.371	.000*	.067
	4. I'd be less likely to speed in this situation if the weather was poor.	6.21 (1.38)	6.40 (0.86)	1.963	.162	.008
	5. It would be harder to avoid speeding if I believed the speed signs were inappropriate.	4.37 (1.60)	4.88 (1.40)	6.672	.010*	.025

*Significant at the adjusted alpha level.

