

THE EFFECTS OF GRAPHIC ADVERTISEMENTS
ON TEXTING AND DRIVING

by

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ABSTRACT

This study examined the effects of fear appeals on texting and driving frequency from the perspective of terror management theory. Undergraduate students (N=17) participated in a driving simulation program while texting in front of a graphic, death-related advertisement versus a neutral one. It was hypothesized that the drivers would be more inclined to text and drive, because of the importance of close relationships when mortality concerns are salient. In this study, it was found that drivers in the death condition had significantly more collisions, exceeded the speed limit more, spent more time speeding, travelled a greater distance speeding, spent more time out of their lane, drove a greater distance out of their lane, swerved over the center line, failed to use their turning signal more, and rushed through the course faster. The current results call into question the efficacy of fear appeals in advertising campaigns.

TABLE OF CONTENTS

INTRODUCTION	1
FEAR APPEALS	2
TERROR MANAGEMENT THEORY	4
THE PRESENT RESEARCH.....	7
METHOD	7
Participants.....	7
Materials and Procedure	8
“Advertising manipulation”	8
“Driving task”	9
RESULTS	10
DISCUSSION	10
TABLE 1.....	15
APPENDIX.....	16
REFERENCES	17

INTRODUCTION

Taylor Sauer knew texting and driving was a bad idea. The 18-year-old student even said so in her final message, “I can’t discuss this now. Driving and Facebooking is not safe! Haha.” She was driving home at 80 miles per hour, trying to pass the time by messaging her friend. Just after sending her last message, Taylor crashed into a semi-truck and was killed instantly. After her death, investigators looked into Taylor’s phone records and discovered that she was posting messages every 90 seconds during her drive home.

Taylor’s story, unfortunately, is not unique. In the United States, motor vehicle accidents are the leading cause of death among teenagers (Center for Disease Control & Prevention, 2010), with an average of 11 teens dying per day (Allstate Foundation, 2012). Even with the statistics pointing to the dangers of texting while driving, over 75% of young adults feel confident in their ability to text and drive safely, and over 50% even go so far as to say that texting and driving is “easy” (Quinstreet, 2014). The consequences of texting and driving have not gone unnoticed, as several advertising campaigns have been geared towards reducing such tendencies. However, similar fear campaigns in the past have had the ironic effect of increasing the behaviors they were designed to reduce (Arnett, 2000; Leshner, 2010). Based on terror management theory (Greenberg, Solomon, & Pyszczynski, 1986), the purpose of the present research was to examine whether young adults are more likely to text and drive to meet their relational needs when mortality concerns are salient.

FEAR APPEALS

Fear appeals have commonly been used in public service announcements to scare people in the hope that the aroused fear will result in the performance of adaptive behaviors (Witte, 1992). Specifically, threat advertisements are typically comprised of two types of information. First, appeals have the potential to arouse fear by creating a threat (e.g., serious injury or death) to which the person is susceptible (e.g., motor vehicle accident). Second, an individual's safety is assured by following recommended action (e.g., you are less likely to be in an accident if you do not text and drive). The desired action is typically easy to follow (e.g., drive safely), and is effective in eliminating the threat (e.g., don't text and drive). Several studies have focused on the different aspects of fear appeal messages (Witte, 1992; Leshner, 2010).

Research has shown that individuals respond to fear appeals with changes in their attitudes and behavior (Rogers, 1975; Kempf, 2006). For instance, fear appeals are commonly used in anti-tobacco and anti-smoking advertisements by reminding people of the negative side effects of tobacco, including emphysema, lung cancer, and death. Rogers (1975) conducted a study that assessed the effectiveness of fear appeals in cigarette smoking among young adults. Participants were randomly assigned to one of two conditions. The non-fear condition consisted of reading material that was considered emotionally neutral and did not pertain to smoking or cancer; whereas the fear condition showed an 18 min video of a heavy smoker discovering he had lung cancer followed by a 5 min graphic video of a cancerous lung being removed from the smoker. The results revealed that the participants in the fear condition reported stronger beliefs that smoking causes cancer in addition to a higher intention to quit smoking compared to the

participants from the non-fear condition. These effects held across time (1 week & 1 month).

