Identifying the determinants of concealed and obvious texting while driving: Are they distinct behaviours?

Gauld, C.[1] Lewis, I.[1] & White, K.M.[2]

[1] Centre for Accident Research and Road Safety, Queensland University of Technology

[2] School of Psychology and Counselling, Queensland University of Technology

Abstract

Concealed texting (CT) while driving involves a conscious effort to hide one's texting while obvious texting (OT) does not involve such efforts to conceal the behaviour. Young drivers are the most frequent users of mobile phones while driving which is associated with heightened crash risk. This study investigated the extent to which CT and OT may be discrete behaviours to ascertain whether countermeasures would need to utilise distinct approaches. An extended Theory of Planned Behaviour (TPB) including moral norm, mobile phone involvement, and anticipated regret guided the research. Participants (n = 171) were aged 17 to 25 years, owned a mobile phone, had a current driver's licence, and resided in Queensland. A repeated measures MANOVA found significant differences between CT and OT on all standard and extended TPB constructs. Hierarchical multiple regression analyses showed the standard TPB constructs accounted for 68.7% and 54.6% of the variance in intentions to engage in CT and OT, respectively. The extended predictors contributed additional variance in intentions over and above the standard TPB constructs. Further, in the final regression model, differences emerged in the significant predictors of each type of texting. These findings provide initial evidence that CT and OT are distinct behaviours. This distinction is important to the extent that it may influence the nature of advertising countermeasures aimed at reducing/preventing young drivers' engagement in these risky behaviours.

Keywords

Texting, Young drivers, Theory of planned behaviour, Moral norm, Mobile phone involvement, Anticipated regret

Introduction

Ninety-eight percent of young Australians aged 15 to 24 years have a mobile phone, and 79% report using it while driving (Petroulis, 2011). A study by the National Roads and Motorists' Association (NRMA) Insurance found that 88% of NSW drivers make calls while driving, and 68% send text messages (Campbell, 2012). Despite the fact that 17 to 25 year olds are represented in over 25% of deaths in road crash fatalities (Department of Infrastructure and Transport [DIT], 2013) yet constitute only 12.1% of the population (Australian Bureau of Statistics [ABS], 2012), younger drivers aged 18 to 30 years are more likely to use a mobile phone while driving (McEvoy et al., 2006). General mobile phone use (including talking and texting) while driving has been associated with a two to fourfold increase in the chance of road crash (Svenson & Patten, 2005).

Texting while driving may be more dangerous than talking on a mobile phone while driving as it involves higher levels of cognitive distraction (e.g., reading and composing a text message), physical distraction (e.g., finding the phone), and visual distraction (e.g., eyes focusing inside the car) (Drews et al., 2009). As the most prolific users of text messaging

services, 15 to 24 year olds, therefore, appear to have a heightened crash risk (WHO, 2011). A simulated driving study at Monash University Accident Research Centre in Victoria found that novice drivers aged between 18 and 21 years spent 400% more time looking away from the road when they were texting than when they were not texting (Hosking et al., 2006). Despite this distraction and regardless of the illegal nature of using a handheld mobile phone while driving in Australia, drivers continue to send and receive text messages.

It has been suggested that laws banning texting are not having the desired effect as they are difficult to implement or enforce, that is, it is difficult to catch a driver texting (Farris, 2011; Gilbert et al., 2010). Texting is a sporadic activity and may not be clearly seen from outside the vehicle due to privacy mechanisms in the car (e.g., tinted windows) or the driver consciously and deliberately concealing their behaviour to avoid being fined (Farris, 2011; Gilbert et al., 2010). Gilbert et al. (2010) distinguished between 'upward texters' (i.e., drivers who hold their phone above the steering wheel) and 'downward texters' (drivers who position their phone below the dashboard), with 'upward texters' being easier to apprehend. The US Highway Loss Data Institute (2010) investigated 3,313,507 collision claims from 30 US states to determine whether recently introduced laws banning motorists from texting had resulted in reduced collision claims. Results of regression analyses showed that, rather than reducing collision claims, there had been a small increase. This finding supports the idea that drivers may be responding to the law by continuing to text, but in a more dangerous, concealed manner (Highway Loss Data Institute, 2010). Generally speaking, concealed texting (CT) while driving involves a conscious effort to hide one's texting while obvious texting (OT) does not involve such efforts to conceal the behaviour. As concealed texting while driving is therefore less easily policed than other major road safety issues, such as speeding and drink-driving, there is a need to investigate alternate measures that could potentially reduce the prevalence of this behaviour to support enforcement efforts. One such method is to investigate the underlying motivations of texting (both CT and OT) while driving that may provide focal points for the development of alternate preventative measures such as advertising and public education strategies.

