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Texting and tombstones: Impact of mortality salience on risky driving intentions [☆]

Gabriel Frieze ^{*}, Lawrence D. Cohn

Department of Psychology, University of Texas at El Paso, United States

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ABSTRACT

Objective: This study investigated the impact of a new mortality salience (MS) manipulation on the intentions of young adults to drive a motor vehicle while texting or using a cell phone.

Methods: Four hundred and eight participants were randomly assigned to one of four experimental conditions. Participants in the MS condition were shown a color photograph of a gravesite and tombstone on which the *participant's name* was inscribed. Participants in the quasi-MS condition viewed a color photograph of a grave site and tombstone on which the *participant's family name* was inscribed. Participants in the two remaining non-MS conditions viewed color photographs depicting scenes unrelated to death. A 10-item scale assessed the extent to which a participant's self-image was linked to their cell phone use. The 20-item Positive and Negative Affect Schedule (PANAS) served as the distractor task, enabling images of death to fade from conscious awareness prior to completing the dependent measures.

Results: Both mortality salience manipulations *increased* negative attitudes toward driving while using a cell phone (DWCP) and *decreased* DWCP behavioral intentions. A subsequent test of an interaction between experimental condition and self-image scores on DWCP attitudes and intentions was non-significant.

Conclusion: Public health campaigns that personalize the risk of DWCP and link images of death to one's own health threatening behavior may increase negative attitudes towards DWCP and reduce DWCP intentions even after these images fade from conscious awareness. This finding is based on a new method of increasing mortality salience, which has implications for future mortality salience research, terror management theory, and the development of risky driving interventions.

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1. Introduction

An estimated 1.6 million motor vehicle crashes each year involve drivers who are texting or using cell phones, contributing to \$43 billion in economic losses and 424,000 injuries associated with distracted driving (Atchley, Atwood, & Boulton, 2011; Cohen & Graham, 2003; National Highway Traffic Safety Administration, 2013). Driving a motor vehicle while using a cell phone (DWCP) quadruples the risk of a motor vehicle crash by decreasing time spent scanning the roadway, decreasing

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^{*} Corresponding author at: School of Pharmacy, University of Texas at El Paso, El Paso, TX 79902, United States.

E-mail address: gafrieze@miners.utep.edu (G. Frieze).

reaction time to hazardous situations, increasing reaction time to traffic signals, and increasing lane deviations (Klauer et al., 2014; Lipova, Deric, Tesic, Andric, & Maric, 2017). Data from the 2017 National Youth Risk Behavior Surveillance System survey suggests that at least 39% of teenage drivers texted or e-mailed while driving a car during the month preceding the survey (Kann, McManus, Harris, et al., 2018). The risk of reading or typing a text message or e-mail while driving is higher in locales where cell phone bans are absent. For example, a representative sample of all U.S. households revealed that 50% of 18-year old drivers in locales where cell phone bans were absent reported reading or responding to texts or emails at least once while driving during the month preceding the survey (Rudisill, Smith, Chu, & Zhu, 2018). National survey data suggests that at least 68% of adult drivers in the United States drove a motor vehicle while using a cell phone at least once during the month preceding the 2011 survey, and 31% of adult drivers read or sent text messages or e-mail at least once during the month preceding the survey (Centers for Disease Control, 2013). The incidence of DWCP is highest among young adults. A 2010 national survey of drivers revealed that approximately two-thirds of 25–29 year olds reported DWCP behavior several times per week, and 43% of younger drivers (ages 18–24) reported texting while operating a motor vehicle (Braitman & McCart, 2010). In a study by Harrison (2011), approximately 91% of college students reported sending and receiving text messages while driving. Notably, an estimated 33% of drivers, ages 20–29, who were involved in fatal car crashes in 2015 were using cell phones (National Center for Statistics and Analysis, 2017).

