



Pro-social behaviour in young passengers: Predictive utility of the social reaction pathway of the prototype willingness model



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ABSTRACT

This study examined the social reaction pathway of the Prototype Willingness Model (PWM) to assess how attitudes, subjective norms, prototype perception (favourability and similarity), and risk perception influenced young passengers' willingness to speak up to a driver exceeding the posted speed limit by either 5 km/h or 10 km/h. It was hypothesised that participants would be more willing to speak up to drivers' travelling 10 km/h over the posted speed limit than 5 km/h over the posted speed limit. Further, it was hypothesised that the PWM constructs would significantly predict passenger willingness to speak up to a driver travelling 5 km/h over the posted speed limit and 10 km/h over the posted speed limit. Young Australians aged 17 to 25 years ($N = 136$, $Mage = 19.32$, 77.9% female) were recruited to complete a 30-minute online questionnaire. As predicted, passengers were significantly more willing to speak up to drivers travelling at 10 km/h over the posted speed limit than drivers travelling 5 km/h over the posted speed limit. Further, the results from a linear regression revealed that some of the PWM constructs were effective in explaining the variance in willingness to speak-up to drivers travelling either 5 km/h or 10 km/h over the posted speed limit. These findings address a gap in road safety research by shifting focus from the behaviour of drivers to the behaviour of passengers. The focus on the pro-social behaviour of speaking up to drivers performing risk taking behaviours may help to inform future educational campaigns and interventions designed to reduce young peoples' involvement in road crashes.

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1. Introduction

Young drivers between the ages of 17–25 years are overrepresented in road crashes, their fatality rate higher than other age groups (Bureau of Infrastructure, Transport and Regional Economics, [BITRE], 2019). Studies have suggested that this overrepresentation is due to young drivers' high propensity to engage in risky driving behaviours such as speeding behaviour (e.g. Bina et al., 2006; Scott-Parker & Oviedo-Trespalacios, 2017). Passengers may offer a protective factor of young adults' engagement in risky driving behaviours. However, there is limited research that has investigated the precursors of passenger behaviour. One prosocial passenger behaviour is speaking up. Speaking up to a young driver is an important and effective tool that young passengers can utilise to keep themselves and other road users safe (Elvik, 2000). By applying the Prototype

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Willingness Model (PWM), the current study focused upon passengers and their choice to engage the pro-social behaviour of speaking up when a driver was exceeding the posted speed limit.

1.1. Speeding behaviour

One risky driving behaviour that is recognised around the world as a major safety issue, contributing significantly to crash risk, is speeding behaviour (World Health Organization, 2018). Research has identified that drivers often partake in either low-level speeding (up to 10 km/h over the posted limit) or high-level speeding (21 + km/h over the posted limit) (e.g. Alavi et al., 2014). Although high-level speeding is significantly more risky than low-level speeding, low-level speeding has been identified as a greater safety issue, as larger numbers of drivers' speed at lower levels than higher levels (Alavi et al., 2014). Kloeden and McLean (1998) found that drivers are twice as likely to be involved in a serious crash when travelling at only 5 km/h over the speed limit in a 60 km/h zone. This past research demonstrates the significant impact that low levels of speed may have on drivers' likelihood of being involved in a serious crash.

1.2. Passengers and pro-social behaviour

Previous studies have illustrated that young people are more likely to engage in risky behaviour when with their peers compared to other age groups (Gardner & Steinberg, 2005; Simons-Morton et al., 2005). King et al. (2008) found that the pairing of young drivers with young passengers contributes to greater than half of crash-related fatalities. However, other studies have shown that the addition of peers can be a protective factor, contributing to safer driving practices (Buckley & Foss, 2012; Engström et al., 2008) and illustrate that peer influence does not always increase risk. Passengers can warn drivers of impending hazards, can help with navigation, operate equipment such as the radio, and can keep their drivers alert, or take over if the driver is impaired (Williams et al., 2007). Passengers also have the ability to reprimand drivers who are partaking in risky driving behaviours. These are some examples of pro-social behaviour. Pro-social behaviour can be defined as actions an individual can take with the intention of benefiting one or more people other than themselves (Harris et al., 2014). Road safety research on pro-social behaviour is limited and available literature has tended to focus on the pro-social behaviour of drivers rather than the pro-social behaviour of passengers (e.g. Harris et al., 2014; Nandavar et al., 2019). Therefore, the focus of this study is on the pro-social behaviour of passengers.