While previous studies have tended to focus on general mobile phone use and thus, tended to regard talking and texting as a homogenous general phone use behaviour, a few studies (e.g., Nemme & White, 2010; Walsh et al., 2007) have found support for talking and texting as distinct behaviours (i.e., with different factors found to predict people's intentions to engage in such behaviours). Although these previous studies did not refer specifically to whether or not they were investigating CT, it is likely this behaviour may have been included inadvertently, along with OT. A study of CT as a discrete and particularly problematic form of texting behaviour requiring further diversion from the task of driving would build on this emerging idea that general mobile phone use while driving may be more complex than first considered, comprising a number of distinct sub-behaviours. Further, an investigation into whether CT and OT are different behaviours with different underlying motivations would help determine if these two behaviours require different countermeasure focal points.

The Theory of Planned Behaviour ([TPB], Ajzen, 1985) is a well-validated decision-making model that has been utilised successfully to predict people's intention across a range of behaviours including general mobile phone use while driving (e.g., Walsh et al., 2007; White et al., 2010) and general texting (i.e., not defined explicitly as CT or otherwise) while driving (e.g., Nemme & White, 2010). It follows, then, that the TPB should also be an effective model for predicting both CT and OT while driving. In the current study it was hypothesised that the standard TPB constructs of attitude (i.e., how favourably a behaviour is viewed),

subjective norm (i.e., the perceived social pressure to perform or not perform the behaviour and comply with social standards), and perceived behavioural control (PBC; the perceived ease or difficulty of performing the behaviour) would predict drivers' intentions to text in a concealed manner in the next week, and these constructs would also predict drivers' intentions to text in an obvious manner in the next week. Thus, it was expected that, for both CT and OT, a more favourable attitude towards texting, more pressure felt from significant others to text, and a greater sense of control over texting while driving would lead to stronger intentions to do so. As previous studies (e.g., Nemme & White, 2010; Walsh et al., 2007) have found support for talking and texting as distinct behaviours, it is expected that the total variance explained by the standard constructs will be different for CT and OT. As the TPB posits that the relative importance of each of these constructs varies across behaviours and situations (Ajzen, 1991), it is expected that the individual contribution of each of the standard constructs will be different for these two behaviours. It is also predicted that there will be significant differences between the means of each of these standard constructs for CT and OT.

It has been suggested that extending the TPB to include other predictors may help account for additional variance in behavioural decisions over and above the standard TPB constructs (Ajzen, 1991, 2011; Conner & Armitage, 1998). In light of this suggestion, and based on empirical evidence, the current study extended the TPB to include the additional predictors of moral norm, mobile phone involvement, and anticipated regret. Moral norm refers to a person's sense of moral obligation in terms of deciding what is right and wrong based on society's values to perform a behaviour or not (Ajzen, 1991). The addition of moral norm may be worthwhile in certain contexts, such as when investigating unethical or illegal behaviours (Ajzen, 1991). Further, studies have produced mixed results for the predictive validity of the standard TPB construct of subjective norm, which has led to the suggestion that personal normative influences on intentions may be explained by moral norm (Ajzen, 1991; Beck & Ajzen, 1991). As texting while driving (both CT and OT) are illegal behaviours, it follows, then, that people's intention to engage in them may involve moral considerations (Ajzen, 1991; Conner & Armitage, 1998). Nemme and White (2010) investigated psychosocial influences of sending and receiving texts in general while driving among young people and found that moral norm significantly predicted people's intention. Consistent with this previous research finding, it was hypothesised that young people who regard CT and OT while driving as an immoral behaviour will be less likely to intend to engage in these behaviours.

