

SCARED TEXTLESS: THE INFLUENCE OF SENSATION SEEKING
TENDENCIES AND NEED FOR COGNITION ON
TEXTING WHILE DRIVING FEAR APPEALS

A Thesis

by

MADELINE LEE BOENKER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of
MASTER OF ARTS

August 2011

Major Subject: Communication

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Cognition on Texting while Driving Fear Appeals

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ABSTRACT

Scared Textless: The Influence of Sensation Seeking Tendencies and Need For
Cognition on Texting while Driving Fear Appeals. (August 2011)

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Chair of Advisory Committee: Dr. Michael T. Stephenson

Texting is ubiquitous; the International Association for the Wireless Telecommunications Industry reported that 4.1 billion text messages were sent per day in the first half of 2009. In isolation, texting does not injure individuals; however, when combined with driving, lives have changed for the worse. The National Safety Council estimates that 1.6 million crashes per year can be attributed to distracted drivers either talking on cell phones or texting while driving and nearly 28% of all crashes in the United States can be ascribed to these behaviors. An increasing number of texting while driving fear appeal campaigns are being utilized in the media. Therefore, the purpose of this research was to create and test theoretically-based messages aimed at discouraging texting while driving.

Formative research along with the Extended Parallel Process Model was used for guidance in the creation of the fear appeal messages. No low threat message was used for the main study after repeated message validations failed. For the study, three high threat messages varied only by a single paragraph which targeted beliefs about benefits, mastery, and ubiquity of texting while driving. 155 undergraduates at Texas A&M

University completed a pretest, read the high threat message, and answered a posttest. Need for cognition and sensation seeking tendencies were measured in order to understand the effects such personality traits have on message perceptions. Five major outcomes were revealed even though numerous hypotheses were unsupported. There was a significant interaction between perceived threat and sensation seeking tendencies on message realism. There was a significant interaction between perceived threat and need for cognition on message realism. There was a significant interaction between perceived threat and need for cognition on message accuracy. There was a significant interaction between perceived threat and need for cognition on attitudes. There was a significant positive correlation between perceived threat and perceived message sensation value.

This project provides support that sensation seeking tendencies and need for cognition do interacted with perceived threat on perceptions of message effectiveness and that perceived message sensation value was positively related to perceived threat. Results also revealed the prevalence of texting while driving behavior and relationships between personality traits and texting while driving. Sensation seeking tendencies were positively correlated with initiating text messages while driving. Need for cognition was negatively correlated with reading and replying to text messages while driving.

DEDICATION

This thesis is dedicated to individuals who have lost their lives or lost a loved one in an accident related to texting while driving.

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I would like to thank my committee chair, Dr. Stephenson, and my committee members, Dr. Dorsey and Dr. Beaudoin, for their unyielding support and excitement for my project. Their passion for research inspired me greatly. Specifically, I would like to thank Dr. Stephenson for the years he has dedicated to my education. He has been an exceptional mentor, advisor, and friend.

Thanks also go to my colleagues who have become my dearest friends. Ashley, thank you for listening to me whine over a bottle of wine, solving the world's problems on a morning walk, and distracting me from scholarship with shoe shopping. Brittany, thank you for reminding me to laugh at myself and live life one moment at a time. Rashé, thank you for motivating me with pep talks and cheering me on during this journey.

Finally, thanks to my parents and husband, Taylor. Thank you for tethering me to reality. Thank you for your patience. Thank you for listening to the “does this make sense” paragraphs. Thank you for the unconditional love you give me each day and most importantly, thank you most for always saying “honey, if you drop out now, we will still love you.”

NOMENCLATURE

TWD	Texting while Driving
NFC	Need for Cognition
SS	Sensation Seeking
EPPM	Extended Parallel Process Model

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CHAPTER I

INTRODUCTION

Texting is ubiquitous; CTIA, an international wireless telecommunications association, reported that 4.1 billion text messages were sent per day in the first half of 2009 (Roche, 2009). In isolation, texting does not injure individuals; however, when combined with driving, lives have changed for the worse. The National Safety Council (NSC, 2010) estimates that 1.6 million crashes per year can be attributed to distracted drivers either talking on cell phones or texting while driving. Nearly 28% of all crashes in the United States can be ascribed to these behaviors (NSC, 2010). The National Highway Traffic Safety Administration found that distracted drivers were the culprits of about 500,000 injuries and almost 6,000 deaths in 2008 (Nies & Clarke, 2010). This worrisome activity coined as the new “drunk driving” (Box, 2009) has gained the attention of the media, celebrities, and citizens throughout America. Texting while driving may be harder to combat than drinking while driving because Americans are inundated with technology in daily life (Hanes, 2009). Statistics of accidents and the dangers of texting while driving are infiltrating the news.

Virginia Tech Transportation Institute [VTTI] conducted a series of driving studies to assess the danger of distracted driving. Hanowski, Olson, Hickman, and

This thesis follows the style of the *Journal of Communication*.

Bocanegra (2006) found that text messaging while driving was the riskiest behavior in which a driver could engage. Therefore, texting while driving is different from other distracted driving behaviors because of the amount of time a driver takes his/her eyes off the road. They discovered that “the odds of being involved in a safety-critical event is 23.2 times greater for drivers who text message while driving than if they were not text messaging while driving” (Hanowski et al., 2006, p. 2). Although their results and findings primarily centered on the operations of commercial vehicles, Hanowski et al. (2006) recommended that operators “do not text while driving” in order to reduce accidents (p. 4). Other results from VTTI were reported by Box (2010) and indicate that texting while driving not only increased the risk of an accident by 20 times compared to not using a cell phone but also kept the driver’s eyes off the road for a 4.6-second over a 6-second interval. Box (2010) claims that the amount of time drivers kept their eyes off the road “equates to a driver traveling the length of a football field at 55 miles per hour without looking at the roadway.” Legislation discouraging texting while driving may be one solution to keeping Americans safe. Box (2010) claims that VTTI recommends “texting should be banned in moving vehicles for all drivers” because it “has the potential to create a true crash epidemic if texting-type tasks continue to grow in popularity” (p. 4). This approaching epidemic has policy makers working to discourage texting while driving.

Legislation in 30 states now prohibits text messaging while driving (Governors Highway Safety Association, July, 2010). However, the Highway Loss Data Institute [HLDI], an affiliate with the Insurance Institute for Highway Safety [IIHS], found no

decrease in crashes after the texting bans were implemented in three states and the District of Columbia (Copeland, 2010). The United States government is trying to reduce texting while driving with the creation of distraction.gov, a website to inform individuals about the dangers of distracted driving and to promote their recent “Put it down” campaign (United States Department of Transportation, 2010). And, President Obama has signed an executive order that prohibits federal employees from texting while driving (Richtel, 2009). Nationwide Insurance found in a recent survey that 8 out of 10 drivers supported cell phone restrictions (Gillespie, 2009). Although legislation may discourage texting while driving, recent campaigns and media personalities are trying to change attitudes and behavior. Snyder (2001) noted in her meta-analysis of 48 health communication campaigns that employing an enforcement angle into campaign messages increases success rates (p. 188). She claims that “campaigns that include enforcement messages may be successful because they take advantage of a coercive strategy rather than relying solely on persuasion” (Snyder, 2001, p. 188). Currently, texting while driving campaigns have not emphasized that the authorities can and will ticket offenders.

Oprah Winfrey and *FocusDriven*, an organization that helps victims and their families, have joined together to discourage distracted driving (Nies & Clark, 2010). Oprah has started the “No Phone Zone” pledge in which individuals can electronically sign as a commitment to saving lives by not being a distracted driver (The Oprah Winfrey Show, 2010). Another venture, *FocusDriven*, hopes to prevent texting while driving and has now provided an outlet for media advocacy. *FocusDriven* not only

serves as a social networking site for families who have lost love ones to distracted driving but also a place to propose legislation and offer personal narratives (www.focusdriven.org). Although legislation and support groups may bring the issue to the forefront, will behavior ultimately change?

A public service announcement released by the Gwent police department in Wales depicts the dangers of texting while driving in a four minute video. The video displays three girlfriends chatting in the car when the driver tries to answer a text but then she loses control. The entire video dramatizes the scenario of a serious accident in which innocent lives are lost. On the *Today Show*, Donny Deutsch, the ad executive for the agency that created the PSA, claimed that “old, hard data is nothing compared to showing people the human toll texting while driving can exact, up close and in chilling detail” (Inbar, 2009). The United States has yet to allow that PSA to air on television; however, the *Today Show* did air a few minutes before leaving the gore to the audience’s imagination.

AT&T recently released a campaign to discourage drivers from texting while driving by revealing the last text someone sent before their deadly accident (Rader, 2010). Two radio, thirteen video, and four print ads were created by AT&T (2010), National Safety Council [NSC], and the International Association for the Wireless Telecommunications Industry [CTIA]. The PSAs for radio describe a text that a person was reading before an accident and then provides statistics along with the slogan “it can wait” (AT&T, 2010). The videos each show a text message along with the voice over of someone who was injured from texting while driving or a family member of someone

who was injured. The print ads show the text and a caption that describes in one sentence the outcome, such as “no text is worth permanent brain damage” (AT&T, 2010).

Campaigns released thus far have incorporated fear into the message design; however, evaluative data has yet to determine whether these campaigns have impacted the target population. Madden and Rainie (2010) surveyed adults and found that 49% had been in a car when the driver was sending or reading a text message and 47% had sent or read a text message while driving. The same study revealed that 34% of teenagers (age 16-17) sent or read a text message while driving and 48% (ages 12 – 17) had been a passenger in a car when the driver was texting. Thus, texting while driving continues to be a prevalent activity among society members regardless of legislation and the current campaigns. This problem warrants further exploration through a communication perspective in order to better comprehend the outcomes campaign elements will have on the audience and what could prevent Americans from engaging in this risky behavior. Theories such as the Extended Parallel Process Model (Witte, 1992, 1994, 1998), the Activation Model of Information Exposure (Donohew, Lorch, & Palmgreen, 1998; Donohew, Palmgreen, & Duncan, 1980), and the Elaboration Likelihood Model (Cacioppo & Petty, 1982; Petty & Cacioppo, 1986) offer insights into message creation for an anti-texting while driving message and how individual personality traits may contribute to message processing.

Participants in the formative research for this project suggested that anti-texting while driving campaigns should incorporate high levels of affect in order to persuade college students to refrain from engaging in this behavior (Boenker, 2010).

Consequently, the Extended Parallel Process Model (Witte, 1992, 1994, 1998) was employed during the creation of anti-texting while driving fear appeals. Similar to the desire for high affective arousal in campaigns expressed by some participants, this theory posits that high susceptibility and high severity must be communicated in the message in order to encourage persuasion. This theory along with the formative research, both of which are detailed below, supply a theoretical foundation for message design and creation.

Participants in the focus groups additionally requested that anti-texting while driving messages should also be created that elicit low affective arousal in order to target individuals who are not persuaded by fear (Boenker, 2010). This finding suggests that individual personality traits may moderate message persuasiveness and message design. The Activation Model of Information Exposure (Donohew, Lorch, & Palmgreen, 1998; Donohew, Palmgreen, & Duncan, 1980) along with in the Elaboration Likelihood Model (Cacioppo & Petty, 1982; Petty & Cacioppo, 1986) explains how individual traits may determine messages persuasiveness. Sensation seeking, a trait discussed in the Activation Model of Information Exposure, and need for cognition, a trait discussed in the Elaboration Likelihood Model, will be further explored in the context of fear appeal messages in Chapter II.

CHAPTER II

FORMATIVE RESEARCH AND THEORETICAL FRAMEWORK

The implications of texting while driving are known. Yet, individuals are continuing to engage in this risky behavior, and this provides researchers an opportunity to better understand the message design that would persuade individuals to stop texting while driving. Therefore, the purpose of this research is to create and test theoretically-based messages aimed at discouraging texting while driving. The following paragraphs define texting while driving as a behavior, report formative research findings, and explain theoretical bases for message creation. Before detailing the strategies of message design, the behavior must first be explicated.

Defining Texting while Driving

What is texting while driving? Fishbein et al. (2002) notes that “the definition of a behavior involves several elements: the action, the target, and the context” (p. 96). For this study, texting while driving [TWD] refers to creating, reading, or sending (the action) a text or email message from a cellular phone (the target) while operating a motorized vehicle that is in motion (the context). Although TWD falls under the umbrella term of distracted driving (Madden & Rainie, 2010), this study primarily seeks to understand the problem of sending, reading, and creating messages (but excluding the GPS or iPod features) while driving a vehicle that is in motion. However, more questions are raised about whether or not sending, reading, or creating a message while stopped at a stop light, stop sign, or in heavy traffic represents TWD. Arguments can and

will arise that driving does not necessarily mean the vehicle must be in motion; however the greatest harm can occur while the vehicle is in motion.

Formative Research

Only a minute amount of research is available about TWD. Therefore, in order to better comprehend the magnitude of TWD, formative research was conducted before devising the messages for this study. The formative research provides an enhanced explanation of the participants' attitudes, intentions, behaviors, and perceptions associated with TWD. According to Fishbein et al. (2002), "before developing interventions to change intentions, it is important first to determine the degree to which that intention is under attitudinal, normative, or self-efficacy control in the population in questions...one size does not fit all" (p.94). Therefore, to gain additional insight into what motivates individuals to TWD, I relied on Fishbein's Integrative Model of Behavioral Prediction (IM) in my formative research. The IM combines elements of the Health Belief Model, Social Cognitive Theory, and Theory of Reasoned Action (Cappella, Fishbein, Hornik, Ahern, & Sayeed, 2001) and was employed to develop questions for the focus groups that specifically asked about self efficacy, attitudes, intentions, current behavior, and norms.

Three one hour focus groups were conducted with thirty Texas A&M University students and of those, twenty-five admitted (83.3%) to TWD. Thirty participants engaged in the focus groups, 16 males (53.3%) and 14 females (46.7%). The participants' ages ranged from 18 – 23, with a mean of 19.87 ($SD = 1.22$). The majority of the participants identified themselves as sophomores (43.3%), followed by freshman

(23.3%), juniors (16.7%), and seniors (16.7%). The majority of the respondents were White (86.7%), followed by Asian (6.7%), and Hispanic (6.7%). The three focus groups yielded approximately 3 hours of audio taped discourse and yielded 63 single-spaced pages of transcription.