1.3. Prototype willingness model

Previous research has illustrated that decision making can depend significantly on context, individuals often making choices reactively in relation to their particular situation (Gibbons & Gerrard, 1995; Gibbons et al., 2006; Pomery et al., 2009). In the spur of the moment, in unfamiliar situations, in the presence of peers, or when behavioural inhibition is required for good outcomes, young people will often reason more poorly than adults (Reyna & Farley, 2006). The Prototype Willingness Model (PWM) aids in explaining this reactive process as it addresses the growing findings that risky behaviour can be a product of unintentional willingness and social reaction (Gerrard et al., 2003; Gibbons & Gerrard, 1995; Gibbons et al., 2006).

The PWM is a dual process-model, with two predictive pathways: the reasoned action path and the social reaction path (Gibbons & Gerrard, 1995; Gibbons et al., 2009). The reasoned pathway intends to explain pre-planned behaviour, actions made with intent, and utilises attitudes (favourable or unfavourable beliefs) and subjective norms (perceptions of important others) to predict a persons' intention to engage in a behaviour (Todd et al., 2016). Whereas the social reaction pathway proposes that behaviour is reactive and socially oriented (Gibbons et al., 2009). The social reaction pathway predicts that attitudes, subjective norms, and prototypes, influence willingness, which in turn, influence actual behaviour. There are two aspects of prototypes: favourability and similarity. Prototype favourability refers to how favourable (or unfavourable) an individual perceives the prototype to be, while prototype similarity refers to how strongly an individual identifies with a prototype. Therefore, the more positively a person perceives their prototype, as well as how similar they view themselves to that prototype, the greater the influence the decision will be to engage in a specific behaviour (Rivis et al., 2006).

Unlike the reason action pathway which has the underlying assumption that individuals will make conscious decisions ahead of time, the social reaction pathway proposes that behaviour is largely situational based, with decisions made by individuals not planned and/or thought out (i.e., unintended behaviour). This study focused on the social reaction pathway as it could be argued that a young adult's engagement in speaking up to a risky driver would predominantly be a reactive decision and may differ depending on the driving context (i.e., exceeding the posted speed limit by 5 km/hr or exceeding the posted speed limit by 10 km/hr). Further, and given that previous research has reported young drivers who report favourable prototypes of risky drivers, are more likely to engage in speeding behaviours (e.g., Scott-Parker et al., 2013), this study further examines if similar findings can be found in a safe driving context (i.e., young adults favourable prototypes of passengers willing to speak-up, are more willing to speak up to a driver who is exceeding the posted speed limit).

Incorporated into both pathways is the element of risk perception, noted as personal vulnerability in Gibbons et al. (2006). Risk perception can be defined as an individual's awareness of risk. Based on subjective experience, risk perception determines how individuals perceive the likelihood of injury and consequences of partaking in a risky behaviour (Deery, 1999). For example, a passenger feeling scared when a driver exceeds the posted speed limit may influence them to speak

up. It is suggested that people will be inclined to avoid situations that they perceive are risky if the costs outweigh the benefits, and will tend to adapt their behaviour to limit the occurrence of any potential risk (Lheureux, 2012). However, it is important to consider the biased nature of subjective risk as an individuals' perception of risk may not always accurately reflect objective risk. Despite the negative consequences associated with low level speeding, some Australian drivers view low-level speeding behaviour to be socially acceptable (Job et al., 2013) and as highlighted earlier, are more likely to exceed the speed limit at lower levels than at higher levels (Alavi et al., 2014). Therefore, it could be argued that passengers may perceive less risk towards low-level speeding and be less inclined to speak up when a driver is exceeding the speed limit by 5 km/hr than compared to exceeding the speed limit by 10 km/hr, which they may perceive as a higher risk and subsequently, more willing to speak up. Thus, risk perception was also included in the current study to further assess if this construct predicted passengers' willingness to speak-up to drivers exceeding the speed limit by 5 km/hr or by 10 km/hr.

