



Young drivers' engagement with social interactive technology on their smartphone: Critical beliefs to target in public education messages



Cassandra S. Gauld^{a,*}, Ioni M. Lewis^a, Katherine M. White^b, Barry Watson^{a,c}

^a Queensland University of Technology, Centre for Accident Research and Road Safety—Queensland (CARRS-Q), Kelvin Grove Campus, Kelvin Grove, 4059, Australia

^b Queensland University of Technology, School of Psychology and Counselling, Kelvin Grove Campus, Kelvin Grove, 4059, Australia

^c Global Road Safety Partnership, International Fédération of Red Cross & Red Crescent Sociétés, Route de Pré-Bois 1, CH-1214, Vernier, Switzerland

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ABSTRACT

The current study forms part of a larger study based on the Step Approach to Message Design and Testing (SatMDT), a new and innovative framework designed to guide the development and evaluation of health communication messages, including road safety messages. This four step framework is based on several theories, including the Theory of Planned Behaviour. The current study followed steps one and two of the SatMDT framework and utilised a quantitative survey to validate salient beliefs (behavioural, normative, and control) about initiating, monitoring/reading, and responding to social interactive technology on smartphones by $N = 114$ (88 F, 26 M) young drivers aged 17–25 years. These beliefs had been elicited in a prior in-depth qualitative study. A subsequent critical beliefs analysis identified seven beliefs as potential targets for public education messages, including, 'slow-moving traffic' (control belief – facilitator) for both monitoring/reading and responding behaviours; 'feeling at ease that you had received an expected communication' (behavioural belief – advantage) for monitoring/reading behaviour; and 'friends/peers more likely to approve' (normative belief) for responding behaviour. Potential message content targeting these seven critical beliefs is discussed in accordance with the SatMDT.

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1. Introduction

Smartphones are a type of mobile phone with a range of functions superior to a standard mobile phone and similar to a computer. The term 'interactive technology' broadly encompasses functions that respond to user actions which, in turn, may cause the user to respond further (Interactive Technology Learning Curriculum, 2012). Social interactive technology accessible on smartphones allows the user to communicate with other people and includes social networking sites (e.g., Facebook, Twitter), emails, and also texting and calling. The idea that people communicate with others through a range of media (e.g., Skype, Facebook, phone calls) has been termed 'media multiplexity' and is increasingly characteristic of modern relationships (Baym, 2015). A recent Australian survey of over 2000 adults aged over 16 years from metropolitan and regional centres found that 75% of Australian mobile phone owners now have smartphones. This figure

has more than doubled in the past three years and is expected to reach 91% by 2017 (Telstra, 2014).

The increased functionality of smartphones, compared to standard mobile phones, has meant that they have a greater potential to distract a driver. A survey of 415 drivers in the Australian state of New South Wales found that 68% had read emails and 25% had updated their Facebook status or tweeted while driving (National Roads and Motorists' Association [NRMA], 2012). Of particular concern is that drivers may be accessing the social interactive technologies in the hand-held mode (Rudin-Brown et al., 2013), thereby increasing crash risk. Additionally, as hand-held mobile phone use is illegal for all Australian drivers, drivers may be concealing their use from outside view, making detection and enforcement difficult (Rudin-Brown et al., 2013) and further diverting the driver's eyes from the road.

1.1. Young drivers

In Australia, young drivers aged 17–25 years constitute just 12.4% of the population (Australian Bureau of Statistics, 2015) yet are represented in over 20% of road crash fatalities (Department of

* Corresponding author.

E-mail addresses: c1.gauld@qut.edu.au, cassgauld@gmail.com (B. Watson).

Infrastructure and Regional Development, 2014). In the Australian state of Queensland, where the current study was conducted, learner drivers and provisional licence holders under the age of 25 years are not permitted to use any form of mobile phone, including hands-free. Despite this legislation, younger drivers aged 18–25 years are more likely than any other age group to use a mobile phone while driving (Australian Associated Motor Insurers [AAMI], 2012), particularly a smartphone. Indeed, an Australian survey of 3706 drivers of all ages found that young drivers aged 18–24 years were twice as likely to make a phone call and four times more likely to text than drivers over 50 years, and were more likely to read emails on their smartphones (AAMI, 2012). When asked to report the emotions that they experience in relation to their smartphone in a large American study, young people aged 18–29 years were more likely than any other age group to report feeling distracted (Smith, 2015). Such distraction, specifically the behaviours of dialling, reaching for a mobile phone, and sending or receiving text messages have been shown to significantly increase the risk of crash or near-crash of newly licensed drivers (Klauer et al., 2014). Young drivers' willingness to use a smartphone while driving and their greater propensity to feel distracted when they do so, combined with their relative lack of driving experience, significantly increases their chance of being involved in road trauma compared to more experienced drivers (Foss and Goodwin, 2014).