Mobile phone 'involvement' is a construct that encompasses additional ways that people interact with their phone when they are not using it to communicate with others (e.g., checking for missed calls, thinking about their phone) (Walsh et al., 2010). To measure this construct, Walsh et al. (2010) developed the Mobile Phone Involvement Questionnaire (MPIQ) which measures the relationship between addictive tendencies and mobile phone use. The MPIQ has been found to be a reliable measure of the predictors of mobile phone use and mobile phone involvement in 15 to 24 year olds (Walsh et al., 2010). It has been suggested that the more involved people are with their mobile phones, the more likely they are to engage in behaviours with potential negative outcomes as the perceived need for constant connection supersedes the perception of danger (White et al., 2012). In support of this notion, White et al. (2012) found that mobile phone involvement significantly predicted young people's intentions to use a mobile phone (i.e., making and receiving calls, sending and reading text messages) while driving. It was expected therefore in the current study that participants who had a higher involvement with their mobile phone would be more likely to intend to text while driving in both an obvious and concealed manner.

The traditional TPB constructs do not recognise the contribution that affect and emotions may play in influencing intentions (Ajzen, 1991, 2011). However, as affect appears to be able to influence salient beliefs, it is possible that affect can influence intentions more directly and, indeed, inclusions of affective constructs in an extended model have been encouraged (Ajzen, 1991, 2011). Anticipated regret is an affective construct that has been shown to significantly influence people's intentions over and above the standard TPB constructs (Ajzen, 2011; Sandberg & Conner, 2008). This influence is more likely when consequences of performing the behaviour are likely to have a negative affective impact and the individual anticipates the regretful feeling that will occur after they perform the behaviour (Conner & Armitage, 1998). Conner et al. (2007) found anticipated regret to be a significant negative predictor of drivers' intention to exceed the speed limit and contributed an additional 2% of unique variance. As CT and OT while driving are also illegal and risky behaviours, it follows that they may be accompanied by increased feelings of anticipated regret. In the current study, it was expected that young people who scored high on anticipated regret for both CT and OT while driving would be less likely to intend to engage in these behaviours.

For the additional predictors in the current study it was hypothesised that moral norm, mobile phone involvement, and anticipated regret would together significantly account for additional variance in intentions over and above the standard TPB constructs for both CT and OT. It is also expected that there will be significant differences between the means for each of the additional constructs. In addition, and as this study is exploratory in nature with regard to the differences between CT and OT, differences in the significant predictors of intention between CT and OT were expected.

The aim of this study, therefore, was to address the gap in the current evidence and explore whether CT while driving and OT while driving may be distinct behaviours among young drivers, aged 17 to 25 years. To establish that such behaviours are distinct would support the use of different approaches to countermeasure development in terms of key foci for challenging underpinning motivations and provide support to the current enforcement efforts. An extended model of the TPB was used, with the additional predictors of moral norm, mobile phone involvement, and anticipated regret.

Methodology

Participants (n = 171, 126 females, 37 males, 8 unreported) were mainly first year psychology students (n = 110) recruited at lectures or self-selected via an online recruitment system at a large Australian university. Extra participants (n = 61) were recruited from other faculties on the campus grounds and from snowballing techniques. All participants were required to be between 17 and 25 years of age (M = 20.0, *Mode* = 18, SD = 2.4), own a mobile phone (79.5% had a touchscreen phone, 10.5% had a phone with a keypad), and have a current drivers licence (84.2% had an open or provisional licence, 10.5% had a learner's licence). In addition, 60.2% had completed high school as their highest level of education. On average, the participants reported driving 6.9 hours per week (SD = 4.9) in either an automatic (52.6%) or a manual car (42.1%). Most participants had the option of either completing the online (n = 83) or hard copy (n = 88) version of the questionnaire. For their participation, first year psychology students received course credit while all other participants were eligible to enter the draw for one of three $AUD50 store vouchers.