A thematic analysis (Fereday & Muir-Cochrane, 2006; Rice & Ezzy, 1999) was used to discover underlying themes and subthemes from the transcripts. Five themes and twenty-three subthemes emerged and suggested that the behavioral intention to TWD was under a combination of attitudinal, normative, and self efficacy control. The IM suggests that “attitudes, perceived norms, and self-efficacy are all, themselves, viewed as functions of underlying beliefs – about the outcomes of performing the behavior in question, about the normative proscriptions and/or behaviors of specific referents, and about specific barriers to behavioral performance” (Fishbein, 2008, p. 839). Therefore, understanding the beliefs of the target population provides a lens for the creation of messages. The inclusion of all twenty-three subthemes is not feasible in this study; however, focus group participants expressed six subthemes (identified as four beliefs about TWD and two message strategies) that provided insight into to the development of theoretically-based messages. These subthemes provide a level of detail more suitable to message design. Four of the six subthemes are beliefs about TWD and were labeled poor self efficacy, mastery, perceived benefits, and ubiquity. Additionally, two subthemes surfaced that entailed perceptions of effective strategies for message delivery: high emotional arousal and low emotional arousal. What follows is an

explanation of the four beliefs followed by a description of the two strategies for message delivery.

Poor Self Efficacy

The first belief, poor self efficacy, emerged as a subtheme when participants repeatedly expressed their inability to ignore a text message while driving. Kasprzyk, Montano, and Fishbein (1998) define self efficacy as “an individual’s judgment of his ability to perform the behavior under certain circumstances” (p. 1561). The responses revealed that although some felt that TWD was dangerous, they did not have the confidence in their ability to delay answering a text message. Thus, this subtheme was coded as poor self efficacy primarily because individuals reported that they lacked the confidence to ignore the urge to TWD. A participant said “Yeah, I do it all the time. I don’t know, I just...I don’t know why I feel like text messages can’t wait.” Others’ responses were radically similar.

Bandura (1998) states that “efficacy beliefs operate as one of many determinants that regulate motivation, affect and behavior” (p. 627). Self efficacy is also a primary component of the Extended Parallel Processing Model (Witte, 1992) and Protection Motivation Theory (Rogers, 1982). Both theories emphasize a need for high self efficacy in order for individuals to process messages and respond with a recommended behavior (Witte, 1992 & Rogers, 1982). As illustrated in the quotes above, many of the individuals in the focus groups do not believe they can stop TWD. Because efficacy is a determinant of future behavior (Bandura, 1998), and because messages can change

efficacious beliefs (Witte, 1992), any campaign message for this target audience should consider efficacy a critical component for message design.

Mastery

The second belief, mastery, developed as a subtheme when 21 participants disclosed strategies for how they have, in their view, “mastered the art” of TWD. Strategies ranged from how to handle a cell phone to what road conditions are acceptable for TWD. Participants indicated they felt these strategies had been mastered because they had not experienced any negative consequences from the act. One participant proudly announced “I’ve got a system now where I can be like ‘ok.’ Three letters, then look up, three letters and then look up.”

This belief provides a valuable tool for message content. Bandura (1999) claims that “people act on their beliefs about what they can do as well as their beliefs about the likely outcomes of performance” (p. 29). Further, SCT maintains that people will continue a behavior when it produces positive outcomes (Bandura, 1998, 1999). Finally, when individuals feel a sense of self-worth or satisfaction for accomplishing a behavior, such as TWD, they will continue to engage in that behavior, but if an individual experiences negative consequences, self-censure, and failure, the individual will refrain from the activity (Bandura, 1999).

Mastery is a belief that can effectively be addressed in anti-TWD messages. A counterargument to the belief that a safe way to TWD exists should be addressed in the message content of a campaign. The negative consequences, such as injuring oneself or bystanders, should be exposed as a deterrent for individuals who TWD. The message

content should include information that illustrates that there are no safe strategies for TWD and a false sense of security threatens the safety of drivers. Currently, TWD simulations are taking the form of games on the internet and actual full-sized driving simulators in order to target this belief. But how do we target this belief without a hands-on simulation? According to Atkin (2002), “it is more effective to raise and refute the opposing side if the audience is sophisticated and knowledgeable about the topic, predisposed against the position being advanced, perceives manipulated intent, and is already aware of the pro-arguments” (p. 43). In the case of TWD, individuals are aware of the benefits and believe they’ve mastered the behavior; therefore, the messages must blatantly address the opposition and refute the belief.

Perceived Benefits

The third belief, perceived benefits, emerged as a subtheme explaining why people chose to TWD. Fishbein et al. (2002) claim that “the more one believes that performing a behavior will lead to positive outcomes and/or will prevent negative outcomes, the more favorable will be one’s attitude toward performing the behavior” (p. 91). Many of the responses explained the “convenience” of TWD and the desire to be constantly connected with peers. A participant said that “I think just being able to have the convenience and we don’t really want to give that up. So, I guess, the benefit would be that we don’t have to wait around.”

This insight is essential in creating the content of a message that attends to this belief. This type of belief has been referred to as a “behavioral belief” (Ajzen & Fishbein, 1980; Fishbein, 2008; Fishbein & Yzer, 2003; Fishbein et al., 2002) which

indicates an individual's belief that performing a behavior will lead to certain outcomes. Bandura (1998) states that "outcome expectations about the effects of different lifestyle habits also contribute to health behavior" (p. 627); therefore, individuals who TWD may hold expectations that TWD provides benefits for their lifestyles rather than costs. In this particular research, participants believe that the behavior, TWD, leads to convenience and social connections (outcomes). This subtheme allows for the development of specific message content that directly addresses these behavioral beliefs of the target audience.

Ubiquity

The fourth belief, ubiquity, surfaced as participants from all three focus groups described many instances in which they had witnessed TWD. A participant claimed that "I think people are brought into that part of the reality that it's okay and it's normal to text while you drive...it's a cultural thing." Another respondent said "Every time you go driving you can look next to you and see somebody texting while driving."

This subtheme reflects what Fishbein labels as the perceived norms of these participants. Perceived norms are illustrated by Fishbein (2008) as "the more one believes that others are performing the behavior, the more one believes that specific others think one should perform the behavior in question, the stronger the perceived norm" (p. 839). Cialdini, Reno, and Kallgren (1990) refer to these perceptions as descriptive norms which describe what people think are "typical or normal" behaviors (p. 1015). Although terminology varies for this subtheme, it is essential to the creation

of a campaign because this belief illustrates that TWD is considered a normative behavior.

The four beliefs that appeared as subthemes during the focus groups lend valuable insight into what must be addressed in the message content for a TWD campaign and poor self-efficacy, mastery, perceived benefits, and ubiquity all fit neatly into the IM. The beliefs illustrate self-efficacy beliefs, normative beliefs and behavioral beliefs all of which are variables within the IM that influence behavioral intention (Fishbein, 2008). Fishbein (2008) states that “one forms attitudes, perceived social norms, and perceptions of control, that in turn influence one’s intentions and behaviors” (p. 835) and “the single best predictor of whether one will (or will not) perform the behavior in question is the person’s intention to perform that behavior” (p. 836). Therefore, these four subthemes reflect beliefs about efficacy, norms, and outcomes and are important to the formation of an individual’s intention. By devising message content that addresses these beliefs, a shift may occur in an individual’s intent to TWD thus changing likelihood of the behavior.

Although the four beliefs shed light on the type of message content that should be employed, two subthemes emerged that suggest strategies for delivery of the message content. Next, these two subthemes, high emotional arousal and low emotional arousal, are discussed within the context of designing messages for stopping TWD.

High Emotional Arousal

High emotional arousal appeared as a subtheme when participants described what types of interventions would most affect their behavior. Participants described past

campaigns that used frightening images which were intended to make lasting impressions on their intentions and behaviors. One participant provided his recollection of the Wales anti-texting campaign: “they show the girl that’s the only one left alive, the car destroyed, all of the friends are dead...I saw that and I haven’t forgotten it.”

Participants from all three focus groups discussed that the impact a strong emotional component, such as fear, would make them possibly change their behavior.

According to Witte (1992), “fear is a negatively-valenced emotion, accompanied by a high level of arousal” but more importantly, it “is elicited by a threat that is perceived to be significant and personally relevant” (p. 331). Eliciting a fear of the consequences of TWD would imply writing a high-threat message which, as Witte (1992) explains, is a combination of two variables, severity and susceptibility.

Combining the appropriate level of severity and susceptibility could effectively elicit a level of fear that some participants believe might work. Focus group comments suggest that the participants alluded to severity as the mechanism through which to elicit high emotional arousal, but they did not mention any feeling about their susceptibility. If participants believe TWD has severe consequences but that they are not susceptible, then Witte’s (1992) Extended Parallel Process Model [EPPM] could be useful in message development for an anti-TWD campaign.

Low Emotional Arousal

Low emotional arousal became an argument from participants who discouraged the use of high emotional arousal to change TWD behavior. These participants promoted the use of an intervention that used statistics and facts to portray the dangers of TWD. A

focus group participant said that “emotional appeals do not work for some people. So I think there should be logic, you know, like statistics...cold, hard logic is something you can't argue with” (Boenker, 2010). Although research results are mixed in regard to which forms of evidence provide a greater foundation for persuasion, this subtheme reveals that some participants are apt to process less arousing information more readily and with fewer counterarguments than high emotional arousal messages.

In summary, this formative research better identifies the beliefs the target population holds in regard to TWD. However, the beliefs that emerged do not neatly fit into any single theory for message design. Although Fishbein's (2008) IM was helpful in the development of questions for the focus groups and the discussion of beliefs, the theory will not be employed in the message design because it does “not tell us how to reinforce or change those beliefs” (p. 842) held by the target audience. However, one theory which does provide clear direction about the design of messages in addition to addressing issues of emotional arousal is the Extended Parallel Process Model (Witte, 1992). Moreover, the focus group participants honed in on the idea of scaring them with graphic and vivid stories in order to get the attention necessary to facilitate a change in TWD behavior. Other focus group participants wanted specifically to avoid being made afraid. In both instances, the EPPM provides directives for how to design messages that elicit fear that will lead to behavior change. While there are other theories of emotion and mood available in the literature, none explain how to craft text in such a way that will allow participants to process a message while in a fearful state. For example, Watson, Clark, and Tellegen's (1988) PANAS (positive and negative affect scale) will

measure emotional activation, but does not give clear direction on the design of messages to elicit either positive or negative affect. While some communication scholars have recently emphasized the importance of assessing discrete emotions (Dillard & Peck, 2000; Nabi, 2002) over more globalized measures of affect (like the PANAS), again, there is a lack of direction in how to craft messages to elicit the desired outcomes. Finally, there is evidence linking the effect of positive and negative moods on how individuals process the information in persuasive messages (e.g., Bless & Schwarz, 1999), but as with the other literature, there is little theoretical guidance to direct the construction of positive or negative emotion appeals or to ascertain theoretically related variables (see Stephenson et al., 2005). Therefore, what follows is an overview of EPPM and how this provides message strategies to discourage TWD.

The Extended Parallel Process Model

In the Extended Parallel Process Model [EPPM], Witte (1992) defines fear appeals as “persuasive messages designed to scare people by describing the terrible things that will happen to them if they do not do what the message recommends” (p. 329). She argued that no existing theories thoroughly addressed why individuals reject fear appeal messages and few described the interaction between threat and efficacy (Witte, 1992, 1994, 1998). With the development of the EPPM, Witte (1992) desired to provide clear operationalizations between fear, threat, and efficacy in order to create a consistent vocabulary for researchers and illustrate a model that emphasized fear as a central component. Previously, theories had overly emphasized the cognitive

component of message acceptance and rejection rather than the emotional component best captured by fear (e.g. Rogers, 1975, 1983).

In explaining why individuals accepted or rejected fear appeals, Witte's (1992) EPPM combined Leventhal's (1970) parallel processing model with Rogers' (1975) Protection Motivation Theory [PMT]. Although Rogers and Leventhal describe the processes which individuals employ when exposed to a fear appeal, neither theory defined the point at which the fear control process (message rejection) overrides the danger control process (message acceptance) (Witte, 1992, 1994, 1998). Additionally, Witte (1992) was unsatisfied with the lack of clarity in other theories on the role of fear, the danger control process, the fear control process, and the critical point at which individuals accept or reject messages. In response to these gaps in the literature, Witte developed the EPPM. What follows is a definition of the terms, an explanation of the threat and efficacy relationship, and an overview of research that has employed the EPPM as a theoretical platform.

Fear, threat, and efficacy are critical components of the EPPM. Witte (1992) defines fear as "a negatively-valenced emotion, accompanied by a high level of arousal, and is elicited by a threat that is perceived to be significant and personally relevant" (p. 331). Contrary to fear, threat is "an external stimulus variable that exists whether a person knows it or not" (Witte, 1992, p. 331). When an individual cognitively recognizes that a threat is present, the person perceives the threat and this, in turn, elicits fear. Threat is a multifaceted concept with two components: susceptibility and severity. Susceptibility makes the receivers of the message aware that the consequence could

happen to them. For example, a message that states “You are at risk for a car accident if you text while driving” conveys the audience’s susceptibility to the threat (car accident). Perceived susceptibility “is an individual’s beliefs about his or her chances of experiencing the threat” (Witte, 1992, p. 332). Severity indicates the seriousness of the threat. For example, a message that states “Texting while driving leads to death” reveals the high severity of texting while driving. Perceived severity “is an individual’s beliefs about the seriousness of the threat” (Witte, 1992, p. 332).

Efficacy, a recommended response for an individual to control the threat, is comprised of two variables, self-efficacy and response efficacy. Response efficacy represents the individual’s belief that a response is effective, whereas, self-efficacy represents audience members’ belief that they can effectively engage in the recommended response (Perloff, 2003; Witte, 1992). Perceived response efficacy is “an individual’s beliefs as to whether a response effectively prevents the threat” (Witte, 1992, p. 332). For example, that statement “I believe that refraining from texting while driving is an effective way to prevent accidents” reflects perceived response efficacy. Perceived self-efficacy “refers to an individual’s beliefs in his or her ability to perform the recommended response” (Witte, 1992, p. 332). “I am confident in my ability to refrain from texting while driving to prevent getting into a car accident” is an example of an individual’s perceived self-efficacy.

An explanation of the relationship between threat and efficacy along with a description of danger control and fear control processes follows. Witte (1992, 1998) developed twelve propositions of the EPPM, all of which will be detailed below.

Although Witte (1992) only described 11 propositions, the most recent propositions and terminology (i.e. maladaptive and adaptive were used to describe fear control process outcomes and danger control outcomes in the first article but were changed in 1998) will be included.

Fear appeal messages are composed by uniting a statement of threat (comprised of severity and susceptibility) and a statement of efficacy (self-efficacy and response efficacy). When an individual is presented with a fear appeal, s/he evaluates the perceived threat. If threat is perceived as low, the individual will not process the message any further which means efficacy is never appraised. If the perceived threat is moderate or high, the person will experience some level of fear. Once fear is elicited, the individual will assess the efficacy of the recommended response. Witte (1992, p. 339) illustrates this phenomenon in Proposition 1: “When perceived threat is low, regardless of perceived efficacy level, there will be no further processing of the message.” Thus, for fear appeals to be effective, the individual must first perceive threat as high.