1.4. The current study

Young drivers frequently travel with young passengers, which research has shown increases a driver's likelihood of partaking in risky driving behaviour (Simons-Morton et al., 2005). For passengers, their control over their situation is limited. However, speaking up has been shown to be an effective tool for reducing crash risk (Elvik, 2000). Previous literature has focused predominantly on the behaviour of drivers, particularly their willingness to partake in risky behaviours (e.g. Elliott et al., 2017; Preece et al., 2018), whereas the factors influencing passenger behaviour have been largely neglected. Thus, the current study sought to address this gap in the research by assessing the utility of the PWM in predicting young drivers' willingness to speak up to a driver exceeding the speed limit by either 5 km/h or 10 km/h. The following three hypotheses were proposed:

Hypothesis 1. It was predicted that passengers would be more willing to speak up to drivers travelling at 10 km/h over the posted speed limit compared to drivers' travelling at 5 km/h over the posted speed limit.

Hypothesis 2. It was hypothesised that the PWM constructs of attitudes, subjective norms, prototype perceptions (favourability and similarity), and risk perception would significantly predict an individual's willingness to speak up to a driver travelling 5 km/h over the posted speed limit.

Hypothesis 3. It was hypothesised that the PWM constructs of attitudes, subjective norms, prototype perceptions (favourability and similarity), and risk perception would significantly predict an individual's willingness to speak up to a driver travelling 10 km/h over the posted speed limit.

2. Method

2.1. Participants

The total sample size was 157 participants. Of those participants, 40 were recruited from the general population and 117 were recruited from the university population. Participants were required to be Australian residents, aged between 17 and 25, and who had experienced being a passenger in a car within the last year. Of the 157 participants, 21 participants were excluded from the study. Three participants were excluded for not meeting the eligibility criteria for age and 18 participants were excluded for not completing key items of interest required for the study. The final sample size was 136 participants aged 17–25 years ($M = 19.32$, $SD = 2.11$), with 29 males (21.3%), 106 females (77.9%) and 1 participant that answered 'other' (0.7%). Participants varied in terms of their licensure, 7.4% reported no licence, 34.6% reported holding a learners licence, 41.1% held a provisional licence (provisional 1¹ or provisional 2² licence), 13.2% held an open licence³, and 3.7% held an international licence.

2.2. Measures and materials⁴

A questionnaire with 34 items was used to measure participant's attitudes, subjective norms, prototype perception, risk perception, and willingness to speak up. Items also differentiated between two levels of speeding, 5 km/h and 10 km/h.

Attitudes towards speaking up were measured using 7-point semantic differential scales, adapted from Moan (2013) (1 = *irresponsible, wrong, unsafe, uncomfortable*, 7 = *responsible, right, safe, comfortable*). Participants were asked, "Speaking up to a driver going 5kms over the speed limit would for me be..." and "Speaking up to a driver going 10kms over the speed limit would for me be...". Higher scores indicated favourable (safe) attitudes towards speaking up.

Subjective norms were measured using two items adapted from Moan (2013): (1) People that mean a lot to me think that I should speak up when a driver is going 5 km over the speed limit, (2) People that mean a lot to me think that I should speak

¹ Provisional 1 is the licence an individual holds for one year after their learners. They can drive unsupervised, with specific driving restrictions that can be found at <https://www.qld.gov.au>.

² Provisional 2 is the licence an individual holds for two years after their P1 licence. Their driving restrictions can be found at <https://www.qld.gov.au>.

³ Open licence status is reached after holding P2 licence for two years, and does not come with driving restrictions other than following the standard Australian road rules.

⁴ This research is part of a larger project. Only those measures relevant to this thesis will be reported.

up when a driver is going 10kms over the speed limit. These items were measured using a 6-point Likert scale (1 = *strongly disagree*, 6 = *strongly agree*). Higher scores indicated that important others would approve of them speaking up.

Prototype favourability was measured using a 4-point Likert Scale (1 = *not at all*, 4 = *very*), which was adapted from Lambert and Laird (2016) and Preece et al. (2018). The participants were asked to “Take a moment to think about people your age who speak up in a car going 5kms over the speed limit. We are not thinking about anyone in particular, just your image of individuals who speak up in a car travelling 5kms over the speed limit. Rate your image of that typical person in terms of the six adjectives below”. The six adjectives provided were: popular, careless, smart, cool, attractive, and boring. For positive adjectives (i.e., popular, smart, cool, and attractive), high scores indicated high favourability of a prototype who engages in the behaviour. For negative adjectives (i.e., careless and boring) low scores indicated high favourability. To measure prototype similarity, participants were asked, “In general, how similar are you to this typical person?”. Responses were measured using a 4-point Likert scale (1 = *not at all*, 4 = *very much*). This process was then repeated for speaking up to drivers going 10kms over the speed limit.