Initial focus groups were conducted (n = 12) to determine a suitable definition of both CT and OT while driving as an initial investigation into whether they are perceived as distinct

behaviours. From these discussions, CT while driving was defined as "making a conscious effort to hide the fact that you are texting while driving (e.g., by hiding your phone below the window or steering wheel). In doing so, it is not obvious to people outside your vehicle that you are texting". OT while driving was defined as "not making a conscious effort to hide the fact that you are texting while driving. In doing so, it may be obvious to people outside your vehicle that you are texting".

The questionnaire was based on the standard TPB self-report format regarding attitude (e.g., "For me, texting in concealed manner while driving in the next week would be (1) *Harmful* to (7) *Harmless*"), subjective norm (e.g., "People important to me would want me to text in a concealed manner while driving in the next week"), PBC (e.g., "I am confident that I could text in a concealed manner while driving and still drive safely"), and intention (e.g., "I intend to text in a concealed manner while driving in the next week") (Fishbein & Ajzen, 2009). It also included the additional predictors of moral norm (e.g., "It would be against my principles to text in a concealed manner while driving"), mobile phone involvement (e.g., "I often think about my mobile phone when I am not using it"), and anticipated regret (e.g., "If I text in a concealed manner in the next week I would feel regret"). As outlined in Fishbein and Ajzen (2009), the questions were framed in terms of reference to the target behaviour, action, context, and time. Thus, the target behaviours were "texting in a concealed manner while driving in the next week" and "texting in an obvious manner while driving in the next week". All scales were reliable with Cronbach's alpha ranging from .86 to .91. Most items were scored on a seven-point likert scale of (1) *strongly disagree* to (7) *strongly agree.* The questionnaire also assessed demographic data (e.g., gender, age, education level). Return of a completed questionnaire was considered provision of consent to participate.

Results

Table 1 describes how often participants reported engaging in CT while driving and OT while driving. Differences emerged in the reported frequencies of these two behaviours, showing CT while driving to be a more common behaviour than OT while driving. For example, 50.9% of participants reported sending a text message in a concealed manner at least 1 to 2 times per week, while 24% reported sending a text message in an obvious manner at least 1 to 2 times per week. In addition, 60.8% reported reading a text message in a concealed manner while driving at least 1 to 2 times per week and 31.6% reported reading a text message in an obvious manner while driving at least 1 to 2 times per week. Independent samples t-tests showed that there were no significant gender differences with regard to the frequency of engagement in CT and OT.

Table 1

Reported Frequencies (%) of CT and OT While Driving

How often do you do the following while driving:	More than once per day	Daily	1 – 2 times per week	1 – 2 times per month	1 – 2 times per 6 months	Once a year	Never
Send a text message in a:							
Concealed manner?	9.4%	14.6%	26.9%	11.1%	7.6%	1.8%	28.7%
Obvious manner?	5.8%	5.3%	12.9%	14.6%	7.6%	12.3%	39.2%
Read a text message in a:							
Concealed manner?	11.1%	21.6%	28.1%	9.9%	4.7%	5.3%	19.3%
Obvious manner?	6.4%	8.2%	17.0%	15.2%	8.2%	9.4%	33.9%

To determine whether CT and OT while driving represented two distinct behaviours, a repeated measures MANOVA was conducted comparing these two behaviours on the

standard and extended TPB constructs (i.e., attitude, subjective norm, PBC, moral norm, anticipated regret, and intention) (see Table 2). Findings showed significant differences between CT and OT for all of the constructs with all mean scores higher for CT than OT while driving, except for moral norm and anticipated regret where the mean for OT was higher (Wilks's $\Lambda = .61$, $F(6, 153) = 16.09$, $p < .001$).