The optimal process for an individual to engage in is danger control. This process occurs when the individual perceives both threat and efficacy as high. Witte (1992) states that “perceived threat determines the degree or intensity of the reaction to the message, while perceived efficacy determines the nature of the reaction” (p. 338). High efficacy gives the individual the tools to manage the fear elicited by the high threat component and lead the individual into danger control. Witte (1992) illustrates this in Proposition 2: “As perceived threat increases when perceived efficacy is high, so will message acceptance” (p. 340). Therefore, for fear appeals to lead to message acceptance,

the individual must perceive efficacy as high if s/he also perceives threat as high. Message acceptance occurs during danger control because individuals are able to cognitively control the danger by changing an attitude, intention, or behavior related to the threat. Witte (1992) describes this in Proposition 3: "Cognitions about threat and efficacy cause attitude, intentions, and behavior changes" (p. 340). The danger control process allows individuals to cognitively process the message, manage the fear, and cope with the danger.

However, when an individual's perceived threat is high and perceived efficacy is low, s/he engages in fear control processing. The perceived threat increases the individual's fear, and when little or no efficacy is perceived, the fear escalates. The high efficacy component would provide the tools necessary to help the individual to manage the fear. Instead, to reduce fear, individuals engage in message derogation, defensive avoidance or perceived manipulation, which are fear control responses that minimize the fear the person feels. Unlike the danger control process, the fear control process is emotional and individuals are motivated to cope with the fear rather than danger. Automatic or unconscious defense mechanisms may occur to protect the individual from experiencing anxiety aroused by the perceived high threat and low efficacy.

Additionally, some individuals may consciously control the threat by a boomerang effect which is a notorious response to the exposure to a weak or missing efficacy component in a high threat message. Witte (1992) depicts this in Proposition 4: "As perceived threat increases when perceived efficacy is low, people will do the opposite of what is advocated (boomerang)" (p. 341). Atkin (2001) claims that "highly

threatening fear appeals may backfire without a strong efficacy component, and frequent emphasis on a negative incentive may produce desensitization as the audience becomes accustomed to the harmful outcome” (p. 52). As both Atkin and Witte illustrate, the boomerang effect can be more dangerous than the individual not processing the original message. In fact, formative research and awareness of unintended consequences must be at the forefront of researchers’ minds when creating campaigns (Atkin & Freimuth, 2001).

Witte (1992) explains that “the critical point occurs when perceived threat exceeds perceived efficacy and this critical point is where fear control processes begin to dominate over danger control processes” (p. 341). Consequently, a fine line exists between the danger control process and the fear control process. The level of perceived efficacy determines how the individual will react to the high threat. Self-efficacy and response efficacy must be included in fear appeals to increase the chance of message acceptance. Perloff (2003) claims that “if perceived efficacy exceeds perceived threat, individuals engage in danger control, and adopt recommendations to avert the danger” (p. 192) which is critical to message acceptance, the changing of attitudes, intentions, or behaviors. Witte (1998) explains this in Proposition 7: “When perceived efficacy is high, fear indirectly influences danger control outcomes, as mediated by perceived threat” (p. 439). So although fear emerges when perceived threat is high, if the individual perceives efficacy as high, then the individual believes there is an effective response to control the danger. Thus, danger control process will lead to positive outcomes. Proposition 11: “Perceived threat determines the intensity of a response (how

strong the response) and perceived efficacy determines the nature of the response (either fear or danger control).

A variety of research employs the EPPM to better understand how fear appeal messages change attitudes, behaviors, and intentions. Health-related interventions have utilized the EPPM as a guide for developing and or testing messages. A plethora of health topics have been studied using the EPPM, some include AIDS (Witte, 1994; Witte & Morrison, 2000; Roberto, Zimmerman, Carlyle, & Abner, 2007), gun safety (Roberto, Meyer, Johnson, & Atkin, 2000), influenza pandemic response (Barnett et al., 2009), smoking cessation (Wong & Cappella, 2009), teen pregnancy (Witte, 1997), and breast self-examinations (Roskos-Ewoldsen, Yu, & Rhodes, 2004). According to Hale and Dillard (1995), “an effective fear appeal must include a severe threat, evidence suggesting the target is especially vulnerable to the threat, and solutions that are both easy to perform and effective” (p. 78). An exhaustive list of researchers who have used the EPPM is beyond the scope of this paper; however, a brief overview of how the EPPM has been used to create messages and the target populations studied lends support for the use of the EPPM for this particular project. Although no current research has employed this model for TWD, the findings from previous research and the formative research suggests that the EPPM is useful for the message design in this study.

The earliest test of the model lends support for using language to manipulate threat in message creation. Witte (1994) illustrates that extremely vivid language, which was utilized in high threat messages for the current study, was used to manipulate threat. Witte (1994) varied threat and efficacy in six messages targeting sexually active

unmarried individuals who knew little about AIDS. The factorial design was a 3(high, moderate, low threat) X 2 (high, low efficacy) with one no-message population comparison group. The participants were 146 predominately White (66.4%) undergraduates. Each participant received a folder that contained a core message, a case study of a fictitious AIDS patient, and a message about the effectiveness of condoms. Four photos were also supplied in the case studies and core messages. Witte (1998) developed the messages by using passages from HIV textbooks, government documents, etc. and each message contained accurate information. Threat and efficacy were manipulated in the messages.

Witte manipulated threat on three levels: high, moderate, and low. For the high threat message, graphic photos of late-stage AIDS victims and vivid language were used to emphasize severity. Personalistic language that stressed the individual was at risk for contracting the AIDS-virus maximized perceived susceptibility about AIDS. Fairly vivid terms along with photographs showed intermediate states of the disease in the moderate threat messages. Witte (1994) claims that “moderately personalistic language emphasizing the susceptibility of heterosexuals in the United States to HIV-infection was used to induce moderate levels of perceived susceptibility” (p. 120). The low threat messages minimized severity and susceptibility by employing neutral language that discussed the effects of AIDS beyond the United States and showing bland photographs of laboratory tests.

Witte manipulated efficacy on two levels: low and high. The low efficacy message minimized response efficacy and self-efficacy. To minimize response efficacy,

studies were cited that “found condoms fail some of the time and that people have contracted HIV while using condoms” (Witte, 1994, p. 120). To minimize self-efficacy, problems associated with condom use were explored and a list of excuses people give for not using condoms was provided. However, the excuses were not directly refuted. The high efficacy message maximized response efficacy and self-efficacy. Response efficacy was maximized by stating that condoms reduce the risk of HIV transmission if used correctly. Self-efficacy was maximized by highlighting the benefits and ease of condom use along with providing refutations for typical excuses partners give for not wanting to use condoms.

The research yielded support for the propositions that the danger control process is primarily a cognitive process and the fear control process is primarily an emotional process. Individuals who engaged in the danger control process or the fear control process were able to cope with fear but did so by different techniques. Therefore, Witte (1994) was successful in creating high, moderate, and low threat messages with high and low efficacy that induced varying levels of perceived threat and efficacy. This research offers insight into the components of high threat and low threat messages, particularly in the form of language that was employed in the current message design.

In 2000, Witte and Allen conducted a meta-analysis of 100 fear appeal articles and found support for the EPPM. They discovered that fear control and danger control are consistent with the original propositions. However, Witte and Allen (2000) also found that high threat messages, regardless of efficacy, produced stronger effects than low-threat messages; therefore, individuals who perceived a high threat-high efficacy

message or high threat-low efficacy message still processed messages more than low threat-low efficacy conditions. They claim that “a persuader should promote high levels of threat and high levels of efficacy to promote attitude, intention, and behavior changes” (p. 604). These research findings indicate that high threat and low threat messages can successfully be created. Witte and Allen (2000) found that newer studies had larger manipulation effects than older studies; therefore, they suggest that manipulations of threat and efficacy were more carefully constructed in the newest research. This meta-analysis exemplifies that high threat messages regardless of efficacy level will be more persuasive than low threat messages. This finding justifies why the current project holds efficacy constant in order to measure the difference between high threat and low threat messages.

By in large, research on EPPM has reduced since the 90's; however, a few recent studies are applicable to the current project. McKay, Berkowitz, Blumberg, and Goldberg (2004) conducted a preliminary study and used the EPPM to build persuasive print materials for older adults who were at risk for cardiovascular disease. The messages were created from combining passages from brochures, American Heart Association documents, press articles, and several newspapers. High threat messages explained heart disease as a serious health problem for older adults and the increase risk because of high homocysteine levels. Low threat messages were not created for this study; yet, a validation study was conducted to test that the high threat messages did differ in threat from low threat messages. Efficacy level was manipulated. Low efficacy messages addressed that lowering homocysteine does not always lower heart disease risk

and that remembering to eat right and take a multivitamin can be difficult. High efficacy messages stressed that consuming vitamin B-rich foods and supplements can lower homocysteine and such items are easy to consume. The messages were piloted prior to the study. McKay et al. (2004) found individuals who were exposed to the high threat-high efficacy messages reported greater confidence in behaviors and indicated the employment of the danger control process which lead to complaint behaviors. Thus, this research supports the EPPM as a theoretical model for designing print messages that manipulated threat and efficacy. In this case, high threat and high efficacy message increase compliance for adults at risk for cardiovascular disease. This study reiterates that print messages can be effective in manipulating threat and that high threat messages were persuasively effective; therefore, the current project seeks to manipulate threat by creating print messages.

Goei, Boyson, Lyon-Callo, Schott, Wasilevich, and Cannarile (2010) conducted two studies to explore if the EPPM propositions would yield support even when “the target of a message assumes some responsibility for the health of another” (p. 342). Goei et al. (2010) found support that severity, susceptibility, response efficacy, and self-efficacy can be measured validly in the health context of asthma and of an individual overseeing someone else’s health. This is a significant finding because Goei et al. (2010) suggest that threat and efficacy may be additive rather than multiplicative as previously described in the EPPM.

Given these findings, this model was employed to create high threat and low threat messages that address TWD. Additionally, since Witte (1992, 1994, 1997, 2000)

found that efficacy was not processed with low threat messages and low efficacy with high threat messages causes fear control processing, this current study will not manipulate efficacy. Instead, efficacy was held constant. The fear control process can backfire and lead to a boomerang effect and this research does not seek to induce message derogation, defensive avoidance, perceived manipulation, or reactance. The current research will further explore the attitudes, intentions, and behaviors individuals report after perceiving high/low threat and high efficacy messages.

Although the EPPM provides not only conceptual clarity but also specifies with clarity how threat and efficacy must be balanced to facilitate message acceptance, there are some boundary conditions to the theory. The theory does not thoroughly explain why some individuals in the focus groups expressed a desire for highly threatening messages while others were far less enthusiastic about the use of this technique. That said, guidance is available from the EPPM for those with varying levels of need for activation or arousal. While Witte (1998) does recognize that “Individual differences influence outcomes indirectly” (p. 439), she is silent on how to handle these issues. Nevertheless, she leaves open the idea that other variables may influence an individual’s perception of threat and efficacy. Witte (1992) states that “each person evaluates the components of a message in relation to his or her prior experiences, culture, and personality characteristics. Thus, the same fear appeal may produce different perceptions in different people, thereby influencing subsequent outcomes” (p. 339).

Other literature is necessary, then, to identify how individual differences will moderate the effect of high and low threat messages. Sensation seeking is one viable

option to explain the responses from the focus group participants who were interested in messages that induced high levels of arousals (e.g. scary pictures). In contrast, need for cognition provides a useful mechanism through which to understand those individuals who desired lower levels of arousal (e.g. statistics). What follows is an overview of these concepts.

Need for Cognition

Cohen, Stotland, and Wolfe (1955) first conceptualized need for cognition [NFC] as “a need to structure relevant situations in meaningful, integrated ways. It is a need to understand and make reasonable the experiential world” (p. 291). This definition places an emphasis on situational factors rather than operationalizing NFC as an individual trait. In a 1957 study with undergraduates from Yale University, Cohen found support for the hypothesis that individuals high in need for cognition were more apt to critically think about information. Therefore, a distinction was drawn between individuals who expressed a high need for cognition from those who expressed a low need for cognition. Cacioppo and Petty (1982) and Cacioppo, Petty, and Morris (1983) then shifted NFC from a situational factor to a dispositional determinant after executing multiple studies. Cacioppo and Petty (1982) developed a need for cognition scale [NCS] to differentiate between individuals who “dispositionally tend to engage in and enjoy effortful analytic activity and those who do not” (Cacioppo et al., 1983, p. 806).

Cacioppo and Petty (1982) describe individuals with low intrinsic motivation to process messages as “chronic cognitive misers” whereas highly cognitively motivated individuals as “chronic cognizers”. In regard to how individuals react to persuasive

messages, Cacioppo, Petty, & Morris (1983) found in two experiments that individuals high in need for cognition were more likely to “extract information from and think about externally provided message arguments than individuals low in need for cognition” (p. 815). They suggest that regardless of motivation level, people are sense-makers; thus, they seek to understand the world. Chronic cognizers and chronic cognitive misers make sense of the world by different techniques such that “individuals high in need for cognition were proposed to naturally tend to seek, acquire, think about, and reflect back on information to make sense of stimuli, relationships, and events in their world” whereas “individuals low in need for cognition, in contrast, were characterized as more likely to rely on others, cognitive heuristics, and social comparison processes to provide this structure” (Cacioppo et al., 1996, p. 198). Thus, individuals low in NFC rely on simple cues, such as source attractiveness, to evaluate a message whereas individuals high in NFC are more influenced by the quality of message arguments (Cacioppo, Petty, & Morris, 1983; See, Petty, & Evans, 2009). When using NFC as a variable in message creation, practitioners must include strong, logical arguments for a target audience high in NFC or simple arguments for audience members low in NFC (Perloff, 2003).

Although tailoring messages to an individual’s level of NFC is ideal (Perloff, 2003), this particular project seeks to understand if NFC moderates an individual’s response to fear appeals. Therefore, NFC won’t be employed as a theoretical base for the creation of the messages but as foundation for research questions and hypotheses for NFC level may influence perceptions of fear appeal messages. Since NFC is conceptualized as a factor that influences an individual’s level of cognitive processing

(Cacioppo & Petty, 1982; Cacioppo, Petty, & Morris, 1983) and studies have found that individuals high in NFC will elaborate more on messages than individuals low in NFC (e.g. Petty & Cacioppo, 1986), this trait must be further explored in the context of the EPPM. In regard to the EPPM, Witte (1992) claims that if a receiver of the message perceives the threat to be low then no further processing will occur; however, literature on NFC suggests that individuals high in NFC may process low threat messages. Similarly, participants in the focus groups suggested that low emotional arousal messages would be effective for individuals who are not persuaded by high emotional arousal messages (Boenker, 2010). Therefore, testing NFC as a moderator for an individual's response to fear appeals is essential to filling this gap in the literature. What follows is an overview of research findings in regard to NFC.