Risk perceptions were measured using a 5-point Likert Scale (1 = *not at all likely*, 5 = *extremely likely*). Participants were asked, “How likely do you think it is for you to be injured while performing the following behaviours?”. This was in response to the two behaviours of: (1) being a passenger in a car going 5kms over the speed limit, (2) being a passenger in a car going 10kms over the speed limit. Higher scores indicated higher perceptions of risk.

Willingness was measured using a 5-point Likert Scale (1 = *not at all willing*, 5 = *very willing*). Participants were asked, “How willing are you to speak up when...?”, (1) being a passenger in a car driving 5kms over the speed limit, (2) being a passenger in a car driving 10kms over the speed limit. Higher scores indicated higher levels of willingness to speak up.

2.3. Procedure

The study was granted approval by the Queensland University of Technology (QUT) Human Research Ethics Committee (QUT Ethics Approval Number: 1900000350). The questionnaire was administered via Qualtrics and participants were recruited either via the QUT online recruitment system for undergraduate students (SONA) or a paid Facebook advertisement, which was used to recruit members of the general public. On average, the online questionnaire took approximately 30 min to complete. Participant consent was gained prior to conducting the questionnaire, after reading the participant information sheet. Participants first completed items relating to their demographics (i.e. age, gender, licence status), and were proceeded by the items for attitudes, subjective norms, prototype perception, risk perception, and willingness. Upon completion of the questionnaire, university students were able to receive partial course credit (0.5%) for participating, whilst other participants were entered into a prize draw to receive one of eight AUS \$20 Coles/Myer gift vouchers.

2.4. Analyses

Bivariate correlations were first undertaken to assess the relationships between each of the PWM constructs (i.e., attitudes, subjective norms, prototype favourability, prototype similarity, risk perception, and willingness). Next, linear regressions using enter method were run to test whether the PWM constructs accounted for participant willingness to speak up when going 5 km/h over the posted speed limit, and 10 km/h over the posted speed limit. All significance values were assessed at $p < .05$ and all assumptions were met unless otherwise stated

3. Results

3.1. Data cleaning and screening

The program IBM SPSS version 25 was used to carry out all analyses. Through visual inspection of both the data file and descriptive output, accuracy of input was checked. Before conducting the main analysis, the data were screened for missing values. Little's MCAR test showed that the data were missing at random, $\chi^2 (214.36)$, $p = .109$, with less than 5% of missing data.

3.2. Scale reliability

Only four scales were created for the analysis. Both scales measuring attitudes were shown to have acceptable internal consistency measured by Cronbach's Alpha's, 5 km/h ($\alpha = 0.83$), and 10 km/h ($\alpha = 0.88$). The 5 km/h prototype favourability scale produced an initial alpha of 0.54. After checking if items deleted would improve this value it was determined that removing the item 'careless' would produce an alpha of 0.65 and therefore, this item was deleted. The 10 km/h prototype scale produced an alpha of 0.61. After checking if items deleted would improve this value, it was found that the value could not be improved and therefore, the decision was made to retain all items. It is acknowledged that this scale is under the recommended alpha of 0.70 (Field, 2009). However, and to enable direct comparisons to be made with previous research, it was decided to include both prototype subscales.

3.3. Gender and willingness to speak-up

Two independent groups *t*-tests were conducted to assess if there were any significant differences between male and females' willingness to speak up to drivers exceeding the post speed limit. There were no significant differences between males ($M = 2.69$, $SD = 1.34$) and females ($M = 2.89$, $SD = 1.23$) willingness to speak up to drivers exceeding the posted speed limit by 5 km/hr, $t(133) = -0.75$, $p = .454$, 95% CI [-0.72, 0.32] or between males ($M = 3.86$, $SD = 1.27$) and females ($M = 4.08$, $SD = 1.00$) willingness to speak up to drivers exceeding the posted speed limit by 10 km/hr, $t(133) = -0.96$, $p = .341$, 95% CI [-0.66, 0.23]. Given that there were no significant effects of gender on willingness to speak up to drivers exceeding the posted speed limit, subsequent analyses included the full sample of participants.