Table 2
Means, Standard Deviations, and Mean Differences Comparing CT and OT While Driving

	Intention		Attitude		Subjective norm		PBC		Moral norm		Anticipated regret	
	CT	OT	CT	OT	CT	OT	CT	OT	CT	OT	CT	OT
M	3.43	2.39	2.89	2.05	2.02	1.69	4.45	3.71	4.39	4.92	4.12	4.53
SD	1.75	1.42	1.37	1.18	1.12	0.92	1.65	1.72	1.54	1.46	1.65	1.67
Mean Difference	1.04***		0.84***		0.33***		0.74***		-0.53***		-0.41***	

Note. *M* = mean; *SD* = standard deviation.
*** $p < .001$.

Means, standard deviations, and bivariate correlations for the independent variables and dependent variables for CT and OT while driving are presented in Table 3. For both CT and OT, all of the standard TPB predictor variables were significantly and positively correlated with intention. Of the extended predictor variables, mobile phone involvement was significantly and positively correlated with intention and moral norm and anticipated regret both had significant negative correlations with intention for both CT and OT.

Table 3
Means, Standard Deviations and Bivariate Correlations for Standard and Extended TPB Constructs for CT and OT

		1	2	3	4	5	6	7	*M*	*SD*
1.	Intention	-	.76***	.42***	.75***	-.65***	.41**	-.46***	3.43	1.75
2.	Attitude	.67***	-	.42***	.64**	-.63***	.27***	-.53***	2.89	1.37
3.	Subjective norm	.42***	.41***	-	.33***	-.22**	.24**	-.31***	2.02	1.12
4.	PBC	.56***	.46***	.22**	-	-.55***	.18*	-.44***	4.45	1.65
5.	Moral norm	-.63***	-.56***	-.19*	-.39***	-	-.22**	.71**	4.39	1.57
6.	Mobile phone involvement	.20*	.18*	.18*	.01	-.16**	-	-.05	4.04	1.18
7.	Anticipated regret	-.44***	-.43***	-.15*	-.37***	-.39***	.05	-	4.12	1.65
	M	2.39	2.05	1.69	3.71	4.92	4.04	4.53	-	
	SD	1.42	1.18	0.92	1.72	1.46	1.18	1.67		-

Note. *M* = mean; *SD* = standard deviation. Correlations, means and standard deviations above the diagonal are for CT; Correlations, means and standard deviations below the diagonal are for OT.
* $p < .05$. ** $p < .01$. ***$p < .001$.

Two hierarchical multiple regression analyses were conducted to determine the extent to which the standard TPB constructs predicted young people's intention to text in a concealed manner while driving and to text in an obvious manner while driving. The analyses also investigated the extent to which the extended variables predicted intention, over and above the standard TPB constructs. Tables 4 and 5 display the results of the regression analyses for CT and OT while driving, respectively. As shown, the TPB variables of attitude, subjective norm, and PBC entered into step 1, and the extended variables of moral norm, anticipated regret, and mobile phone involvement entered into step 2. This approach enabled the determination of the extent to which the TPB was able to explain intention as well as the extent to which the additional predictors explained variance over and above the standard TPB constructs.

For CT, results showed that the standard TPB variables entered at step 1 accounted for a significant 68.7% (68.1% adjusted) of the variance in intention to conceal texting while driving, $R^2 = .69$, $F(3,152) = 111.24$, $p < .001$. The addition of the extended TPB variables at step 2 added a significant 6.0% (5.6% adjusted) to the prediction of intention, $\Delta R^2 = .06$, $\Delta F(3, 149) = 11.73$, $p < .001$. Overall, model 2, containing both the standard and extended TPB constructs, was significant, $F(6, 149) = 73.26$, $p < .001$, with the significant predictors of intention being, in order of beta weight, PBC, attitude, moral norm, mobile phone involvement and subjective norm.