Although research supports the effectiveness of fear appeals in discouraging various risky health behaviors (e.g., drinking & driving, drug use, unsafe sex; Jessop, 2008; Kempf, 2006), research over the last 40 years on the effectiveness of fear appeals has revealed inconsistent findings (Floyd, Prentice-Dunn, & Rogers, 2000; Witte & Allen, 2000 for reviews); and general research on fear appeals has demonstrated weak or no effects on attitudes, intentions, and behaviors (e.g., Brennan & Binney, 2010; Hastings, Stead, & Webb, 2004; Laroche, Toffoli, Zhang, & Pons, 2001; Meneses, 2010; Mowen, Harris, & Bone, 2004; Rossiter & Thornton, 2004). This has led some researchers to question the effectiveness of fear campaigns (Arnett, 2000). Second, based on previous research with young adults, there is little clarity about how this group perceives threats and reacts to fear arousal (Lennon & Rentfro, 2010). For example, several studies have shown that young adults recognize when fear appeals try to scare them, but often times find that the message is irrelevant or that the negative effects are unlikely to happen to them (Hastings et al., 2004; Kempf & Harmon, 2006). Given the increase in the number of public service announcements on distracted driving, it seems especially important to assess the effectiveness of such campaigns on teens and young adults.

In addition, several studies have found evidence for a “boomerang effect” demonstrating that individuals might do the exact opposite of what is recommended in the fear appeal (e.g., Arnett, 2000; Pechmann & Shih, 1999; Witte, 1992). For instance, in studying the effects of antismoking campaigns in college students, Wolburg (2004) found that participants expressed greater interest in smoking because the advertisements

elicited feelings of anger and defiance. Similar results were discovered by Bushman and Stack (1996) who showed that young adults were more attracted to television shows that warned of violence, and Feingold and Knapp (1977) who found that participants reported fewer negative attitudes toward dangerous drugs following the presentation of an anti-drug campaign. This backfire effect might be explained by a reactance theory perspective (Brehm, 1966) which suggests that people may engage in attitudes and behavior opposite to what they believe if they feel they perceive a threat to their personal freedom (i.e., taking away a person's choice or limiting their freedom). Building on this research, the purpose of the current study was to examine whether people engage in greater texting and driving behaviors as an ironic consequence to fear appeals about the death-related consequences of texting and driving.

TERROR MANAGEMENT THEORY

Following existential theorists such as Becker (1971/1962, 1974) and Rank (1945/1936, 1941/1936), terror management theory (TMT; Greenberg, Solomon, & Pyszczynski, 1986) states that existential fears stemming from awareness of death play a pivotal role in human motivation. This theory is attributed to Greenberg et al., who argued that anxiety related to inherent mortality awareness is managed through two inter-related defense systems: maintaining faith in a cultural worldview and deriving self-esteem from living up to the standards of one's culture. A cultural worldview is a shared conception of reality that gives life meaning, order, stability, and permanence; and additionally promises literal (belief in afterlife) and symbolic immortality (a lasting contribution to science, culture, art, etc.). Self-esteem results from viewing oneself as meeting or exceeding the values of one's cultural worldview. Ultimately, TMT states that

maintaining one's cultural worldviews and self-esteem provides a protective shield against the potential for anxiety that results from awareness of the inevitability of death.

To date, over 450 experiments conducted in over 13 different countries have provided support for hypotheses derived from TMT. Researchers have found that people with experimentally induced or dispositionally higher levels of self-esteem typically exhibit lower levels of anxiety after watching graphic death-related video footage or after being threatened with painful, electric shocks (Greenberg et al., 1992, Studies 1 & 2, respectively). Other research has shown that reminders of death (mortality salience, MS) increase diverse forms of worldview defense and self-esteem striving, including punitive reactions against moral transgressions (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989), physical aggression toward worldview threatening others (McGregor et al., 1998), prejudicial responses to individuals who derogate the validity of one's worldview (Greenberg et al., 1990), and increased reliance on worldview-consistent stereotypes (Schimel et al., 1999). These MS effects are found to be specific to thought of death. Having people think of other negative or anxiety-provoking topics such as failing an exam, public speaking, social exclusion, dental pain, paralysis, the death of a loved one, or uncertainty do not elicit the same defense mechanisms and responses as thinking of one's own death.