Research studying NFC as a personality trait has crossed many disciplines such as communication (e.g., Braverman, 2008), psychology (e.g., Petty, Brinol, & Priester, 2009; Petty & Cacioppo, 1986), and marketing (e.g., Hoffman, 2010). NFC also has been tested as a moderator for various persuasive messages that targeted behaviors such as smoking (e.g., Shen, Monahan, Rhodes, & Roskos-Ewoldsen, 2008; Vidrine, Simmons, & Brandon, 2007), screening mammography (e.g. Williams-Piehot, 2003), and fruit and vegetable intake (e.g. Williams-Piehot, 2006). An exhaustive review of all research on NFC is beyond the scope of this paper; however, the studies that provide a glimpse into how individuals low in NFC differ from those high in NFC when exposed to persuasive messages were explored.

The earliest validation of NFC as a trait was conducted by Cacioppo and Petty (1982) in which they created the NCS for four studies. They found that individuals low in NFC were “more likely to think about and derogate the experimenter” (Cacioppo & Petty, 1982, p. 130). The studies also revealed that NFC was a moderator variable in determining which route to persuasion an individual use as theorized by the Elaboration Likelihood Model (Petty & Cacioppo, 1982). The ELM was created in response to the lack of theories accounting for “situations where people were not actively thinking about the message content” (Petty, Brinol, & Priester, 2009, p. 132). This model describes two dichotomous routes, determined by the high or low levels of thinking individuals can take when interpreting messages. The first is the *central route* which is determined by the individual’s *motivation* and *ability* to use higher level thinking; the second route is the *peripheral route* which uses less cognition during processing (Petty, 1986). According to Cacioppo and Petty (1986), elaboration is the “extent to which a person scrutinizes the issue-relevant arguments contained in persuasive communication” (p. 7). The amount of elaboration determines which route an individual uses. For example, high levels of elaboration indicate the central route. In this model, NFC is one determinant of motivation which in turns leads to either processing a message peripherally or centrally. Individuals high in NFC are more likely to elaborate on a message if they possess the ability to do so (Cacioppo & Petty, 1982; Petty & Cacioppo, 1986).

See, Petty, and Evans (2009) conducted two experiments to determine whether if a message labeled simple or complex affected the motivation level of individuals to

process the message. NFC interacted with subjective perceptions of the message feature, perceived complexity, when no real manipulations of the messages existed. When individuals were exposed to a message labeled as complex, participants high in NFC exerted more effort to process the message while participants low in NFC were less motivated to process. When individuals were exposed to a message labeled as simple, participants high in NFC exerted less motivation to process the message while participants low in NFC were more motivated. See et al. (2009) also discovered that “the common assumption of most individuals, regardless of their NC, appears to be that most information or cognitive tasks they encounter will be complex” (p. 886). Thus, this may explain why literature reports that individuals high in NFC process messages more readily and without incentive compared to those low in NFC. These findings shed light on that the perceptions of complexity lead to differences in processing where previous research has actually varied the complexity of the message (See et al., 2009). This finding has implications for the EPPM because Witte (1998) argues that individuals will not process low threat messages; however, See et al. (2009) found that individuals high in NFC are motivated to process a variety of messages because of the individual’s assumption that most messages are complex.

Braverman (2008) tested NFC as a moderator for the effectiveness of persuasive messages on individuals. Persuasive messages were created to advocate drinking water to lose weight. Two types of messages containing the same information were created; however, one message was purely informational while the other was testimonial. The testimonial messages were composed of personal opinions, stories, and experiences

whereas informational messages provided statistics, expert opinions, and reports of events. The messages were provided in both written and audio format. She found that individuals high in NFC were more persuaded by testimonial and informational messages than participants low in NFC; however, those high in NFC were equally persuaded by informational and testimonial messages while individuals low in NFC were less persuaded by the informational message than the testimonial (Braverman, 2008). Therefore, testimonial messages which would elicit emotional arousal were more effective with individuals low in NFC whereas individuals high in NFC were equally persuaded by both high emotional arousal messages (testimonial) and low emotional arousal messages (informational).

Vidrine et al. (2007) studied NFC as a moderator for responses to a smoking risk message intervention. They found that NFC interacted with pamphlet type, factual or evaluative, to increase smoking-relevant risk perceptions among occasional smokers. The evaluative pamphlet was an emotion-based message which described risks of smoking in terms of emotional, impressionistic, and subjective statements. The factual pamphlet contained logical, well-documented, and objectively verifiable information. Participants high in NFC reported a greater perceived risk when exposed to the factual pamphlet, while individuals low in NFC displayed larger changes in risk perception when exposed to the evaluative pamphlet. Therefore, Vidrine et al. (2007) claims that “Emotional information may function also as a peripheral cue for individuals lower in NC because they may rely on their emotional responses to evaluate information to a greater degree than individuals who are higher in NC” (p. 94). This was also evident in

the formative research conducted for this study. Participants promoted the use of high emotional arousal messages to increase persuasion and mentioned source factors as peripheral cues (Boenker, 2010). Research has found support that individual perceptions of risk and message effectiveness have been influenced by NFC level.

Research conducted by Ruiters, Verplanken, Cremer, and Kok (2004) found that fear appeals result in danger control processing among respondents who are high in NFC whereas individuals low in NFC were not motivated to change their behavior. Thus, Ruiters et al. hypothesized that individuals low in NFC may use the fear control process when exposed to fear appeals. Efficacy was present in these messages and reported as high. Consequently, they suggest that fear appeals should be used with caution since people high in NFC may also occasionally respond using the fear control process (Ruiters et al., 2004). An interaction effect occurs between NFC and threat information. Ruiters et al. (2004) claim that “only people who are high in need for cognition may profit from confrontations with fear appeals” (p. 22). Hence, individuals high in NFC will report greater levels of behavior change when exposed to high threat messages than individuals low in NFC. In dissertation research extending EPPM and the research conducted by Ruiters et al. (2004), Love (2009) found that NFC was a moderator between a fear appeal message (high threat and high efficacy) and perceived threat (p. 4). Individuals high in NFC reported a greater perceived threat after exposure to the fear appeal messages than individuals low in NFC (Love, 2009). Therefore, Love calls for additional research to further examine this finding and for practitioners to be more aware of the target population’s cognitive abilities.

Given that NFC has been shown to moderate message effects (Braverman, 2008; Love, 2009; Ruiter et al., 2004; Vidrine, 2007), and given that fear appeal messages are, by nature, designed to elicit fear responses, I hypothesize:

- H1: There will be an interaction between threat and NFC on message effectiveness. Specifically, individuals low in need for cognition will report greater levels of message effectiveness for high threat messages than low threat messages. Individuals high in need for cognition will report similar levels of message effectiveness for high threat and low threat messages.
- H2: There will be an interaction between threat and NFC on attitude toward texting while driving. Specifically, individuals high in need for cognition will report similar levels of attitude change when exposed to low threat messages than when exposed to high threat messages. Moreover, individuals low in need for cognition will report greater levels of attitude change when exposed to high threat messages than when exposed to low threat messages.
- H3: There will be an interaction between threat and NFC on intention to text while driving. Specifically, individuals low in need for cognition will report a greater change in intentions when exposed to high threat messages than when exposed to low threat messages. Moreover, individuals high in need for cognition will report similar levels of change in intentions when exposed to low threat messages than high threat messages. Individuals high in need for cognition will report greater levels of change in intentions when exposed to high threat messages than individuals low in need for cognition.

H4: NFC and perceived threat will be negatively related, such that individuals high in need for cognition will report greater perceived threat than those low in need for cognition.

H5: There will be an interaction between threat and NFC on perceived threat. Specifically, individuals high in need for cognition will report greater levels of perceived threat when exposed to high threat messages than low threat messages. Moreover, individuals high in need for cognition will report greater perceived threat when exposed to fear appeal messages than individuals low in need for cognition.

Cacioppo et al. (1993) claims that “it remains for future research to determine exactly how the dispositional factor of need for cognition bears on our analysis of persuasion” (p. 816-817). Therefore, this project seeks to shed light on NFC as a dispositional factor that may influence the way individuals process fear appeals and whether NFC is related to TWD or the other trait that will be studied, sensation seeking.

In contrast to need for cognition, the literature on sensation seeking specifically and activation models generally provides an alternative to the overly cognitive approach to message processing. Sensation seeking and activation theories focus on one’s optimal level of arousal (Donohew et al., 1998) and those concepts are reviewed next.

Sensation Seeking

Sensation seeking (SS) is a biologically based personality trait that manifests as a need for physiological arousal, novel experiences, and a willingness to take risks to obtain the optimal level of arousal (Zuckerman, 1971, 1979, 1994). Zuckerman (1990)

postulates that this trait evolved in humans as a survival mechanism and claims that “the need for change, variety, and intensity of stimulation would manifest itself in many aspects of behavior, including sensory, social, and thrill-seeking types of activity” (1971, p 45). Therefore, people engage in a variety of risky and/or illegal behaviors to satisfy their needs. Health behaviors that have been correlated with higher SS tendencies are smoking (Stephenson & Helme, 2005; Zuckerman, 1990) and substance abuse (Everett & Palmgreen, 1995, Lorch et al., 1994; Palmgreen et al., 1991; Stephenson & Palmgreen, 1999; Stephenson, 2003). Although research has yet to find a correlation between SS and TWD, the current project seeks to understand how this personality trait may relate to the behavior along with how individuals process an anti-TWD message. The Activation Model of Information Exposure provides a theoretical foundation for the use of sensation seeking as a target variable for health campaigns.

From a communication perspective, Donohew, Palmgreen, and Duncan (1980) place SS in the Activation Model of Information Exposure. This model assumes that individuals “enter information exposure situations with the expectation of achieving or maintaining [an] optimal state [of arousal]” (Donohew et al., 1980, p. 279). Particularly, this model concentrates on the relationship between one’s need for stimulation and the probability that a message will attract and maintain an individual’s attention. The Activation Model of Information Exposure assumes that individuals vary on their levels of optimal arousal and if the optimal level is not reached and maintained, then individuals may seek alternate forms of activation (Donohew et al., 1980; Donohew, Palmgreen, Zimmerman, Harrington, & Lane, 2003; Stephenson & Southwell, 2006).

Therefore, understanding how an individual's optimal level of arousal translates into the likelihood of engaging in risky behaviors and the individual's likelihood of processing a health message is critical.

The need for stimulation is a function of an individual's biological composition. Thus, individuals with a high need for stimulation and activation often seek activities that produce an arousal of the subcortical limbic systems, which release dopamine and norepinephrine (Zuckerman, 1994). In order to measure the optimal level of arousal, researchers have employed the variable of SS as it relates an individual's response to media content (Stephenson & Southwell, 2006). Individuals are categorized as either high or low sensation-seekers based on their arousal tendencies, and "greater tendency to seek sensation, simply stated, is often associated with lower default levels of dopamine" (Stephenson & Southwell, 2006, p. S41) which connects back to Zuckerman's initial findings that SS is a biologically-based personality trait. SS was employed to further understand whether TWD is related to other risky behaviors in which individuals high in sensation seeking may engage.

As previously stated, individuals vary in SS level and this trait can be classified on a continuum from high sensation seekers (HSSs) to low sensation seekers (LSSs). The HSS and LSS may not comprehend the behavior of the opposite. Whereas HSSs overlook or underestimate the risks involved in risky behavior because the reward of the experience outweighs the price of the risk, according to Zuckerman (1994), "low sensation seekers are not just risk averse; they see no point or reward in sensation-seeking activities that could justify what they regard as the high levels of risk involved"

(p. 27). LSSs perceive higher levels of risk in situations compared to HSSs; therefore, LSSs choose not to engage in activities that HSSs may enjoy such as mountain climbing or speeding (Zuckerman, 1994). Therefore:

H6: Sensation seeking and perceived risk of TWD will be negatively related, such that high sensation seekers will perceive less risk than low sensation seekers. Low sensation seekers will perceive greater risk than high sensation seekers.

Further, HSSs take more behavioral risks than LSSs (Heino, van der Molen, & Wilde, 1996). Heino et al. (1996) tested SS in regard to the distance drivers chose to take while driving behind a car on a motorway. They found that HSSs preferred a shorter following distance than LSSs (Heino et al., 1996). Heino et al. (1996) claims that “the behaviour of our sensation seekers is generally considered to be more risky but they do not perceive this as such themselves, nor do they need to invest more mental effort in order to operate at their preferred behavioural level” (p. 78). Clément and Jonah (1984) discovered in a replication of Zuckerman and Neeb’s (1980) study that SS is related to faster driving and that HSSs who were female were less likely to wear seatbelts. These findings illustrate that HSSs may be more prone to participate in dangerous driving than LSSs which may provide insight into the personality traits of an individual who engages in TWD. HSSs also report engaging in multiple activities at the same time while LSSs prefer a single activity to multitasking because they may become easily distracted by outside stimuli (Zuckerman, 1994). The enjoyment of multitasking by HSSs may be a reason these individuals TWD. Therefore:

H7: Sensation seeking and engagement in TWD will be positively related, such that high sensation seekers will report higher levels of TWD than low sensation seekers. Low sensation seekers will report lower levels of TWD than high sensation seekers.

Beyond risky health behaviors, SS has been associated with how individuals perceive messages. The Activation Model of Information Exposure describes what transpires when an individual is exposed to a message: “the individual will be attracted to it [the message] and continue attending if the arousal generated by the message is consistent with the arousal desired by the individual” (Stephenson & Southwell, 2006). If the message elicits arousal that is consistent with the optimal level of arousal, then the individual will continue exposure to the message and experience positive affect (Zillmann & Bryant, 1985). On the contrary, if the message is not stimulating enough, the individual will seek more arousal elsewhere. However, a message may be overly stimulating and cause the individual to experience negative affect and seek less arousal elsewhere. The Activation Model of Information Exposure is consistent with the insights provided by the formative research for this project: participants argued over the effectiveness of affective arousal in anti-TWD messages and many disagreed on the levels of fear needed to produce persuasion. How do we translate this theoretical foundation into message creation of an anti-TWD message?

Message sensation value, “the degree to which formal and content audio-visual features of a message elicit sensory, affective, and arousal responses” (Palmgreen, Donohew, Lorch, Rogus, Helm & Grant, 1991, p. 219), was conceptualized by

Stephenson and Palmgreen (2001) as either an attribute of the message (MSV) or as the perceived sensation value (PMSV) (p. 51). Donohew, Lorch, and Palmgreen (1998) then reworked the Activation Model of Information Exposure to become an individual-differences model of information exposure. They propose that HSSs should be more attracted to messages high in sensation value (HSV) while messages low in sensation value (LSV) should be more attractive to LSSs (Donohew et al., 1998, p. 458). Donohew et al. (1998) expands on this idea, “In messages, stimulation is provided by formal features, including (a) fast action, (b) novelty, (c) color, (d) stimulus intensity, (e) complexity, and others, and by the verbal content, including dramatic qualities and emotional intensity” (p. 459). Therefore, the greater number and higher intensity of the formal features, the more likely the message will have HSV. The EPPM combines high severity and high susceptibility to create high threat messages; therefore, no formal features of the message are addressed in terms of sensation value. However, since the EPPM suggests that high threat messages elicit fear which in turn is emotional intensity as described by Donohew et al. (1998) then high threat messages may have high PMSV. The following research questions are posed:

RQ1: Will individuals perceive high threat messages as high sensation value messages?