For OT, results showed that the standard TPB variables entered at step 1 accounted for a significant 54.6% (53.7% adjusted) of the variance in intention to engage in OT while driving, $R^2 = .55$, $F(3,155) = 62.06$, $p < .001$. The addition of the extended TPB variables at step 2 added a significant 9.4% (8.8% adjusted) to the prediction of intention, $\Delta R^2 = .094$, $\Delta F(3, 152) = 13.15$, $p < .001$. Overall, model 2, containing both the standard and extended TPB constructs, was significant, $F(6, 152) = 44.89$, $p < .001$, with the significant predictors of intention being, in order of beta weight, moral norm, PBC, attitude, and subjective norm.

Table 4

Hierarchical Multiple Regression Analysis with Standard and Extended TPB Constructs for CT

	Variable	*B* [95% CI]	β	R^2	ΔR^2	sr^2
Step 1	Attitude	0.53 [0.37, 0.69]	.42***	.69***	.69***	.09
	Subjective Norm	0.16 [0.00, 0.31]	.10*			.01
	PBC	0.46 [0.33, 0.59]	.44***			.10
Step 2	Attitude	0.38 [0.22, 0.54]	.30***	.75***	.06***	.04
	Subjective Norm	0.16 [0.01, 0.30]	.10*			.01
	PBC	0.37 [0.25, 0.50]	.36***			.06
	Moral Norm	-0.31 [-0.48, -0.14]	-.27***			.02
	Mobile Phone Involvement	0.26 [0.13, 0.39]	.18***			.03
	Anticipated Regret	0.10 [-0.04, 0.23]	.10			.00

Note. *B* = unstandardised regression coefficient; β = standardised regression coefficient; sr^2 = squared semi-partial correlations

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5

Hierarchical Multiple Regression Analysis with Standard and Extended TPB Constructs for OT

	Variable	*B* [95% CI]	β	R^2	ΔR^2	sr^2
Step 1	Attitude	0.55 [0.39, 0.70]	.46***	.55***	.55***	.15
	Subjective Norm	0.21 [0.03, 0.40]	.13*			.01
	PBC	0.27 [0.17, 0.37]	.33***			.09
Step 2	Attitude	0.31 [0.16, 0.47]	.26***	.64***	.09***	.04
	Subjective Norm	0.22 [0.04, 0.39]	.13*			.01
	PBC	0.23 [0.14, 0.32]	.28***			.06
	Moral Norm	-0.40 [-0.55, -0.25]	-.41***			.07
	Mobile Phone Involvement	0.07 [-0.05, 0.19]	.06			.00
	Anticipated Regret	0.07 [-0.06, 0.19]	.07			.00

Note. *B* = unstandardised regression coefficient; β = standardised regression coefficient; sr^2 = squared semi-partial correlations

* $p < .05$. ** $p < .01$. *** $p < .001$.

To check for the effects of demographic variables, two additional regressions (one for CT and one for OT) were performed with gender, car type, and number of driving hours per week in step one. The overall pattern of results was the same for both CT and OT and the

demographic variables were not significant indicating that, as proposed by Ajzen (1991) the TPB accounted for the variance explained by these demographics.

Discussion

The aim of the current study was to provide an initial investigation into whether CT and OT while driving may be distinct behaviours among young drivers, aged 17 to 25 years. In support of the study's premise that drivers may be responding to texting bans by deliberately and consciously attempting to conceal their behaviour (Farris, 2011; Gilbert et al., 2010; Highway Loss Data Institute, 2010), this study showed that CT is a more prevalent behaviour among young drivers than OT. This study found 50.9% of participants reported sending a text message in a concealed manner while driving at least 1 to 2 times per week and 24% reported carrying out the same behaviour in an obvious manner. In addition, 60.8% of participants reported reading a text message in a concealed manner while driving at least 1 to 2 times per week and 31.6% reported carrying out the same behaviour in an obvious manner. In addition, significant differences were found between the means for CT and OT while driving for each of the standard and extended TPB constructs, with the mean for CT higher for all constructs except for moral norm and anticipated regret. As CT while driving is a more risky and deliberate behaviour, the driver may require a stronger conviction and conscious effort to execute this behaviour.