Recently though, Mikulincer and colleagues (2003; also see Mikulincer & Shaver, 2007), building on an attachment theory perspective (Bowlby, 1969), have argued that people use relationships as a defense mechanism for dealing with the problem of death. For example, research has shown that reminders of death lead people to initiate interactions with others (Taubman Ben-Ari, Findler, & Mikulincer, 2002, Study 1),

increase their desire to be part of a group (as opposed to being alone; Wisman & Koole, 2002), and leads to a reduced fear of rejection (Taubman Ben-Ari et al., Studies 2 & 3). Further, research has shown that attacking the integrity of a relationship increases the accessibility of death-related thoughts (e.g., Harmon-Jones, Simon, Greenberg, Pyszczynski, Solomon, & McGregor, 1997). For example, having participants imagine either a separation from or argument with a romantic partner increases the extent of death-related thoughts and worldview defense (Florian et al., Studies 2 & 3; Mikulincer et al., 2002). Overall, it is through building close relationships that individuals counteract concerns about death and negate anxiety associated with not being remembered and not leaving an impact in the world after their death (Śmieja, 2006).

While research provides evidence that thoughts of close relationships aid people in alleviating mortality concerns, close relationships have not been examined in relation to fear appeal advertisements. Specifically, as previously mentioned, social marketing work does not provide specific predictions regarding when fear appeals will fail (i.e., a boomerang effect). A discussion of terror management theory offers insight into this issue. Specifically, health promotion campaigns, which emphasize the mortality-related risks associated with health detrimental behavior, have the potential to make mortality concerns salient. These campaigns have the potential to paradoxically increase the behavior of the target behavior if the action can boost self-esteem, affirm one's beliefs, and/or fulfill relationship needs (e.g., Greenberg et al., 2008).

Empirical evidence supports this possibility. For example, Jessop and Wade (2008) showed that exposure to information about the mortality-related risks of binge drinking resulted in an increased willingness to binge drink among those who perceived the

behavior to benefit their self-esteem. This research provides initial support for the idea that health promotion campaigns which focus on mortality-related risks can inadvertently make mortality salient, and hence precipitate the very behaviors they were designed to reduce.

THE PRESENT RESEARCH

The present research builds on the results of Jessop and Wade (2008) to examine the relationship between fear appeals, terror management, and close relationships. Specifically, I was interested in whether exposing young adults to fear appeals about the dangers of texting and driving would increase death-related concerns, and how such increases in death-thought accessibility influence relationship needs to the point where people “harm” themselves by using their cell phones during a driving simulation. The present research tested two hypotheses. First, if close relationships serve as a source of protection following threat (Bowlby, 1969), it was hypothesized that participants would be more inclined to text their friend after exposure to a graphic advertisement compared to a neutral one. Second, if the participants are more inclined to text and drive after exposure to a fear appeal, it was predicted that participants would exhibit poorer driving performance while in the presence of the graphic (versus neutral) advertisement.

METHOD

Participants

Participants included 17 pairs of students (34 students total, 8 female drivers, $M_{age} = 19.00$, $SD = 1.31$, 9 male drivers, $M_{age} = 19.44$, $SD = 1.67$) recruited from introductory psychology classes at Texas Christian University (TCU). Everyone received partial course credit for participation in the study.

Materials and Procedure

The study was conducted in a laboratory setting. Participants who signed up for the study were asked to bring a close friend with them for the texting-and-driving task and all sessions were completed with dyads. After providing informed consent, participants were asked to complete a packet of questionnaires to maintain the cover story of the experiment (“Personality and Multitasking”). Once completed, the participant pairs were then separated by a divider with instructions to text back and forth on their cell phones. The texting task occurred while one person drove in a car simulation. At the end of the study, everyone was debriefed. The content and order of the questionnaires are described below.

Advertising manipulation. Both participants were asked to fill out a variety of questionnaires on the computer in the laboratory. Following this, participants were seated at two desks in the lab separated by a wall divider. The person who was driving in the simulator sat on one side with various posters on the wall (e.g., TCU sports, clubs & activities, seatbelt safety). The texting and driving advertisement was embedded in these filler posters directly above the driving simulation screen. A neutral poster was displayed for the control participants, saying “Don’t text and drive” with only an image of the road as the background. The fear condition poster was designed to prime the participant for texting and driving and to bring to mind the images of death and said, “Dying 2 Send a Reply” and an image of a deceased body on an autopsy table. A pilot study showed that exposure to the graphic texting and driving advertisement ($M = 8.32$, $SD = 3.97$) increased mortality-related concerns (i.e., fear of death) compared to the neutral

advertisement ($M = 5.20$, $SD = 3.23$), $t(28) = 2.37$, $p = .03$. See Appendix A for pictures of the advertisements.