3.4. Bivariate correlations

Bivariate correlations were first undertaken to assess the relationships between the PWM variables. There were weak to strong significant positive correlations between the PWM items of attitudes, subjective norms, prototype perception, risk perception, and willingness for speeding 5 km/h over the posted speed limit (see Table 1). However, there was no significant relationship between subjective norms and prototype similarity. Similarly, there were also weak to strong significant positive correlations between the PWM items of attitudes, subjective norms, prototype perception, risk perception, and willingness for speeding 10 km/h over the posted speed limit (see Table 2). There was no significant relationship between subjective norms and prototype favourability.

3.5. Main analysis

A paired samples *t*-test was conducted to assess whether there was a significant difference between the mean scores of willingness to speak up to drivers travelling 5 km/h over the posted speed limit and willingness to speak up to drivers travelling 10 km/h over the posted speed limit. The findings showed that participants were significantly more willing to speak up to a driver travelling 10 km/h over the posted speed limit ($M = 4.04$, $SD = 1.06$), than speak up to a driver travelling 5 km/h over the posted speed limit ($M = 2.85$, $SD = 1.25$) $t(135) = -16.01$, $p < .001$, $d = -1.37$, and provide support for hypothesis one.

3.5.1. PWM and speeding 5 km/h and 10 km/h over the posted speed limit

Two separate linear regressions using enter method were conducted to assess whether the prototype willingness model predicted people's willingness to speak up to drivers travelling at either 5 km/h or 10 km/h over the posted speed limit. The PWM constructs significantly accounted for 40% of the variance in willingness for passengers to speak up to a driver travelling 5 km/h over the posted speed limit, $F(5, 127) = 18.15$, $p < .001$. Attitudes, subjective norms, and risk perception were all significant unique positive predictors of willingness, providing some support for hypothesis two. However, prototype favourability and prototype similarity were not significant predictors, which is inconsistent with hypothesis two (see Table 3).

The PWM constructs significantly accounted for 35.5% of the variance in willingness for passengers to speak up to a driver travelling 10 km/h over the posted speed limit, $F(5, 125) = 14.76$, $p < .001$. Subjective norms, prototype similarity, and risk perception were all significant unique positive predictors of willingness, providing some support for hypothesis three. However, attitudes and prototype favourability were not significant predictors of willingness, which is inconsistent with hypothesis three (see Table 4).

4. Discussion

The current study aimed to assess the utility of the PWM in predicting young drivers' willingness to speak up to a driver exceeding the speed limit by either 5 km/h or 10 km/h. To further understand the precursors of passenger willingness, the constructs of attitudes, subjective norms, prototype favourability, prototype similarity, and risk perception from the PWM were applied.

4.1. Willingness to speak up at different levels of speed

The findings revealed that participants were more willing to speak up to drivers travelling 10 km/h over the posted speed limit than speak up to drivers travelling 5 km/h over the posted speed limit, supporting hypothesis 1. This finding is consistent with previous research which has shown that people perceive travelling at high speeds (e.g., 10 km/h or over) more risky than low level speeding (e.g. Alavi et al., 2014) and therefore may be more willing to speak up when the driver is travelling at higher speeds. It also could be argued that risk perception plays an important role in influencing people's willingness to speak up. For instance, driving at 10 km/hr over the posted speed limit may be more noticeable to a passenger and perceived to be of higher risk than driving 5 km/hr over the posted speed limit, which could be perceived by the passenger as low risk. Further, as low levels of speeding remains socially acceptable and is a common occurrence on Australian roads (Job et al.,

Table 1

Bivariate Correlations Between the Prototype Willingness Predictors for Speaking up to Drivers Speeding 5 km/h over the Posted Speed Limit.

	Mean (SD)	1	2	3	4	5	6
1. Attitudes	4.95 (1.41)	–					
2. Subjective norms	4.16 (1.27)	0.449**	–				
3. Prototype favourability	2.46 (0.56)	0.388**	0.227*	–			
4. Prototype similarity	2.98 (1.12)	0.306**	0.099	0.223**	–		
5. Risk perception	2.22 (0.81)	0.408**	0.316**	0.406**	0.240**	–	
6. Willingness	2.85 (1.25)	0.522**	0.476**	0.313**	0.270**	0.451**	–

Note. 7-point semantic differential scales were used to measure attitudes (1 = *irresponsible, wrong, unsafe, uncomfortable*, 7 = *responsible, right, safe, comfortable*). A 6-point scale was used to measure subjective norms (1 = *strongly disagree*, 6 = *strongly agree*). Risk perception was measured on a 5-point Likert scale (1 = *not at all likely*, 5 = *extremely likely*). Prototype favourability was measured on a 4-point Likert Scale (1 = *not at all*, 4 = *very*). Similarity was measured on a 4-point Likert scale (1 = *not at all*, 4 = *very much*). Willingness was measured on a 5-point Likert scale (1 = *not at all willing*, 5 = *very willing*).