Overall, there was support for the ability of the standard TPB constructs to independently predict both CT and OT while driving with attitude, subjective norm and PBC all emerging as significant predictors in the final model for both behaviours. These findings mean that the more positive attitude towards CT and OT while driving, the more participants believed these behaviours would be approved of by important referents (subjective norm), and the greater the perception of control over these behaviours (PBC) were associated with a higher intention to engage in these behaviours. The amount of variance in intention explained by the standard constructs together was, as predicted, different for CT (68.7%) and OT (54.6%). There was also support for the ability of the additional predictors to significantly account for additional variance in intentions over and above the standard TPB constructs and the amount of additional variance explained by the extended constructs, together, different for the two behaviours (6% for CT and 9% for OT).

For CT while driving, mobile phone involvement (3% unique variance) and moral norm (2% unique variance) emerged as significant predictors in the final model; however, anticipated regret did not. This finding suggests that young drivers who have a higher degree of involvement with their phone are more likely to intend to text in a concealed manner while driving and young drivers who believe it is an immoral behavior are less likely to intend to text in a concealed manner while driving. For CT while driving, the final model explained 75% of the variance in intention. For OT while driving, moral norm was the only significant (additional) predictor, explaining 7% of the unique variance in intention, with the final model explaining 64% of the variance in intention

Comparisons with previous research are somewhat tenuous given they investigated texting in general while driving as opposed to explicitly defining texting as concealed or obvious. With this caveat in mind, previous research utilising the TPB to investigate texting in general while driving found that the TPB constructs accounted for between 11% and 28.9% of the variance in intention (Nemme & White, 2010; Walsh et al., 2007). In this study, the standard TPB variables accounted for 68.7% of variance in intention to conceal texting while driving and

54.6% of variance in intention to text in an obvious manner while driving. It appears that, as anticipated, the TPB may be an effective model to explain these illegal behaviours, particularly CT while driving which may require a greater degree of rational decision making as drivers consciously try to conceal their actions.

Consistent with previous studies, which have shown mixed support for the predictive utility of subjective norm, the current study also found subjective norm, although significant, to be a relatively weak predictor of CT ($\beta = .10$, $p < .05$) and OT ($\beta = .13$, $p < .05$) when compared to attitude and PBC. The idea that this relative weakness may be addressed by the inclusion of moral norm, particularly when the behavior involves ethical considerations, (Ajzen, 1991; Beck & Ajzen, 1991; Conner & Armitage, 1998) was supported in the current study. Moral norm accounted for 2% and 7% of unique variance in intention to text in a concealed manner and an obvious manner while driving, respectively. This finding suggests that young drivers who see texting while driving to be an immoral behaviour are less likely to intend to carry it out, and this tendency is particularly the case for OT, perhaps because OT appears to represent such an blatant disregard for the law banning texting while driving. Although they did not examine CT or OT explicitly, this study's results align with Nemme and White's (2010) finding that moral norm was a significant predictor of both sending and reading text messages while driving.

This study found that participants who scored higher on mobile phone involvement, suggesting they have higher levels of behavioural and cognitive association with their phones, were more likely to text in a concealed manner, but not in an obvious manner, while driving. White et al. (2012) found that mobile phone involvement was a significant predictor of mobile phone use (in general) while driving over and above the standard TPB constructs. This suggests that the more involved a young driver is with their mobile phone, the more likely they are to believe that staying connected with others is more important than the potential negative consequences of engaging in risky behaviours (White et al., 2012). The significant amount of variance in intention to conceal texting while driving accounted for by mobile phone involvement in the present study, suggests that young drivers' perceived need for connectedness may override their perceived risk of engaging in these illegal and risky behaviours. In support of this idea, previous studies have shown that, despite the illegal nature of mobile phone use in general while driving, the persistence of these behaviours may be due to the perceived benefits outweighing the perceived risks, such as crashes or police apprehension (Svenson & Patten, 2005). In the current study, the perceived benefits of CT while driving may be more likely to outweigh the perceived risks as CT, by its very nature, is a more difficult behavior to police and enforce than OT while driving.