1.2. Initiating, monitoring/reading, and responding

There is a growing body of evidence that suggests mobile phone use comprises a number of distinct behaviours. Different motivations have been identified as underpinning driver behaviours such as sending and receiving text messages (Nemme and White, 2010), and obvious and concealed texting (Gauld et al., 2013). Few studies, however, have investigated the behaviours of initiating, monitoring/reading, and responding which could be broadly applied to the range of social interactive technologies. Waddell and Wiener (2014) found that drivers had greater intentions to engage in, and had reported more actual engagement in, responding behaviours than initiating behaviours and suggested that social pressure to respond may play an important role. Other research supports this conclusion, particularly within the population of young drivers (Atchley et al., 2011; Nemme and White, 2010). It is possible, therefore, that young drivers also feel a social pressure to respond when accessing additional social interactive technologies on their smartphones (e.g., email, Facebook).

Atchley et al. (2011) categorized texting behaviours into 'initiating', 'reading', and 'responding' and found that drivers perceived initiating and responding as having a similar level of risk as talking; whereas a significantly lower proportion of drivers believed that reading was more dangerous than talking. Contrary to these perceptions, recent experimental research has shown that simply hearing a notification (and not having follow-up contact with your phone) can significantly disrupt performance on an attention-demanding task at a magnitude similar to actual engagement with a call or text (Stothart et al., 2015).

1.3. Theoretical background

The current study forms part of a larger study that was guided by the Step approach to Message Design and Testing framework ([SatMDT]; Lewis et al., in press). The SatMDT is a new and innovative framework that was specifically designed to aid the development and evaluation of health communication messages, including road safety messages. The framework comprises four steps and is based on the underlying principles derived from social psychological theories of decision making and attitude-behaviour relations. The four main steps of the framework are: (1) identification of pre-existing

individual characteristics; (2) development of message-related characteristics; (3) individual responses; and (4) evaluation of message outcomes (Lewis et al., in press). The main theories underpinning the framework are the Theory of Planned Behaviour (TPB; Ajzen, 1985, 1991), the Extended Parallel Process Model (EPPM; Witte, 1992), The Elaboration Likelihood Model (ELM; Petty and Cacioppo, 1986), and Social Learning Theory (Bandura, 1969).

Of particular relevance to the current study are steps one and two of the SatMDT framework (see Fig. 1). Step one is mainly guided by the TPB and involves the elicitation of salient beliefs underlying each of the TPB standard constructs of attitude, subjective norm and perceived behavioural control (PBC) for the behaviour being investigated (see Gauld et al., 2016, for this prior belief elicitation study). According to the TPB, attitude is influenced by behavioural beliefs, namely, the advantages and disadvantages of performing the behaviour; subjective norm is influenced by normative beliefs relating to the extent that individuals regard specific others as approving or disapproving of a particular behaviour; and PBC is influenced by control beliefs which are based on past experience and the perceived ability to perform the behaviour, in terms of barriers and facilitators (Ajzen, 1985, 1991). This belief elicitation phase of TPB has been successfully utilised independently across a range of behaviours including general mobile phone use while driving (e.g., White et al., 2010), and concealed texting while driving (Gauld et al., 2014). According to step one of the SatMDT (Lewis et al., in press), validation (or verification) of the results of a small, in-depth belief elicitation qualitative study with a quantitative survey is then necessary to determine the extent to which the findings are representative of the target audience. Choice of analysis of the survey results then depends on the aim of the study and may, for example, involve investigating the differences in beliefs between low and high intenders to engage in behaviour of interest (e.g., Gauld et al., 2014; Lewis et al., 2013a,b) or identifying the critical beliefs regarding a particular behaviours (e.g., White et al., 2015).

Step two of the SatMDT guides the development of messages targeting these underlying beliefs. For example, the SatMDT recommends focusing on challenging the perceived benefits or highlighting the perceived disadvantages which were elicited in the belief analysis in step one of the framework. Underpinning step two of the SatMDT is also Social Learning Theory (Bandura, 1969) and includes important considerations such as emotional appeal type and positive or negative modelling of behaviour. Social Learning Theory posits that individuals learn via the social context through, for example, modelling and observational learning (Bandura, 1969). In relation to the SatMDT and in accordance with Social Learning Theory, modelling behaviour as a component of the key message content is an effective means of facilitating the development of new behaviours (Bandura, 1969). Typically, threat appeals depict risky behaviours and the possible negative consequences of such behaviours (e.g., a crash or fatality); however, emerging research suggests that positive emotion-based appeals may be particularly effective for young male drivers (Lewis et al., 2010, 2013a,b, 2007a,b). Depicting a more desirable behaviour and the associated positive outcomes (e.g., approval from peers), therefore, may also be an effective strategy to enhance persuasive effects of an advertisement.

The SatMDT emphasises the importance of including relevant strategies for reduction of the risky behaviour (i.e., response efficacy) in message content. Recommended strategies are elicited in the step one qualitative study, verified in the current study, and then included in message content (step two). Response efficacy was originally identified in the EPPM (Witte, 1992), and was recognised as a crucial component in the effectiveness of fear-based persuasion. Specifically, response efficacy involves the individual evaluating the effectiveness of the recommended response/strategy within the message (Witte, 1992). Response

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