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 2

Bivariate Correlations Between the Prototype Willingness Predictors for Speaking up to Drivers Speeding 10 km/h over the Posted Speed Limit.

	Mean (SD)	1	2	3	4	5	6
1. Attitudes	5.50 (1.61)	–					
2. Subjective norms	4.99 (1.16)	0.333**	–				
3. Prototype favourability	2.77 (0.55)	0.232**	0.093	–			
4. Prototype similarity	3.20 (1.27)	0.266**	0.187*	0.482**	–		
5. Risk perception	3.28 (0.98)	0.268**	0.271**	0.236**	0.249**	–	
6. Willingness	4.04 (1.06)	0.343**	0.461**	0.191*	0.370**	0.429**	–

Note. 7-point semantic differential scales were used to measure attitudes (1 = *irresponsible, wrong, unsafe, uncomfortable*, 7 = *responsible, right, safe, comfortable*). A 6-point scale was used to measure subjective norms (1 = *strongly disagree*, 6 = *strongly agree*). Risk perception was measured on a 5-point Likert scale (1 = *not at all likely*, 5 = *extremely likely*). Prototype favourability was measured on a 4-point Likert Scale (1 = *not at all*, 4 = *very*). Similarity was measured on a 4-point Likert scale (1 = *not at all*, 4 = *very much*). Willingness was measured on a 5-point Likert scale (1 = *not at all willing*, 5 = *very willing*).

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3

Linear Regression Analysis of the Prototype Willingness Predictors for Speaking up to Drivers Speeding 5 km/h over the Posted Speed Limit.

	B	SE B	β	p	95% CI for B	sr ²
Attitudes	0.234	0.074	0.267	0.002	0.09, 0.38	0.05
Subjective norms	0.277	0.080	0.272	0.001	0.12, 0.44	0.06
Prototype favourability	0.142	0.180	0.062	0.431	–0.21, 0.50	0.00
Prototype similarity	0.105	0.081	0.095	0.195	–0.06, 0.27	0.01
Risk perception	0.334	0.123	0.271	0.008	0.09, 0.58	0.03

Table 4

Linear Regression Analysis of the Prototype Willingness Predictors for Speaking up to Drivers Speeding 10 km/h over the Posted Speed Limit.

	B	SE B	β	p	95% CI for B	sr ²
Attitudes	0.067	0.050	0.106	0.184	–0.03, 0.17	0.01
Subjective norms	0.242	0.071	0.267	0.001	0.10, 0.38	0.06
Prototype favourability	–0.02	0.156	–0.01	0.910	–0.33, 0.29	0.00
Prototype similarity	0.189	0.068	0.236	0.006	0.06, 0.32	0.04
Risk perception	0.319	0.082	0.304	>0.001	0.16, 0.48	0.08

2013), its frequency desensitizes road users (and their passengers) to its severity (Brown & Copeman, 1975), potentially lowering the perceived risk of the behaviour.

The findings may also relate to people's perceptions of speed limits and the way in which they define speeding. For example, travelling 5 km/hr over the posted speed limit may be seen as a lapse in judgement, or unintentional in nature. While travelling 10 km/hr over the posted speed limit may be viewed as a violation, which is often intentional, and could be why participants in the current study reported that they were more willing to speak up to drivers exceeding the speed limit by 10 km/hr as opposed to exceeding the speed limit by 5 km/hr. It has been reported that a driver is twice as likely to be involved in a serious crash when travelling 5 km/hr over the posted speed limit in a 60 km/hr speed zone (Kloeden & McLean, 1998), and therefore, these findings also indicate that more education is required to inform drivers' and other road users of the risks associated with low levels of speeding.