RQ2: Will individuals perceive low threat messages as low sensation value messages?

For this research MSV will not be employed as a theoretical base for the creation of the messages or the segmentation of the audience; however, SS was used for research

questions and hypotheses as SS may influence perceptions of fear appeal messages and TWD behavior. What follows is a brief overview of research findings that lend support for differentiating HSSs from LSSs in regard to MSV and PMSV.

HSSs prefer messages that elicit strong sensory, affective, and arousal responses whereas LSSs favor messages that elicit lower levels of arousal (Palmgreen et al., 1991; Palmgreen, Donohew, & Harrington, 2001). Thus, a distinction can be drawn between those individuals who are HSSs and LSSs on the basis of message perception. Since the EPPM suggests that high threat messages are those that elicit emotional arousal (Witte, 1992), HSSs and LSSs should differ in their perceptions of threat, message effectiveness, attitude, and intention. More specifically, this project seeks to understand if SS moderates an individual's response to fear appeals. The hypotheses for this study are:

H8: Sensation seeking and perceived threat will be negatively related, such that high sensation seekers will report lower levels of perceived threat than those low in sensation seeking. Individuals low in sensation seeking will report greater levels of perceived threat.

H9: There will be an interaction between threat and SS on perceived message effectiveness. Specifically, those high in sensation seeking will report higher perceived message effectiveness for high threat messages than those low in sensation seeking. Individuals low in sensation seeking will report lower perceived message effectiveness for high threat messages than those high in sensation seeking. Moreover, Individuals high in sensation seeking will

report lower perceived message effectiveness for low threat messages than those low in sensation seeking. Individuals low in sensation seeking will report higher perceived message effectiveness for low threat messages than those high in sensation seeking.

In their research, Stephenson and Palmgreen (2001) chose to more specifically explore PMSV because “such message perceptions are probably more strongly and directly related to persuasive outcomes than are more objective operationalizations of message attributes” (p. 51). When studying the PMSV of anti-marijuana PSAs perceived by HSSs and LSSs, Stephenson and Palmgreen (2001) discovered that greater PMSV lead to increased processing of the messages by both LSSs and HSSs. While studying PMSV from antimarijuana PSAs, Palmgreen, Stephenson, Everett, Baseheart, and Francies (2002) found similar results as the previous research in that greater PMSV elicited higher levels of cognitive, narrative, and sensory processing of PSAs among both HSSs and LSSs (p. 425).

In contrast, Morgan, Palmgreen, Stephenson, Hoyle and Lorch (2003) chose to look at MSV rather than the subjective PMSV of the receivers. They found that the PMSV can be impacted by the characteristics of the message that are controlled by the creator such as intense images, sound saturation, unexpected format, a surprise or twist ending, and acting out the consequences of drug use (Morgan et al., 2003). They discovered a moderate correlation between the MSV and the PMSV, $r(109) = .46, p < .001$ (Morgan et al., 2003, p. 520). Morgan et al. (2003) claims that ads with high PMSV are more likely to be effective with HSS.

Strasser et al. (2009) researched the impact antitobacco HSV PSAs and LSV had on HSSs and LSSs. LSSs exposed to the LSV PSAs experienced higher levels of self-efficacy whereas LSSs exposed to the HSV PSAs experienced higher negative beliefs. LSV PSAs elicited lower levels of self efficacy beliefs for HSSs. Therefore:

H10: There will be an interaction between threat and SS on perceived self efficacy. Specifically, individuals low in sensation seeking will report higher levels of perceived self efficacy when exposed to LSV messages whereas individuals high in sensation seeking will report lower levels of perceived self efficacy when exposed to LSV messages.

Everett and Palmgreen (1995) also discovered a distinction between HSSs and LSSs in regard to MSV. They found in their studies of anticocaine PSAs that sensation seeking and MSV interacted to affect recall, attitude, and behavioral intentions, and perceived recall (Everett & Palmgreen, 1995). Their findings indicate that LSV PSAs were more effective for LSSs whereas HSV PSAs were more effective for HSSs.

As illustrated by these research findings, MSV and PMSV impact the processing of messages by LSSs and HSSs. HSV messages are attractive to HSS who are drawn to experiences that are novel and that induce affective arousal. In a review of literature, Everett and Palmgreen (1995) state that HSSs prefer stronger fear appeals than LSSs. Therefore, SS should be explored as a moderator for the perception of fear appeal messages. Boenker (2010) discovered that participants expressed an interest in two levels of arousal associated with campaign materials for TWD. High emotional arousal messages were mentioned as a tactic for grabbing the attention of the audience through

the use of gory images and emotionally laden narratives; whereas, low emotional arousal messages were mentioned as a way to provide information about the dangers of TWD without the terrifying images (Boenker, 2010). These results could indicate a preference by HSSs to desire and process an anti-TWD message that induces high levels of emotional arousal which may indicate a message with HSV. On the contrary, participants interested in a message that elicits low emotional arousal which may also be a message with LSV could be characterized as LSSs. Thus, the present research seeks to understand the role of SS and PMSV in regard to perceptions of fear appeal message. SS will also be measured in regard to the behavior of TWD since HSSs have been documented to engage in various risky behaviors; consequently, this personality trait may increase one's tendency to TWD.

CHAPTER III

METHOD

There are two parts, the message validation pretests and the main study, for this project.

Message Validation Pretest

The pretests served to validate the high threat and low threat messages. The messages were tested in order to confirm that the high threat message is perceived as high threat and the low threat message is perceived as low threat.

Participants

Seventy-seven Texas A&M University undergraduate students, 14 males (18.2%) and 63 females (81.8%), were recruited from undergraduate courses offered in the Department of Communication at Texas A&M University and received extra credit for their participation. Participants were similar to those who participated in the main study; however, those that participate in the message validation did not participate in the main study. The majority of respondents identified themselves as seniors (51.9%), followed by juniors (42.9%), and sophomores (5.2%). The majority of the participants were White (88.3%), followed by Hispanic (6.5%), Asian-Pacific Islander (2.6%), and African American (1.3%).

Procedure

Each student who agreed to participate was randomly assigned to read either the high threat message or the low threat message. Each was given a packet which consisted of a cover page, high threat or low threat message, and questionnaire. Participants completed the study in the classroom. The participants had fifteen minutes to complete the questionnaire. Once all participants completed and returned the surveys, the participants signed a role sheet for the instructor to indicate they had completed the assignment for extra credit.

Measures

The participants responded to questions of perceived susceptibility, perceived severity, fear, and demographics. The measures used in the message validation pretest are described below and specific items for each construct are available in Appendix B. Some of the following are scales with established psychometric properties while others were designed specifically for this study.

Perceived Threat

Perceived threat was measured by combining both the perceived susceptibility score and the perceived severity score (Stephenson & Witte, 1998). Historically, Witte (1992, 1994) has measured the two constructs separately but created an additive composite to use in statistical analyses as they are second-order unidimensional (Witte, 1998).

Perceived Susceptibility

Perceived susceptibility to the dangers of TWD was measured with a seven-point, Likert-type scale adapted from Witte (2001) where 1 = strongly disagree and 7 = strongly agree and the items demonstrated good internal consistency ($\alpha=.79$).

Perceived Severity

Perceived severity of the dangers of TWD was measured with a seven-point, Likert-type scale adapted from Witte (2001) where 1 = strongly disagree and 7 = strongly agree and the items demonstrated good internal consistency ($\alpha=.87$).

Fear

Fear was measured using a seven-point, Likert-type scale adapted from Stephenson and Witte (1998) where 1 = not at all and 7 = extremely ($\alpha = .89$) and the items for this study demonstrated good internal consistency ($\alpha = .83$).

Demographic Information

Demographic information was gathered from each participant. The participants were asked to indicate their sex, college classification, and ethnicity.

Pretest Results

The results from the initial message validation study indicated that the high threat messages and low threat messages were not significantly different; both were perceived at a level of high threat. Since the first message validation was unsuccessful, the text in the original low threat message was changed in order to be less threatening. Then, the original high threat message and the new low threat message were tested in a second

message validation. Once again, the results indicated that both messages were perceived as high threat and were not statistically different.

Therefore, a decision was made to use only the high-threat message in the main study, as descriptive data revealed that the high-threat message operated consistently with fear appeal messages in other studies. Specifically, for the high threat message, individuals in the message validation study rated the perceived severity of the message ($M = 6.4$, $SD = 1.23$) and the perceived susceptibility of the message ($M = 5.75$, $SD = 1.28$) above the scale median and at a mean value that would be considered high threat by standards applied from other fear appeal studies.

Main Study

No low threat message was tested in the main study since study participants rated the messages as high threat during the message validation tests. Thus, many of the hypotheses were modified and will be presented appropriately in the results.

Participants

One hundred fifty-five Texas A&M University undergraduate students, 40 males (25.8%) and 114 females (73.4%), were recruited from undergraduate courses offered in the Department of Communication at Texas A&M University and received extra credit for their participation. Each student received an information sheet during recruitment. The majority of participants identified themselves as freshman (40.6%), followed by sophomores (37.4%), seniors (11.6%), and juniors (10.3%). The majority of respondents

were White (63.9%), followed by Hispanic (23.2%), African-American (5.2%), Asian-Pacific Islander (4.5%), and Other (3.2%).

Design

The design is a 3 (ubiquity, mastery, perceived benefits) X 1 (high threat) quasi-experimental, pretest-posttest design. There was no control group. However, forty-three participants were given an assessment of attitudes, intentions, and behaviors prior to exposure to the message in order to check equivalence based on random assignment on primary outcome variables.

Procedures

During the recruitment, participants were given a designated date and time to attend the main study. The participants then report to the reserved room in Bolton and Scoates Hall where the principal investigator welcomed them. Once participants entered the lecture room, the principal investigator verbalized the instructions which were also written on the chalk board. Each participant was handed a packet and allowed 45 minutes for completion. The packet contained a cover sheet, personality and behavioral questionnaire, message, and questionnaire with 92 questions. Each participant was randomly assigned to one of three message conditions (high threat/ubiquity, high threat/perceived benefits, high threat/mastery). A subgroup of participants, which is explained above in the design section, received a packet that contained a pretest questionnaire (15 questions) prior to exposure to the message. Once the participants

finish their questionnaire, they returned it to the principal investigator and signed the extra credit sheet for their communication instructor.

Measures

The pretest provided to the subgroup measured past TWD behavior, current TWD behavior, TWD intentions, perceived risk of TWD, attitudes about TWD, perceived susceptibility, perceived severity, perceived self efficacy, perceived response efficacy, sensation seeking tendencies, and need for cognition. The pretest given to all participants assessed past TWD behavior, current TWD behavior, TWD intentions, sensation seeking tendencies, and need for cognition. The posttest measures perceived susceptibility, perceived severity, perceived self efficacy, perceived response efficacy, attitudes about TWD, perceived risk of TWD, TWD intentions, perceived message sensation value, fear, message effectiveness, exposure to the “Safe Text Pledge”, exposure to TWD messages, and demographics. The measures used in the main study are described below and specific items for each construct are available in Appendix B. Some of the following are scales with established psychometric properties while others were designed specifically for this study.

Subgroup

The following items were only administered to a subgroup in order to test equivalence of random assignment.

TWD Intentions. TWD intention was measured using a five-point, Likert-type scale adapted from Stephenson and Helme (2006) where 1 = very likely and 5 = very unlikely and the items demonstrated good internal consistency ($\alpha = .89$).

Attitudes about TWD. Each participant's personal attitude about TWD was measured using a five-point, semantic differential scale adapted from Stephenson and Witte (1998). Psychometric analyses for this study revealed that the items were neither internally consistent nor unidimensional. Therefore, the items were measured and analyzed separately.

Perceived Risk of TWD Behavior. Perceived risk of TWD behavior was measured with 3 items a seven-point, Likert-type scale where 1 = not at all dangerous and 7 = extremely dangerous (Atchley et al., 2011). Because there were no psychometric data available from the Atchley et al. (2011) manuscript, an exploratory factor analysis using principal axis factor extraction, promax rotation with Kaiser normalization, and a convergence criterion of 25 iterations were used. In the factor pattern matrix, the three items loaded on one factor and reliable ($\alpha = .86$).

Perceived Threat. Perceived threat was measured by combining both the personal susceptibility score and the personal severity score (Stephenson & Witte, 1998). Historically, Witte (1992, 1994) has measured the two constructs separately but created an additive composite to use in statistical analyses as they are second-order unidimensional (Witte, 1998). Stephenson and Witte (1998) reported a reliability of $\alpha = 0.75$. The scale for this study was determined reliable ($\alpha = .89$).

Perceived Susceptibility. Perceived susceptibility to the dangers of TWD was measured with a seven-point, Likert-type scale adapted from Witte (2001) where 1 = strongly disagree and 7 = strongly agree and the items demonstrated good internal consistency ($\alpha = .88$).

Perceived Severity. Perceived severity of the dangers of TWD was measured with a seven-point, Likert-type scale adapted from Witte (2001) where 1 = strongly disagree and 7 = strongly agree and the items demonstrated good internal consistency ($\alpha=.87$).

Pretest

Each participant including those in the subgroup were given a pretest which assessed past TWD behavior, current TWD, sensation seeking tendencies, and need for cognition.

Past TWD Behavior. Past TWD Behavior was measured with three items with possible responses of yes/no/only while stopped. If the participant answered yes to any of the three questions, s/he was prompted to answer two open-ended questions per item. The measure was adapted from Atchley et al. (2011). No psychometric data are available on this measure from Atchley. If the open-ended question solicited a range from the participant, the lowest number was entered.

Current TWD Behavior. Current TWD behavior was measured using a seven-point, Likert-type scale where 1 = never and 7 = always (Atchley et al., 2011). Because there were no psychometric data available from the Atchley et al. (2011) manuscript, an exploratory factor analysis using principal axis factor extraction, promax rotation with Kaiser normalization, and a convergence criterion of 25 iterations were used. In the factor pattern matrix, the three items loaded on one factor and reliable ($\alpha = .88$).

Sensation Seeking Tendencies. Sensation seeking tendencies were measured with the Impulsivity Sensation Seeking subscale (ImpSS), a five-point, Likert-type scale

where 1 = strongly disagree and 5 = strongly agree (Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993). Stephenson, Hoyle, Palmgreen, and Slater (2003) reported a reliability of $\alpha = 0.86$ and the items for this study demonstrated good internal consistency ($\alpha = .87$).

Need for Cognition. Need for cognition was measured with a nine-point, Likert-type scale where 1 = very strongly agree and 9 = very strongly disagree (Cacioppo, Petty, & Kao, 1984). Cacioppo et al. (1994) reported a reliability of $\alpha = 0.90$ and the items for this study demonstrated good internal consistency ($\alpha = .86$).