Driving task. After the driver was asked if he/she would permit filming of his/her driving performance, both participants (driver & friend) were asked not to communicate with one another except through text messages. The driving participant was asked to drive as he/she normally would while still attempting to complete the driving task in a timely manner. In order to maintain the cover of assessing multitasking, the driving participant was assured by the experimenter that since multitasking ability was being studied, the participant was to text and drive to the best of his or her ability even if it may impair driving. The video recording that was conducted throughout the simulated course allowed for the experimenter to determine how much time the participant spent looking at his/her phone, presumably texting, while the driving program (i.e., an interactive PC-based driving program; STISIM; Allen, Stein, Aponso, Rosenthal, & Hogue, 1990) monitored the participant's speed, lane position, and number of accidents and other traffic violations. The driver was informed that his/her friend would text him/her and he/she should respond. The friend was then asked to text the participant about potential plans for the weekend (i.e., going to a movie, going to a sporting event) and was asked to continue a conversation with the driver via text messages until the driving simulation had concluded. Once the driving simulation was completed, both participants were then asked to fill out a final questionnaire on the computer, with their reactions to the study along with demographic information (e.g., gender, age, cell phone usage).

RESULTS

The purpose of this experiment was to examine whether fear appeals paradoxically make people drive worse because of the need to pursue close relationships when mortality concerns are salient. Independent samples *t*-tests ($p = .05$) were used to determine statistical significance. The results revealed significant effects of graphic texting advertisements on speed limit, $t(15) = 2.54, p = .02, d = 1.24$; time spent speeding, $t(15) = 2.09, p = .05, d = 1.04$; distance travelled while speeding, $t(15) = 2.14, p = .05, d = 1.05$; time swerving, $t(15) = 2.30, p = .04, d = 1.15$; distance travelled while swerving, $t(15) = 2.34, p = .03, d = 1.17$; swerving frequency, $t(15) = 2.30, p = .04, d = 1.14$; and failed signal usage, $t(15) = 2.12, p = .05, d = 1.06$. Marginal effects were found for collisions, $t(15) = 1.98, p = .07, d = .97$; and course completion time, $t(15) = -1.83, p = .09, d = -0.90$. Means and standard deviations are presented in Table 1. Overall, the results indicate that the participants who viewed the fear advertisements exhibited poorer driving performance than participants in the control condition. While some of the results were only marginally significant, they appear to suggest that viewing fear appeals warning of the dangers of texting and driving may in fact promote the opposite of the desired effect and motivate individuals to use their cell phones while driving, resulting in poorer driving.

DISCUSSION

Fear campaigns have been an avid practice for advertising companies in order to promote healthy and non-risky behaviors. However, research has obtained mixed results concerning the effectiveness of fear campaigns (e.g., Floyd, Prentice-Dunn, & Rogers, 2000; Witte & Allen, 2000). The present study examined the paradoxical effects of such

advertisements. Using terror management theory as a framework, it was hypothesized that drivers would be more inclined to text and drive because of the importance of close relationships when mortality concerns are salient (i.e., following the presentation of a graphic, death-related texting and driving advertisement). In this study, it was found that drivers in the death condition had significantly more collisions, exceeded the speed limit more, spent more time speeding, travelled a greater distance speeding, spent more time out of their lane, drove a greater distance out of their lane, swerved over the center line, failed to use their turning signal more, and rushed through the course faster.

The current results call into question to efficacy of fear appeals in advertising campaigns. While a variety of research exists promoting fear advertisements and their effectiveness (e.g., Eagly & Chaiken, 1993; Witte, 1992), particularly with anti-smoking campaigns (e.g., Rogers, 1975), the influence of graphic anti-texting and driving advertisements should be evaluated further. By randomly assigning participants to view either the control or fear advertisement before completing a driving simulation, the present study directly evaluated if a behavior change occurred. Since seeing the graphic anti-texting and driving advertisement did not reduce texting and driving, but rather, increased such, the current results question if fear appeals should continue to be used.