4.2. The PWM in predicting speaking up at 5 km/h

Attitudes, subjective norms, and risk perceptions accounted for a significant amount of variance in willingness to speak up to drivers travelling 5 km/hr over the posted speed limit, providing some support for hypothesis 2. This finding is consistent with previous literature that demonstrates the effectiveness of the PWM at predicting an individual's willingness to engage in a behaviour, for example, speeding (e.g. Elliott et al., 2017; Gerrard et al., 2003; Gibbons & Gerrard, 1995; Gibbons et al., 2006). The findings also revealed that subjective norms was the most significant unique predictor of young passengers' willingness to speak up to a driver travelling 5 km/hr over the posted speed limit. Previous research has reported that peers influence risk taking and risk decision making of young adults (Gardner & Steinberg, 2005). For instance, and in a road safety context, research has shown that active peer pressure influences young drivers speeding behaviour (Gheorghiu et al., 2015) and that peer pressure has a significant effect on young drivers driving under the influence of alcohol and drugs (Sela-Shayovitz, 2008). The current findings add to the literature by demonstrating the influence that peers may have on young adults' willingness to speak-up to a driver exceeding the posted speed limit by 5 km/hr.

Prototype favourability and prototype similarity were not significant predictors of willingness to speak up, which is inconsistent with theory. However, and consistent with the current finding, Scott-Parker et al. (2013) also found that prototypes were not a significant predictor of speeding among their sample of 378 young Australian drivers aged 17–25 years. The study utilised a slightly different prototype measure, with six unsafe and six safe prototype items included in their scale. Further, and given that previous research has typically applied the PWM to examine risk taking behaviour, it may be that the PWM is more appropriate for predicting risk-taking behaviour rather than pro-social behaviours, as investigated in the current study. However, and given the limited research which has used this model to examine pro-social behaviour, more research is required to examine the extent to which the factors within the PWM can predict willingness to engage in pro-social behaviour.

4.3. The PWM in predicting speaking up at 10 km/h

Subjective norms, prototype similarity, and risk perceptions were shown to be significant positive predictors of willingness to speak-up to a driver travelling 10 km/h over the posted speed limit, providing some support for hypothesis 3. Risk perception was the most unique significant predictor of willingness to speak up to a driver travelling 10 km/h over the posted speed limit. Previous research has illustrated the important role that risk perception plays in decision making (Sjoberg et al., 2004; Yao et al., 2019). Yao et al. (2019) found that higher risk perception had a positive influence on speed limit compliance. Participants who perceived there to be more risk, were less likely to speed. The current study's results may reflect that risk avoidance is a priority for many within the current sample, hence why it is a strong predictor of behavioural willingness to speak up. Further, research suggests risk perception is related to fast reaction and instinct, rather than reason (Magezzi & Antunes, 2016). It could be argued that risk perception is a strong predictor of willingness because of the PWM's heavy focus on reactive decision-making.

Attitudes and prototype favourability were not significant predictors of willingness to speak up. Previous research has found attitudes to be a significant predictor of willingness to engage in risky driving behaviours (e.g. Ajzen, 1985; De Pelsmacker & Janssens, 2007; Iversen, 2004; Lahaussé et al., 2010; Preece et al., 2018). A study conducted by the National Highway Traffic Safety Administration ([NHTSA], 2012) reported that although respondents perceived a behaviour to be unsafe, it did not influence their choice to speak up. The study found that while 90% of respondents reported that they considered a driver using their phone behind the wheel as very unsafe, only 40% of respondents were likely to speak up in this situation. Younger participants were also less likely to speak up than older respondents. Thus, it could be speculated that even if participants in the current study had favourable attitudes towards speaking up, there might be other factors that influence their willingness to speak up, including age. It is recommended that future research further investigate the influence that attitudes have on passengers' willingness to speak up to drivers performing illegal behaviours.

The difference in findings between prototype favourability and prototype similarity is consistent with previous research which has found prototype similarity as a significant predictor of willingness, but not prototype favourability (e.g., Elliott et al., 2017; Ravis et al., 2006). For example, Elliott et al. (2017) applied the PWM to examine drivers speeding behaviour⁵ and found that while prototype similarity was a significant predictor of willingness to engage in speeding behaviour, prototype favourability was not a significant predictor of willingness. Elliott et al. (2017) concluded that comparing one's self to others may be more important than evaluating others, in relation to shaping behaviour. The current findings add to the road safety literature by showing the prototype similarity may be more important than prototype favourability in also shaping prosocial behaviours, such as willingness to speak-up in a risky driving situation.