Posttest

Perceived Threat. Perceived threat was measured by combining both the perceived susceptibility score and the perceived severity score (Stephenson & Witte, 1998). Historically, Witte (1992, 1994) has measured the two constructs separately but created an additive composite to use in statistical analyses as they are second-order unidimensional (Witte, 1998). Stephenson and Witte (1998) reported a reliability of $\alpha = 0.75$. The scale for this study was determined reliable ($\alpha = .85$).

Perceived Susceptibility. Perceived susceptibility to the dangers of TWD was measured with a seven-point, Likert-type scale adapted from Witte (2001) where 1 = strongly disagree and 7 = strongly agree and the items demonstrated good internal consistency ($\alpha = .93$).

Perceived Severity. Perceived severity of the dangers of TWD was measured with a seven-point, Likert-type scale adapted from Witte (2001) where 1 = strongly

disagree and 7 = strongly agree and the items demonstrated good internal consistency ($\alpha = .94$).

Fear. Fear was measured using a seven-point, Likert-type scale adapted from Stephenson and Witte (1998) where 1 = not at all and 7 = extremely ($\alpha = .89$) and the items demonstrated good internal consistency ($\alpha = .85$).

Perceived Message Sensation Value. Perceived message sensation value was measured using a seven-point, semantic differential scale adapted from Palmgreen et al. (2002). Palmgreen et al. (2002) reported a reliability of $\alpha = 0.93$. An exploratory factor analysis revealed that the items were not unidimensional; therefore, three separate perceived message sensation value scales were created. The first, labeled emotional arousal, was measured with powerful impact, emotional, unexciting, arousing, involving, and stimulating and was reliable ($\alpha = .82$). The second, labeled novelty, was measured with unique, novel, and unusual and was reliable ($\alpha = .75$). The third, labeled dramatic impact, was measured with not creative, not graphic, not intense, and undramatic and was reliable ($\alpha = .80$).

Perceived Message Effectiveness. Perceived message effectiveness was measured using six seven-point semantic differential items adapted from Dillard, Shen, and Vail (2007). Dillard, Shen, and Vail (2007) reported a reliability of $\alpha = 0.78$. Exploratory factor analysis revealed that the “sensible” and “important” items did not load on the two factors that were extracted from the data. Therefore they were dropped and two separate message effectiveness scales were created. The first, labeled perceived message realism, was measured with convincing and believable and was reliable ($\alpha = .77$). The second,

labeled perceived message accuracy, was measured with wise and right and was reliable ($\alpha = .79$).

TWD Intentions. TWD intention was measured using a five-point, Likert-type scale adapted from Stephenson and Helme (2006) where 1 = very likely and 5 = very unlikely and the items demonstrated good internal consistency ($\alpha = .88$).

Perceived Risk of TWD Behavior. Perceived risk of TWD behavior was measured with 3 items a seven-point, Likert-type scale where 1 = not at all dangerous and 7 = extremely dangerous (Atchley et al., 2011). Because there were no psychometric data available from the Atchley et al. (2011) manuscript, an exploratory factor analysis using principal axis factor extraction, promax rotation with Kaiser normalization, and a convergence criterion of 25 iterations were used. In the factor pattern matrix, the three items loaded on one factor and reliable ($\alpha = .77$).

Attitudes about TWD. Each participant's personal attitude about TWD was measured using a five-point, semantic differential scale adapted from Stephenson and Witte (1998). Psychometric analyses for this study revealed that the items were neither internally consistent nor unidimensional. Therefore, the items were measured and analyzed separately.

Perceived Efficacy. Perceived self efficacy and perceived response efficacy was combined to create an overall index that was reliable ($\alpha = .82$). Historically, Witte (1992, 1994) has measured the two constructs separately but created an additive composite to use in statistical analyses as they are second-order unidimensional (Witte, 1998).

Perceived Self Efficacy. Perceived self efficacy was measured using a seven-point, Likert-type scale adapted from Witte (2001) with 1 = strongly disagree and 7 = strongly agree and the items demonstrated good internal consistency ($\alpha = .88$).

Perceived Response Efficacy. Perceived response efficacy was measured using a seven-point, Likert-type scale adapted from Witte (2001) with 1 = strongly disagree and 7 = strongly agree and the items demonstrated good internal consistency ($\alpha = .86$).

Demographic Information. Demographic information was gathered from each participant. The participants were asked to indicate their sex, college classification, and ethnicity.

CHAPTER IV

RESULTS

Research Question 1 and Research Question 2

Research Question 1 asked if high threat messages would be perceived as high in message sensation value. Research Question 2 asked if low threat messages would be perceived as low sensation value messages. Because high and low threat messages were not tested in the main study, Research Questions 1 and 2 were also not tested. However, the message validation data of the message template revealed that individuals rated perceived severity ($M = 6.4$, $SD = 1.23$) and perceived susceptibility ($M = 5.75$, $SD = 1.28$) of all three messages above the scale median, and importantly, at a mean value that would be considered high threat by standards applied from other fear appeal studies (Witte, 1992). More specifically, for Message 1 (Benefits), individuals rated perceived severity ($M = 6.4$, $SD = 1.01$) and perceived susceptibility ($M = 5.45$, $SD = 1.56$) above the scale median and at a mean value that would be considered high. For message 2 (Mastery) individuals rated perceived severity ($M = 6.65$, $SD = .95$) and perceived susceptibility ($M = 5.40$, $SD = 1.87$) above the scale median and at a mean value that would be considered high. Finally, for message 3 (Ubiquity), individuals rated perceived severity ($M = 6.64$, $SD = .91$) and perceived susceptibility ($M = 5.38$, $SD = 1.82$) above the scale median and at a mean value that would be considered high. Although no low threat message was tested, since the individuals rated the messages as high threat,

Research Questions 1 and 2 can be combined and modified to pose the relationship between *perceived* threat and perceived message sensation value.

The modified Research Question was analyzed in multiple ways. First, the correlation between perceived threat and perceived message sensation value was significant ($r = .166, p < .05$). Because of the potential for confounding, including exposure to TWD messages in the last month, exposure to the safe text pledge, sex, and current TWD behavior, a hierarchical multiple regression analysis was conducted with perceived threat as the predictor and perceived message sensation value as the criterion variable. The analysis revealed that model 1, which contained the covariates, was not significant, $F(4, 147) = 2.32, p = .06, R^2 = .059$. There was a significant increase in R^2 from model 1 to model 2. Model 2 containing the predictor variable was significant, $F(5, 146) = 3.16, p < .05, \Delta R^2 = .038$. Perceived threat was a significant predictor of perceived message sensation value ($\beta = .199, p < .05$) such that as perceived threat increases, perceptions of message sensation value increase.

In order to further understand the relationship between perceived threat and perceived message sensation value, the three components of perceived message sensation value (emotional arousal, novelty, and dramatic impact) were analyzed separately.

The correlation between perceived threat and emotional arousal was not significant ($r = .096, p = .24$). To control for confounds, exposure to TWD messages, exposure to the safe text pledge, sex, and current TWD behavior, a hierarchical multiple regression analysis was used. The results revealed that model 1 containing the

covariates was significant $F(4, 147) = 2.85, p < .05, R^2 = .072$, and model 2 containing the predictor variable was significant $F(5, 146) = 3.71, p < .05, R^2 = .087$; however, the change in R^2 was not significant from model 1 to model 2 and neither was the predictor variable perceived threat ($\beta = .126, p = .119$).

The correlation between perceived threat and dramatic impact was significant ($r = .181, p < .05$). To control for potential confounds, exposure to TWD messages, exposure to the safe text pledge, sex, and current TWD behavior, a hierarchical multiple regression analysis was used. The regression revealed that model 1 containing the covariates was significant $F(4, 147) = 3.05, p < .05, R^2 = .077$. There was a significant increase in R^2 from model 1 to model 2. Model 2 containing the predictor variable was also significant $F(5, 146) = 4.22, p = .001, \Delta R^2 = .05$. Perceived threat was a significant predictor of perceived dramatic impact ($\beta = .227, p < .01$) such that as perceived threat increases, perceptions of dramatic impact increase.

The correlation between perceived threat and novelty was significant ($r = .162, p < .04$). To control for potential confounds, exposure to TWD messages, exposure to the safe text pledge, sex, and current TWD behavior, a hierarchical regression analysis was used. The regression revealed that model 1 containing the covariates was not significant; however, there was a significant increase in R^2 from model 1 to model 2. Model 2 containing the predictor variable was significant $F(5, 146) = 2.65, p < .05, \Delta R^2 = .029$. Perceived threat was a significant predictor of perceived novelty ($\beta = .174, p < .05$) such that as perceived threat increases, perceptions of novelty increase.

Hypothesis 1

The original hypothesis predicted an interaction between threat and NFC on message effectiveness. However, as stated earlier, the threat manipulation was unsuccessful. Therefore, the hypothesis could not be tested as originally stated.

Because perceived threat was assessed after individuals read the message, the original hypothesis was modified to predict an interaction between *perceived* threat and NFC on message effectiveness. Specifically, individuals low in need for cognition should report greater levels of message effectiveness for high threat messages than low threat messages. Individuals high in need for cognition should report similar levels of message effectiveness for high threat and low threat messages.

Message effectiveness was defined by two separate scales, message realism and message accuracy. Additionally, there were three message conditions (benefits, mastery, ubiquity). Consequently, six hierarchical multiple regression analyses are presented.

A hierarchical multiple regression analysis was performed on the dependent variable, message realism, using the independent variables perceived threat and need for cognition for each of the three messages. Four covariates were entered in block 1: current TWD behavior, sex, exposure to the safe text pledge, and exposure to TWD messages in the past month. Then, the predictor variables, need for cognition and perceived threat, were entered into block 2. Last, the interaction term between need for cognition and perceived threat was entered into block 3. Prior to creating the interaction term, the predictor variables were mean centered to reduce the potential for

multicollinearity. The hypothesis predicts a significant R^2 change from block 2 to block 3.

Message 1 (Benefits): For the dependent variable message realism, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant,. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = -.114, p = .620$).

Message 2 (Mastery): For the dependent variable message realism, model 1 containing the covariates was not statistically significant. Model 2 containing the predictor variables was significant and there was a significant increase in R^2 from block 1 to block 2, $F(6, 39) = 2.88, p < .05, \Delta R^2 = .139$. The predictor variable perceived threat was statistically significant ($\beta = .38, p < .01$) such that as perceived threat increased, perceptions of message realism increased. Model 3 containing the interaction term was statistically significant, $F(7, 38) = 3.06, p < .05, R^2 = .36$. Although there was not a significant increase in R^2 from block 2 to block 3, the interaction between need for cognition and perceived threat approached significance ($\beta = -.363, p = .08$). The interaction term was decomposed and plotted to determine the nature of the interaction. See Figure 1. Individuals low in need for cognition who perceived the message as low threat rated the message as less realistic than individuals low in need for cognition who perceived the message as high threat. Conversely, individual high in need for cognition

who perceived the message as low in threat rated the message as more realistic than individuals high in need for cognition who perceived the message as high threat.

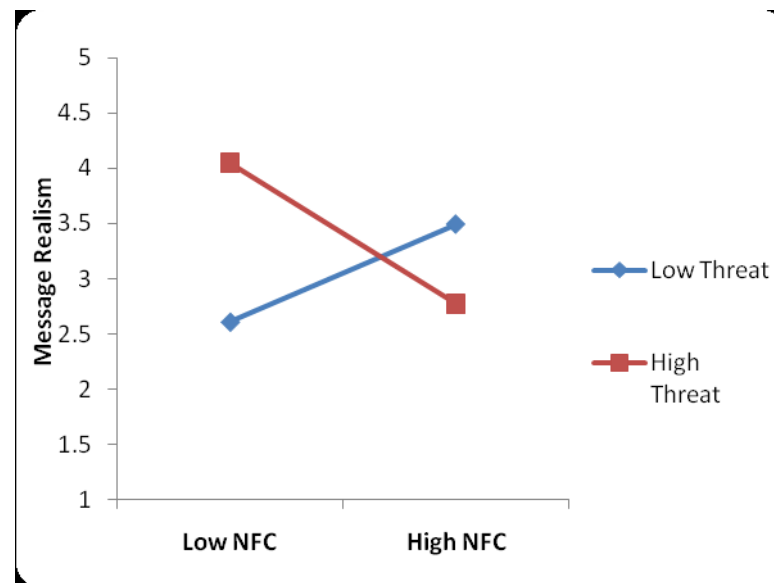


Figure 1 Perceived Threat and NFC Interaction on Message Realism

Message 3 (Ubiquity): For the dependent variable message realism, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = -.157, p = .45$).

A hierarchical multiple regression analysis was performed on the dependent variable, message accuracy, using the independent variables, perceived threat and need for cognition for each of the three messages. Four covariates were entered in block 1: current TWD behavior, sex, exposure to the safe text pledge, and any texting while driving message they had seen or heard in the past month. Then, the predictor variables, need for cognition and perceived threat, were entered into block 2. Last, the interaction term between need for cognition and perceived threat was entered into block 3. The hypothesis predicts a significant R^2 change from block 2 to block 3.

Message 1 (Benefits): For the dependent variable message accuracy, model 1 containing the covariates was statistically significant, $F(4, 48) = 2.85, p < .05, R^2 = .19$. Model 2 containing the predictor variables was significant, $F(6, 46) = 3.14, p < .05, \Delta R^2 = .10$. There was a significant increase in R^2 from block 1 to block 2 and the predictor variable perceived threat was statistically significant ($\beta = .29, p < .05$). There was a significant R^2 change from block 2 to block 3 and model 3 containing the interaction term was statistically significant, $F(7, 45) = 4.45, p < .01, \Delta R^2 = .122$. Thus, the hypothesis was supported. The interaction between need for cognition and perceived threat was significant ($\beta = -.59, p < .01$). The interaction term was decomposed and plotted to determine the nature of the interaction. See Figure 2. Individuals low in need for cognition who perceived the message as high threat rated the message accuracy as higher than individuals low in need for cognition who perceived the message as low threat. Conversely, individuals high in need for cognition who perceived the message as

low threat rated the message accuracy higher than individuals high in need for cognition who perceived the message as high threat.

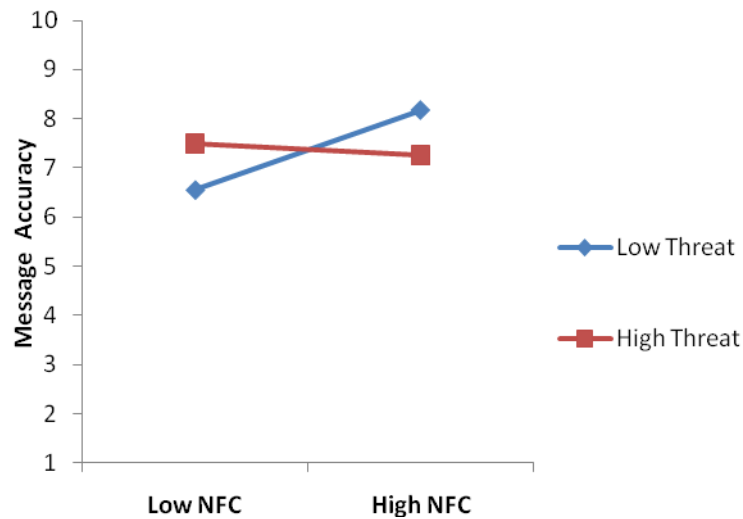


Figure 2 Perceived Threat and NFC Interaction on Message Accuracy

Message 2 (Mastery): For the dependent variable message accuracy, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = -.32, p = .20$).