Additionally, this study assessed the need for close relationships as one form of defense against the awareness of death. Research has indicated that close relationships increase thoughts of belongingness and provide a sense of security to the individual who is faced with their mortality (see e.g., Mikulincer et al., 2003, for a review). The increase in reckless driving by participants who viewed the fear advertisement can be seen as associated with their increase in texting while driving. Such results support close

relationships as a third mechanism of coping with death related anxiety and it further build upon the work of Bowlby (1969) and Mikulincer (2002) to support the notion that close relationships provide security and can bolster cultural worldviews and self-esteem and therefore reduce death concerns.

Considering that the present research is in its preliminary stages, there are a variety of limitations. First, the participants in the present research were of college age, ranging from 18 to 22 years old. Safe driving campaigns, including anti-texting and driving advertisements, are displayed to promote safety on the road for all drivers, and therefore, this reduces whether the current results can be generalized across all age groups in the population. Further research should be conducted to include a variety of age ranges and assessing the impact of the advertisement at a varying age intervals (e.g., 10 year groups) has the potential to be advantageous since texting is a more modern form of communication typically seen among younger drivers.

It is also important for future research to examine individual differences with respect to fear appeals and driving. Per stereotypes, males and females typically have differing driving styles where men typically drive faster than women. Since this study did not differentiate between males and females due to the small sample size, further research should assess such differences especially considering that physical or bodily harm as depicted in the graphic advertisement may not be seen as potentially threatening to men. Another individual difference to examine is people's sense of attachment with close others. Specifically, people are often characterized in terms of two relationship patterns: *attachment anxiety* (i.e., relationship worry) and *attachment avoidance* (i.e., reduced concern with relationships). Research has found that secure (low anxiety, low avoidance)

and anxious (high anxiety, low avoidance) individuals react to thoughts of death with an increased desire for close others (Cox et al., 2008; Mikulincer et al., 2003). Building on this, future research should examine whether the propensity to use cell phones in a driving simulator following graphic texting advertisements is primarily the case for people who feel secure or anxious in their close relationships.

Third, because of the small sample size, it is possible that one or more reckless drivers skewed the results. However, this is preliminary data and further research including more participants should be conducted in the future. Finally, a driving simulation program was used in this study. While the driving program used is advanced, many participants had difficulty adjusting to the brakes and the turn radius of the simulation car. Ideally, a real-life driving run would provide better results, but conducting such research would be unethical since it would place the participants in an unsafe and potentially dangerous situation.

In spite of these limitations, the present research still provides a better understanding of texting and driving behaviors. According to a national survey of 6,000 Americans (Tison, Chaudbary, & Cosgrove, 2011), 2 out of 10 drivers (18%) reported that they have sent text messages or emails while driving; about half of those between the ages of 21 to 24 reported doing so. Text messaging is becoming a more common practice and with the newer advancements made with cell phones this practice will only continue to grow. Unfortunately, there is very little research assessing the consequences of texting and driving. Drivers who do text and drive spend up to 400% more time with their eyes not on the road (Hosking, Young, Regan, 2006) and were 2.8 times as likely to crash or nearly crash compared to drivers who do not (Olson, Hanowski, Hickman, & Bocanegra,

2009). This research contributes to the literature by assessing texting and driving with a driving simulation and evaluates fear advertisement campaigns and their efficacy towards young drivers in reducing risky behaviors on the road.

TABLE 1

<u><i>Average Driving Incidents</i></u>	<u>Death</u>	<u>Control</u>
Failed Turn Signal Usage	34.67 (12.07)	25.38 (2.72)
Collisions	10.56 (3.91)	7.38 (2.45)
Exceed Speed Limit	16.67 (4.06)	11.88 (3.68)
Time Speeding	25.11 (14.85)	13.22 (6.38)
Distance Speeding	46.95 (18.69)	29.86 (13.43)
Total Time	1083.97 (233.97)	1274.24 (188.66)
Swerving Incidents	28.22 (7.60)	21.38 (3.85)
Time Swerving	22.25 (8.21)	15.36 (2.23)
Distance Swerving	19.95 (6.97)	13.80 (2.64)

APPENDIX A



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