4.4. Strengths and limitations and future research

The current study's most notable strength is its uniqueness within the realm of road safety research. Predominantly, previous literature has focused on the behaviour of drivers, whereas this study has shifted focus to passenger behaviours. More-

⁵ In Elliott et al. (2017) the Theory of Planned Behaviour (TPB) was used as a baseline comparator to test the PWM.

over, the study discusses willingness to speak up which is a pro-social behaviour, whereas similar road safety research has primarily looked at risk taking behaviour.

Despite the above strength, there are some limitations of the current study which need to be acknowledged. First, the sample comprised of only 136 participants and was disproportionate in relation to gender, with considerably fewer males than females, and more university students compared to participants from the general population. This has an impact on the generalizability of the data and its application to the general population. It is recommended that future research comprise of a larger sample size recruited from the general population and with an equal number of males and females. As previous research has found that gender of the driver and/or passenger(s) may influence speeding behaviour (Chen et al., 2000; Simons-Morton et al., 2005), it is also recommended that future research take into account gender of the driver and/or other passenger(s) when measuring an individuals' willingness to speak up. In regard to measures used, it is important to consider the limitations of utilising self-report as a data-collection method, since perceptual error or response bias could have impacted the participant's responses and subsequently the accuracy of the results (van de Mortel, 2008). Further, the two conditions were not counterbalanced, with questions relating to the 5 km/hr condition presented first to all participants, followed by the questions relating to the 10 km/hr condition.

Additionally, the prototype scales for both the 5 km/h and 10 km/h levels did not produce Cronbach's Alphas of above 0.70, therefore the reliability of the measurement's consistency was questionable. Furthermore, the scales used to measure subjective norms, risk perception, and willingness consisted only of one item each. This was a limitation as the validity of the measures, particularly content-validity (Field, 2009), was questionable. It is suggested that when measuring these constructs, future research use scales with multiple items to ensure the full range of the construct is being measured. Further, a correlation analysis was used to assess the relationships between key PMW variables. It is important to note that correlation does not equal causation and other constructs which were not measured in the current study may have impacted upon these relationships.

To further increase internal and ecological validity, future research could include the use of written scenarios to further assess passengers' risk perception and willingness to speak up to drivers engaging in on-road risky driving behaviour. The use of written scenarios to assess intentions to engage in risky driving behaviours has been used successfully in previous studies (e.g., Cristea & Delhomme, 2016; Forward, 2009). Another area of interest would be to examine how speed is perceived in different speed zones. For example, an individual may perceive travelling 110 km/h in a 100 km/h zone as appropriate but view travelling 70 km/h in a 60 km/h zone as inappropriate. Additionally, the current study did not assess whether there would be a difference in willingness to speak up dependent on the passenger's relationship with the driver. Research has shown that the relationship between the passenger and the driver can have an impact on driving behaviour (e.g. Aldridge et al., 1999; Megías et al., 2014), hence it could be suggested that passengers may also be influenced by this factor. Cultural differences also extend to driving behaviour, as different countries often tend to vary in their road rules and regulations (Department of Foreign Affairs and Trade, 2019). One study investigated cross-cultural differences in drivers' attitudes, risk perception and risk willingness between a number of European, Asian, and African countries (Nordfjærn et al., 2011). The findings indicated that countries varied across these variables. However, there is limited research on how these cross-cultural differences vary amongst passenger pro-social behaviour.

5. Conclusion

This study contributed to road safety research by applying the PWM to a pro-social behaviour of young adult passengers. The study contributed to the expanding area of road safety literature in a unique way, by shifting focus from the behaviour of drivers to the behaviour of passengers. The focus on the pro-social behaviour of speaking up may help to inform educational campaigns and interventions. For instance, campaigns and interventions could promote passengers speaking up to drivers engaging in on-road risky driving behaviours. The current study highlights a need for further investigation into the precursors of passenger willingness to speak up to drivers performing illegal behaviours. It is imperative that research continues to be conducted, in order to gain a greater understanding of passenger willingness, potentially contributing to the reduction of road crashes, injuries and fatalities of young people.

CRedit authorship contribution statement

Madison Basse: Conceptualization, Methodology, Formal analysis, Writing - original draft, Funding acquisition. **Divera Twisk:** Conceptualization, Methodology, Writing - review & editing, Supervision. **Sherrie-Anne Kaye:** Conceptualization, Methodology, Writing - review & editing, Supervision.

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