Message 3 (Ubiquity): For the dependent variable message accuracy, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = .184, p = .36$).

Hypothesis 2

The original hypothesis predicted an interaction between threat and NFC on attitude toward TWD. Because perceived threat was assessed, the original hypothesis was modified to predict an interaction between perceived threat and NFC on attitude toward TWD. Specifically, as perceived threat increased, it was predicted that individuals low in NFC would report greater levels of negative attitudes toward TWD. The three attitude items were analyzed separately for each of the three message conditions (benefits, mastery, ubiquity).

A hierarchical multiple regression analysis was performed on the dependent variable which assessed whether TWD was good or bad, using the independent variables perceived threat and need for cognition. Four covariates were entered in block 1: current TWD behavior, sex, exposure to the safe text pledge, and any texting while driving message they had seen or heard in the past month. Then, the predictor variables, need for cognition and perceived threat, were entered into block 2. Last, the interaction term between need for cognition and perceived threat was entered into block 3. The hypothesis predicts a significant R^2 change from block 2 to block 3.

Message 1 (Benefits): For the dependent variable TWD attitude good/bad, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = -.38, p = .12$).

Message 2 (Mastery): For the dependent variable TWD attitude good/bad, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = -.21, p = .40$).

Message 3 (Ubiquity): For the dependent variable TWD attitude good/bad, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = .05, p = .8$).

A hierarchical multiple regression analysis was performed on the dependent variable which assessed whether TWD was favorable or unfavorable, using the independent variables, perceived threat and need for cognition. Four covariates were entered in block 1: current TWD behavior, sex, exposure to the safe text pledge, and any

texting while driving message they had seen or heard in the past month. Then, the predictor variables, need for cognition and perceived threat, were entered into block 2. Last, the interaction term between need for cognition and perceived threat was entered into block 3. The hypothesis predicts a significant R^2 change from block 2 to block 3.

Message 1 (Benefits): For the dependent variable TWD attitude favorable/unfavorable, model 1 containing the covariates was not statistically significant. Model 2 containing the predictor variables was not significant. There was a significant R^2 change from block 2 to block 3 and model 3 containing the interaction term was statistically significant, $F(7, 44) = 4.08, p = .001, \Delta R^2 = .18$. The interaction between need for cognition and perceived threat was significant ($\beta = -.73, p = .001$). Thus, the hypothesis was supported. The interaction term was decomposed and plotted to determine the nature of the interaction. See Figure 3. Individuals high in need for cognition who perceived the message as low threat held more unfavorable attitudes toward TWD than individuals high in need for cognition who perceived the message as high threat. Conversely, individuals low in need for cognition did not have a shift in unfavorable attitudes relating to perceived threat.

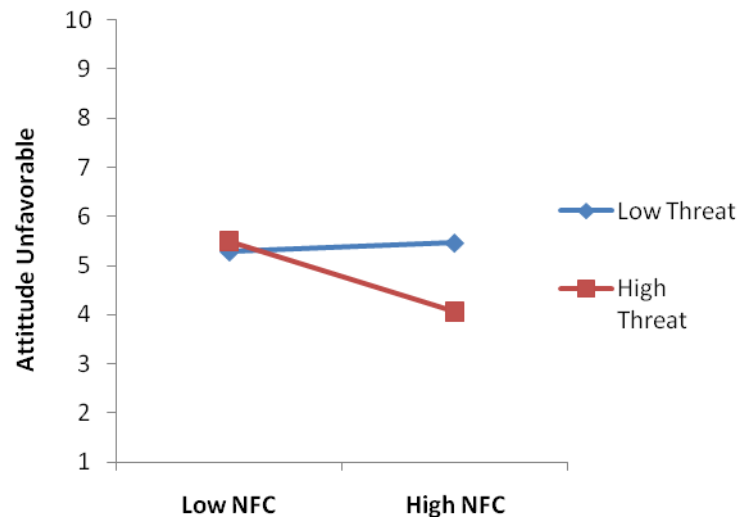


Figure 3 Perceived Threat and NFC Interaction on Attitude

Message 2 (Mastery): For the dependent variable TWD attitude favorable/unfavorable, model 1 containing the covariates was statistically significant, $F(4, 41) = 4.015, p < .01, R^2 = .281$. Model 2 containing the predictor variables was significant, $F(6, 39) = 2.56, p < .05, R^2 = .286$; however, there was no significant increase in R^2 from block 1 to block 2 and neither predictor variable was significant. Model 3 containing the interaction term was significant, $F(7, 38) = 2.36, p < .05, R^2 = .303$. But there was no significant increase in R^2 from block 2 to block 3 and the interaction term was not statistically significant ($\beta = -.21, p = .34$).

Message 3 (Ubiquity): For the dependent variable TWD attitude favorable/unfavorable, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing

the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = -.11, p = .60$).

A hierarchical multiple regression analysis was performed on the dependent variable which assessed whether TWD was desirable or undesirable, using the independent variables, perceived threat and need for cognition. Four covariates were entered in block 1: current TWD behavior, sex, exposure to the safe text pledge, and any texting while driving message they had seen or heard in the past month. Then, the predictor variables, need for cognition and perceived threat, were entered into block 2. Last, the interaction term between need for cognition and perceived threat was entered into block 3. The hypothesis predicts a significant R^2 change from block 2 to block 3.

Message 1 (Benefits): For the dependent variable TWD attitude desirable/undesirable, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was significant ($\beta = -.51, p = .04$).

Message 2 (Mastery): For the dependent variable TWD attitude desirable/undesirable, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from

block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = -.39, p = .10$).

Message 3 (Ubiquity): For the dependent variable TWD attitude desirable/undesirable, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = -.04, p = .85$).

Hypothesis 3

The original hypothesis predicted an interaction between threat and NFC on intention toward TWD. However, as stated earlier, the threat manipulation was unsuccessful. Therefore, the hypothesis could not be tested as originally stated. However, perceived threat was still assessed after individuals read the message. Thus, the original hypothesis can be modified to predict an interaction between perceived threat and NFC on intention toward TWD. Specifically, as perceived threat increased, it was predicted that individuals high in NFC would report lower levels of intention toward TWD. Regressions were run separately on the three message conditions (benefits, mastery, ubiquity).

A hierarchical multiple regression analysis was performed on the dependent variable which assessed intention toward TWD, using the independent variables, perceived threat and need for cognition. Four covariates were entered in block 1: current TWD behavior, sex, exposure to the safe text pledge, and any texting while driving

message they had seen or heard in the past month. Then, the predictor variables, need for cognition and perceived threat, were entered into block 2. Last, the interaction term between need for cognition and perceived threat was entered into block 3. The hypothesis predicts a significant R^2 change from block 2 to block 3.

Message 1 (Benefits): For the dependent variable message intention toward TWD, model 1 containing the covariates was statistically significant, $F(4, 47) = 12.53, p < .001, R^2 = .516$. Model 2 containing the predictor variables was significant, $F(6, 45) = 8.56, p < .001, R^2 = .53$. There was no significant R^2 change from block 1 to block 2 or block 2 to block 3. Model 3 containing the interaction term was statistically significant, $F(7, 44) = 7.60, p < .001, R^2 = .547$. However, neither the predictor variables nor the interaction term were statistically significant ($\beta = .87, p = .21$).

Message 2 (Mastery): For the dependent variable message intention toward TWD, model 1 containing the covariates was statistically significant, $F(4, 41) = 7.66, p < .001, R^2 = .586$. Model 2 containing the predictor variables was significant, $F(6, 39) = 9.43, p < .001, R^2 = .592$. There was no significant R^2 change from block 1 to block 2 or block 2 to block 3. Model 3 containing the interaction term was statistically significant, $F(7, 38) = 7.96, p < .001, R^2 = .595$. However, neither the predictor variables nor the interaction term were statistically significant ($\beta = -.63, p = .62$).

Message 3 (Ubiquity): For the dependent variable message intention toward TWD, model 1 containing the covariates was statistically significant, $F(4, 48) = 6.02, p = .001, R^2 = .334$. Model 2 containing the predictor variables was significant, $F(6, 46) = 3.98, p < .01, R^2 = .341$. There was no significant R^2 change from block 1 to block 2 or

block 2 to block 3. Model 3 containing the interaction term was statistically significant, $F(7, 45) = 3.52, p < .01, R^2 = .354$. However, neither the predictor variables nor the interaction term were statistically significant ($\beta = -.60, p = .36$).

Hypothesis 4

Hypothesis 4 predicted that NFC and perceived threat would be negatively related, such that individuals high in NFC will report greater perceived threat than low in NFC. This hypothesis was analyzed in two ways. First, the correlation between the two variables was not statistically significant, $r = -.138, p = .086$. However, to control for potential confounds (sex, current TWD behavior, exposure to TWD messages within the last month, and exposure to the safe text pledge), a hierarchical regression analysis was used. The regression revealed that the relationship between need for cognition and perceived threat was not significant after controlling for potential confounds ($\beta = -.10, p = .25$).

Hypothesis 5

Hypothesis 5 predicted an interaction between threat and NFC on perceived threat. However, since threat was not manipulated in the main study, the original hypothesis could not be tested or modified to be analyzed.

Hypothesis 6

Hypothesis 6 predicted that SS tendencies and perceived risk of TWD would be negatively related, such that individuals high in sensation seeking tendencies would perceive less risk than individuals low in sensation seeking tendencies. This hypothesis

was analyzed in two ways. First, the correlation between the two variables was not statistically significant, $r = -.081$, $p = .319$. However, to control for potential confounds (sex, exposure to TWD messages, current TWD behavior, texting sensitization to the danger scale, and exposure to the TWD pledge), a hierarchical multiple regression analysis was used. The regression revealed that the relationship between sensation seeking and perceived risk was not significant ($\beta = .14$, $p = .74$) after controlling for potential confounds.

Hypothesis 7

Hypothesis 7 predicted that sensation seeking tendencies and current TWD behavior would be positively related, such that individuals high in sensation seeking tendencies would report higher levels of current TWD behavior. This hypothesis was analyzed in three ways. First, the correlation between the two variables was not statistically significant, $r = .119$, $p = .143$. However, to control for potential confounds (sex, exposure to TWD messages, and exposure to the TWD pledge), a hierarchical regression analysis was used. The regression revealed that the relationship between sensation seeking tendencies and current TWD behavior was not significant ($\beta = .14$, $p = .09$) after controlling for potential confounds. In order to gain further insight into TWD behavior, the three behavior items (read, reply, and initiate) were analyzed separately.

There was a significant relationship between initiating a text and sensation seeking, $r = .176$, $p < .05$, such that individuals high in sensation seeking reported initiating more texts while driving. However, to control for potential confounds, exposure to TWD messages within the last month, exposure to the safe text pledge, and

sex were entered as covariates into a hierarchical multiple regression. Model 1 containing the covariates was not statistically significant. Model 2 containing the predictor variable was significant $F(4, 147) = 2.82, p < .05, \Delta R^2 = .037$. The regression revealed that sensation seeking did have a significant effect on initiation behavior ($\beta = .196, p < .05$) such that individuals high in sensation seeking reported greater levels of initiating texts while driving.

For the item assessing the current behavior of reading a text while driving, the variable of sensation seeking was not significant. The zero-order correlation was not significant, $r = .04, p = .64$. However, to control for potential confounds, exposure to TWD messages within the last month, exposure to the safe text pledge, and sex were entered as covariates into a hierarchical regression. The regression revealed that no significant correlation exists between sensation seeking and the current behavior of reading a text while driving ($\beta = .05, p = .55$).

For the item assessing the current behavior of replying to a text while driving, the variable of sensation seeking was not significant ($r = .12, p = .139$). However, to control for potential confounds, exposure to TWD messages within the last month, exposure to the safe text pledge, and sex were entered as covariates into a hierarchical regression. The regression revealed that no significant correlation exists between sensation seeking and the current behavior of replying to a text while driving ($\beta = .144, p = .08$).

Hypothesis 8

Hypothesis 8 predicted a significant negative relationship between sensation seeking tendencies and perceived threat. This hypothesis was analyzed in two ways.

First, the correlation between the two variables was not statistically significant ($r = -.03$, $p = .68$). To control for potential confounds (sex, exposure to TWD messages, current TWD behavior and exposure to the TWD pledge), a hierarchical multiple regression analysis was used. The regression revealed that the relationship between sensation seeking and perceived threat was not significant ($\beta = -.05$, $p = .53$) after controlling for potential confounds.

Hypothesis 9

The original hypothesis predicted an interaction between threat and SS tendencies on perceived message effectiveness. Specifically, those high in sensation seeking tendencies would report higher perceived message effectiveness for high threat messages than those low in sensation seeking tendencies. However, as stated earlier, the threat manipulation was unsuccessful. The original hypothesis was modified to predict an interaction between perceived threat and SS tendencies. Specifically, as perceived threat increased, it was predicted that individuals high in SS would report greater levels of perceived message effectiveness. There were two outcome variables assessing message effectiveness (message realism and message accuracy) and hierarchical multiple regressions were run on a separately on the three message conditions (benefits, mastery, ubiquity).

A hierarchical multiple regression analysis was performed on the dependent variable, message realism, using the independent variables, perceived threat and sensation seeking for each of the three messages. Four covariates were entered in block 1: current TWD behavior, sex, exposure to the safe text pledge, and exposure to any

texting while driving message in the past month. Then, the predictor variables, sensation seeking and perceived threat, were entered into block 2. Last, the interaction term between sensation seeking and perceived threat was entered into block 3. The two predictor variables were mean centered prior to creating the interaction term to reduce the likelihood of collinearity. The hypothesis predicts a significant R^2 change from block 2 to block 3.

Message 1 (Benefits): For the dependent variable message realism, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = -.13, p = .43$).