The public health threat posed by DWCP has generated numerous media campaigns designed to reduce this high risk behavior. More than 300 anti-DWCP videos have been produced or circulated by state and local health departments, automobile companies, telephone companies, YouTube, and movie producers. These videos have been viewed more than 35 million times on YouTube, with additional exposure through Public Service Announcements on television. Anti-DWCP videos typically portray frightening automobile crashes that result in a driver's injury or death as a consequence of driving while using a cell phone. These videos are intended to decrease the frequency of DWCP by increasing the perceived risk of engaging in the behavior.

The proposed relationship between perceived threat and the adoption of protective behavior is a key component of several theories of risk appraisal and health behavior, including the health belief model (Hochbaum, Rosenstock, & Kegels, 1952), subjective expected utility theory (Fishburn, 1981), and protection motivation theory (Rogers, 1975). Such theories assume that individuals *consciously* evaluate risk information, weigh the perceived costs and benefits of health related behaviors, and then modify their actions accordingly. Several theories include an additional step in which individuals evaluate the efficacy of a recommended response as well as evaluate their own ability to initiate the response. Protection motivation theory (PMT) illustrates this framework (Rogers, 1975), and a meta-analysis of 65 protection motivation studies revealed that the adoption of health related behavior was significantly associated with increases in perceived threat and increases in perceived vulnerability (Floyd, Prentice-Dunn, & Rogers, 2000). Although risk appraisals are often influenced by several decision making biases, investigators typically assume that the appraisals themselves are guided by *conscious evaluations* of risk information and the emotional reactions that it generates. This assumption is clearly present in the design of fear appeals that target reckless driving, where images of injury and death are expected to decrease intoxicated driving, speeding, and other health threatening behaviors by increasing the fear of engaging in them. Strong support for this assumption is provided by a recent meta-analysis of 248 effect sizes, which revealed a significant relationship between the intensity of fear arousal and the adoption of health promoting behaviors ($d = 0.27$; Tannenbaum, 2015). These findings suggest that anti-DWCP campaigns that incorporate images of motor vehicle fatalities should reduce DWCP by encouraging drivers to focus their attention on the risk of death when using a cell phone.

Notably, however, Terror Management Theory (TMT) and its recent derivative – the Terror Management Health Model (Goldenberg & Arndt, 2008) – suggest that anti-DWCP videos that incorporate images of death may unintentionally backfire and increase DWCP rather than decrease it when images of death fade from conscious awareness among drivers whose self-image is tied to their own cell phone use (Pyszczynski, Solomon, & Greenberg, 2015; Taubman-Ben-Ari, Florian, & Mikulincer, 2000). The basis for this claim lies in the complex set of cultural and psychological defense mechanisms that TMT proposes are activated when human beings process thoughts of death *unconsciously*.

According to TMT, death cognitions continue to impact behavior even when they fade from immediate consciousness. This outcome is similar to the spreading activation of semantic networks in models of non-conscious priming effects. To help minimize the paralyzing anxiety that arises from non-conscious death cognitions, TMT proposes that individuals adopt attitudes and behaviors that bolster their self-esteem and reinforce their cultural worldview. The latter strategies give meaning to an individual's existence, symbolically extend their life into the future, and minimize immediate feelings of anxiety. Such unconscious defense mechanisms can encourage either health promoting behavior or health damaging behavior, depending upon the extent to which a health related decision enhances self-esteem. Goldenberg and Arndt (2008) note that "... when [a mortality salience] prime is followed by a delay, people who derive self-esteem from particular risk-taking activities increase their intentions to engage in the risk behavior" (p. 1044). Thus if skillful driving is central to an adult's self-esteem, then images of death that fade from conscious awareness may nevertheless trigger efforts to increase self-esteem by driving quickly (a health threatening response) (Taubman Ben-Ari, 2000; Taubman-Ben-Ari et al., 2000). In contrast, if driving skill is not central to one's self-esteem, then images of death that fade from conscious awareness would not prompt individuals to drive quickly.

More than 300 studies have tested many of TMT's basic propositions (Burke, Martens, & Faucher, 2010; Greenberg, Solomon, & Arndt, 2008). In a typical study, mortality salience (MS) is induced by asking participants to respond to the following questions: (1) *Please briefly describe the emotions that the thought of your own death arouses in you*, and (2) *Got down*,

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