Anticipated regret did not emerge as a significant predictor for either CT or OT in the current study. This result does not support the hypothesis that those who score higher on anticipated regret would be less likely to engage in these behaviours. It has been suggested that anticipated regret could be measured both with regard to performing the behaviour and to not performing the behaviour, with the latter representing a different construct (Fishbein & Ajzen, 2009, Sandberg & Conner, 2008) with a distinct goal system (Richetin, Conner, & Perugini, 2011). Sandberg and Conner (2008) suggested future research could divide anticipated regret into both anticipated 'action regret' and anticipated 'inaction regret' rather than only investigate the composite construct comprised of these two forms of regret. Therefore, consequences of inaction, such as not returning a friend's text message while driving, may indeed have a greater negative affective impact than the negative affective

impact associated with the action of engaging in this risky and illegal behaviour. Future studies could consider this concept.

Enforcement alone does not currently appear to be effective in preventing drivers texting while they are driving (Farris, 2011; Gilbert et al., 2010; Highway Loss Data Institute, 2010) and it remains unlikely that technological advancements and legislative changes will be introduced in the near future which will completely ban mobile phones being used while a car is moving. The current study, therefore, focused on the motivations which influence individual drivers to engage in these behaviours that may provide focal points for advertising countermeasures aimed to persuade individual drivers to reduce their engagement in these risky behaviours. Given the greater reported incidence of CT, as well as the significantly stronger attitude, subjective norm, PBC, and intention for CT rather than for OT while driving, a focus on CT may be worthwhile. Irrespective of whether the texting is obvious or concealed, advertising efforts should challenge the positive attitude (and benefits) of texting while driving, challenge the ease with which drivers believe they are able to text while driving (PBC) (e.g., by showing drivers swerving and crossing the median strip while engaging in these behaviours), and focus on the disapproving influence of important referents, such as parents and partners (subjective norm). For moral norm, especially in the case of OT where it had the highest beta weight, intervention strategies could emphasise the illegal nature of these behaviours and the importance of adhering to the road rules. In relation to mobile phone involvement which emerged as a significant predictor for CT specifically, advertising efforts could also challenge individuals' perceived need to constantly be connected to others by highlighting the importance of getting to their destination safely over texting an immediate reply. A focus on the comparative insignificance of having a friend wait for a reply compared to the potentially fatal consequences associated with the visual, cognitive, and physical diversion from the primary task of driving associated with CT, may encourage young drivers to reconsider engaging in this behaviour.

Limitations

The use of a self-report measure for illegal behaviours may have caused some participants to respond according to social desirability (Beck and Ajzen, 1991). The outcome behaviours in the regression analyses (i.e., intentions to CT and OT) were self-reported intentions and it is unknown whether they are reflected in actual behaviours; however it is hoped that the anonymous nature of the survey encouraged accurate self-reporting. There may have been variability in participants' interpretation of the phrase 'texting while driving' (e.g., does it include texting while stopped at traffic lights?) implying that composite, rather than individual, behaviours were being investigated. This possibility could be addressed in future studies by providing a more detailed definition of CT that includes particular situations (e.g., only while the car wheels are in motion). Finally, future studies should include more males as the sample in this study was comprised of 78% females, potentially limiting the study's generalisability.

Conclusion

The current study provides initial support for the idea that CT and OT while driving are distinct behaviours with different underlying motivations. Although both CT and OT while driving are pervasive road safety issues, particularly among young drivers, it may be argued that CT while driving is more risky as the driver's eyes are drawn downwards inside the vehicle and away from the road. In addition, enforcement of texting while driving bans

appear particularly difficult as drivers increasingly choose to conceal their texting to avoid apprehension (Farris, 2011; Gilbert et al., 2010; Highway Loss Data Institute, 2010). Studies such as the present one, therefore, may provide focal points for alternate countermeasure development, such as advertising and public education strategies, aimed at making young people reconsider deliberately engaging in these very risky driving behaviours. By providing support for CT and OT as distinct behaviours, different approaches to countermeasure development and message content may be required to provide support for the current enforcement efforts.

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