Message 2 (Mastery): For the dependent variable message realism, model 1 containing the covariates was not statistically significant. Model 2 containing the predictor variables was significant and there was a significant increase in R^2 from block 1 to block 2, $F(6, 39) = 5.099, p = .001, \Delta R^2 = .271$. The predictor variable perceived threat was statistically significant ($\beta = .40, p < .01$) such that as perceived threat increased perceptions of message effectiveness increased as well. The predictor variable sensation seeking was statistically significant ($\beta = -.388, p < .01$) such that individuals high in sensation seeking reported lower levels of message realism. There was a significant increase from block 2 to block 3 and model 3 containing the interaction term was statistically significant, $F(7, 38) = 6.324, p < .01, \Delta R^2 = .127$. The interaction

between sensation seeking and perceived threat was significant ($\beta = .404, p < .01$). The interaction term was decomposed and plotted to determine the nature of the interaction. See Figure 4. Individuals high in sensation seeking tendencies who perceived threat to be high rated the messages high in message realism whereas individuals high in sensation seeking tendencies who perceived threat to low rated the message as low in message realism. In contrast, individuals low in sensation seeking tendencies who perceived threat to be low rated the message as higher in message realism compared to individuals low in sensation seeking tendencies.

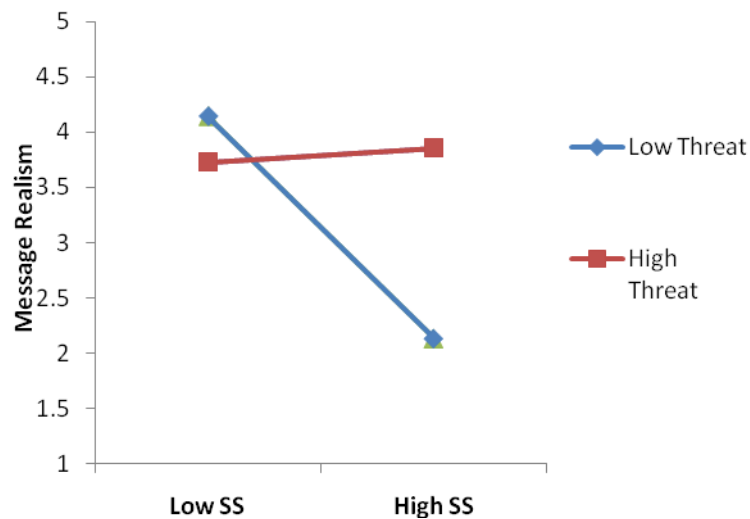


Figure 4 Perceived Threat and SS Interaction on Message Realism

Message 3 (Ubiquity): For the dependent variable message realism, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = .03, p = .85$).

A hierarchical multiple regression analysis was performed on the dependent variable, message accuracy, using the independent variables, perceived threat and sensation seeking for each of the three messages. Four covariates were entered in block 1: current TWD behavior, sex, exposure to the safe text pledge, and any texting while driving message they had seen or heard in the past month. Then, the predictor variables, sensation seeking and perceived threat, were entered into block 2. Last, the interaction term between sensation seeking and perceived threat was entered into block 3. The hypothesis predicts a significant R^2 change from block 2 to block 3.

Message 1 (Benefits): For the dependent variable message accuracy, model 1 containing the covariates was statistically significant, $F(4, 48) = 2.85, p < .05, R^2 = .19$. Model 2 containing the predictor variables was significant, $F(6, 46) = 2.52, p < .05, R^2 = .25$. There was not a significant increase in R^2 from block 1 to block 2 and neither predictor variable was statistically significant. Model 3 containing the interaction term was statistically significant, $F(7, 45) = 3.33, p < .05, R^2 = .259$; however, the interaction term was not significant ($\beta = -.13, p = .41$).

Message 2 (Mastery): For the dependent variable message accuracy, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = -.12, p = .52$).

Message 3 (Ubiquity): For the dependent variable message accuracy, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = -.07, p = .65$).

Hypothesis 10

The original hypothesis predicted an interaction between threat and SS on perceived self efficacy. However, as stated earlier, the threat manipulation was unsuccessful. Therefore, the hypothesis could not be tested as originally stated. Perceived threat was still assessed after individuals read the message. Thus, the original hypothesis can be modified to predict an interaction between perceived threat and SS on perceived self efficacy. Specifically, as perceived threat increases, it was predicted that individuals low in sensation seeking would report lower levels of perceived self efficacy. Regressions were run separately on the three message conditions (benefits, mastery, ubiquity).

A hierarchical multiple regression analysis was performed on the dependent variable, perceived self efficacy, using the independent variables, perceived threat and sensation seeking for each of the three messages. Four covariates were entered in block 1: current TWD behavior, sex, exposure to the safe text pledge, and any texting while driving message they had seen or heard in the past month. Then, the predictor variables, sensation seeking and perceived threat, were entered into block 2. Last, the interaction term between sensation seeking and perceived threat was entered into block 3. The hypothesis predicts a significant R^2 change from block 2 to block 3.

Message 1 (Benefits): For the dependent variable perceived self efficacy, model 1 containing the covariates was not statistically significant, model 2 containing the predictor variables was not significant, and model 3 containing the interaction term was not significant. There was no significant increase in R^2 from block 1 to block 2 or block 2 to block 3 and neither predictor variable was significant. The interaction was not significant ($\beta = .13, p = .42$).

Message 2 (Mastery): For the dependent variable perceived self efficacy, model 1 containing the covariates was statistically significant, $F(4, 41) = 5.55, p = .001, R^2 = .351$. Model 2 containing the predictor variables was significant, $F(6, 39) = 4.88, p = .001, R^2 = .429$; however, there was not a significant increase in R^2 from block 1 to block 2. The predictor variable perceived threat was statistically significant ($\beta = .28, p < .05$) such that as perceived threat increased, perceptions of self efficacy increased as well. Model 3 containing the interaction term was significant, $F(7, 38) = 4.85, p = .001, R^2 = .472$; however, there was no significant change in R^2 from block 2 to block 3. The

interaction between sensation seeking and perceived threat was not significant ($\beta = -.24$, $p = .08$).

Message 3 (Ubiquity): For the dependent variable perceived self efficacy, model 1 containing the covariates was not statistically significant. Model 2 containing the predictor variables was significant, $F(6, 46) = 2.57$, $p < .05$, $R^2 = .251$. Although there was not significant increase in R^2 from block 1 to block 2, the predictor variable sensation seeking was statistically significant ($\beta = -.29$, $p < .05$) such that as sensation seeking level increased, perceptions of self efficacy decreased. Model 3 containing the interaction term was statistically significant, $F(7, 45) = 2.64$, $p < .05$, $R^2 = .291$; however, there was no significant increase in R^2 from block 2 to block 3 and the interaction term was not significant ($\beta = -.21$, $p = .12$).

Additional Analyses

The relationship between need for cognition and TWD behavior was not predicted in the original hypotheses; however, to further investigate TWD behavior analyzes were conducted. First, the correlation between the two variables was not statistically significant, $r = .135$, $p = .096$. However, to control for potential confounds (sex, exposure to TWD messages, and exposure to the TWD pledge), a hierarchical regression analysis was used. The regression revealed that the relationship between need for cognition and current TWD behavior approached significance after controlling for potential confounds, ($\beta = .155$, $p = .059$). Yet to gain further insight into current behavior, the three behavior items (read, reply, and initiate) were also analyzed separately.

For the item assessing the current behavior of initiating a text while driving, the variable sensation seeking was not significant. The zero-order correlation was not significant ($r = .037, p = .65$). However, to control for potential confounds, exposure to TWD messages within the last month, exposure to the safe text pledge, and sex were entered as covariates into a hierarchical regression. The regression revealed that neither model 1 containing the covariates nor model 2 containing the predictor variable were significant ($\beta = -.02, p = .77$).

For the item assessing the current behavior of reading a text while driving, the variable of need for cognition was not significant. The zero-order correlation was not significant ($r = .146, p = .071$). However, to control for potential confounds, exposure to TWD messages within the last month, exposure to the safe text pledge, and sex were entered as covariates into a hierarchical regression. Model 1 containing the covariates was not significant. There was a significant change in R^2 from block 1 to block 2. Model 2 containing the predictor variable was significant, $F(4, 146) = 2.88, p < .05, \Delta R^2 = .029$. The regression revealed that need for cognition was a significant predictor ($\beta = -.173, p < .05$) such that individuals high in need for cognition reported reading texts while driving less than individuals low in need for cognition.

For the item assessing the current behavior of replying to a text while driving, the variable of need for cognition was not significant ($r = .14, p = .083$). However, to control for potential confounds, exposure to TWD messages within the last month, exposure to the safe text pledge, and sex were entered as covariates into a hierarchical regression. The regression revealed that model 2 containing the predictor variable approached

significance $F(4, 146) = 2.21, p = .071, \Delta R^2 = .025$ and that need for cognition approached significance, ($\beta = -.161, p = .051$) such that individuals high in need for cognition reported replying to texts while driving less than individuals low in need for cognition.

CHAPTER V

CONCLUSION

The purpose of this research was to create and test theoretically-based messages aimed at discouraging texting while driving (TWD). With an increasing number of media campaigns (e.g. AT&T's *Texting Can Wait*, NPR's *Put The Thumbs Away*) surfacing on the internet, television, and billboards, some of which detail gruesome events to encourage individuals to refrain from texting while driving, it is theoretically interesting and pragmatically important to understand perceptions of campaigns driven primarily by fear appeal messages. Additionally, since relatively little research has focused neither on the behavior of texting while driving nor on personality traits which may contribute to this behavior, this research significantly advances our understanding of these traits and this behavior by filling the gap in the literature on these topics. The Extended Parallel Process Model (EPPM) provides the theoretical platform for this study. Need for cognition and sensation seeking tendencies were two personality traits that were also examined.

This thesis research is based upon previous formative research with Texas A&M University undergraduate students. Specifically, I conducted focus groups to investigate attitudes, beliefs, and behaviors associated with texting while driving. A thematic analysis of these focus groups revealed two perceptions of effective TWD media campaigns. One perception expressed by some participants was that campaigns should evoke high emotional arousal through the use of gruesome language and pictures. The

other perception expressed by participants was that effective messages should contain statistics and facts which should evoke a low emotional arousal. Therefore, these perceptions were used as a justification for the selection of the EPPM as a theoretical foundation because it would provide theoretical guidance on the creation of the two types of messages requested by focus group participants, namely high threat and low threat messages.

Despite the clarity from the formative research and the established theoretical foundations of the EPPM for producing high and low threat messages, the main study conducted for this thesis did not unfold as expected. Initially high threat and low threat message conditions were created, but after several rounds of testing and retesting messages, only a high threat message condition was used in the main study. Consistent with established research principles, a high threat message and a low threat message were written for a message validation study. The validation was designed to determine if the highly threatening message composed by the author was perceived by participants as high threat and the low threatening message composed by the author was perceived by participants as being low in threat. However, the first message validation revealed that participants perceived no statistically significant difference in level of threat between the high and low threat messages. To the contrary, both messages were perceived as high threat (above the scale midpoint). Therefore, the low threat message was edited further to attempt to reduce the level of perceived threat. Specifically, the new low threat message changed the outcome of the car collision to be a minor fender bender where no one was significantly injured. Sentences from the original low threat

message such as “she took the life of her best friend and hurt the other” were changed to “everyone was okay and no one required medical treatment.” Yet even after these changes, a second message validation revealed both messages were perceived as high threat with no statistically significant difference in perceived threat level.

Given the repeated attempts to create a low threat message, a final decision was made to continue the study without a low threat message condition. Although a low threat message would have provided the ideal experimental comparison, it is also true that Witte (1992) claims that when individuals perceive a message as low threat in a natural (versus a laboratory) setting, they neglect to further process the message. Therefore, for the main study, the high threat message template was selected given the level of perceived threat reported by the participants in combination with the vivid and personalistic language (Witte, 1994) most associated with previous research on fear appeals. Several hypotheses included comparison of high and low threat messages as well as interactions between message condition and other variables. So instead of manipulating threat, level of perceived threat after reading the message was used in the analyses. The primary implication for the data analyses was that the threat manipulation would have produced a categorical variable whereas level of perceived threat was a continuous variable.

The formative research also revealed four prominent beliefs surrounding TWD behavior. The first belief, poor self efficacy, was detailed in the participants’ accounts of believing they were unable to stop texting while driving. This belief, along with the theoretical foundation of the EPPM, provided justification for including a paragraph in

each message specifically addressing self efficacy and response efficacy. The second belief, mastery, was described by participants as the belief that they had “mastered” TWD and therefore they were not in danger because they had developed “safe” strategies for TWD. The third belief, perceived benefits, was the belief that the benefits of TWD (i.e. telling a friend you were on the way, staying awake on a late night road trip) outweighed the costs such as an accident. The fourth belief, ubiquity, was the belief that many people are engaging in TWD not just college students (i.e. my parents do it too, why shouldn’t I?).

Therefore, for the main study, all three messages that were ultimately tested contained the exact same high threat/self efficacy/response efficacy template. Specifically, the first and second paragraph of each message emphasized the components of threat, susceptibility and severity. The first paragraph stressed susceptibility by describing the scenario of a junior at Texas A&M University who had a collision on HWY 6. Gruesome language contributed to the severity of the message in the first paragraph (e.g., “femur was protruding through the mangled skin,” “lifeless body,” “slaughtered”). The second paragraph stressed susceptibility by using increasingly personalistic language (e.g., “You and your friends are in danger”, “Are you prepared?”). Severity was also illustrated in the second paragraph by using descriptive language (e.g., “paralysis and brain damage”, “murderer”) and depersonalized language (e.g., “6,000 people were killed”).

The fourth and fifth paragraph of each message emphasized self efficacy and response efficacy. Self efficacy was specifically targeted using personalistic language

(e.g., “You can refrain,” “You can prevent,” “You can wait”). Response efficacy was specifically targeted using steps in order to stop TWD (e.g., “pull over and make a complete stop,” “put your cell phone out of reach,” “ask him/her [friend] to refrain”). The final paragraph of each message was a single sentence which stated “Set the example and do not text while driving and ask those you care about to do the same.”

The third paragraph was the only paragraph that varied among the message conditions. This paragraph targeted a specific belief (benefits, mastery, ubiquity) revealed in the formative research. See Appendix C for the Benefits, Mastery, and Ubiquity paragraphs.

Discussion

TWD Behavior

For this research study, texting while driving was defined as creating, reading, or sending a text or email message from a cellular phone while operating a motorized vehicle that is in motion. The behavior was measured with three separate items: reading, initiating, and replying. The participants revealed that 81% read, 70% replied, and 47% initiated a text while driving. Also, participants claimed to read, reply, and initiate more text messages on a weekend day than on a week day. See Table 1.

Table 1 Text While Driving Behavior on the Average Week Day and Weekend Day

	Read	Reply	Initiate
Average Week Day	$M = 6.21$ ($SD = 12.05$)	$M = 4.81$ ($SD = 10.03$)	$M = 1.50$ ($SD = 2.98$)
Average Weekend Day	$M = 8.19$ ($SD = 15.26$)	$M = 6.45$ ($SD = 13.59$)	$M = 2.66$ ($SD = 7.50$)

Why do individuals engage in TWD? Results indicated that individuals high in sensation seeking tendencies were more likely to initiate texts while driving. This outcome is consistent with other research which shows that individuals high in sensation seeking tendencies engage in generally risky behaviors such as smoking (Zuckerman, Ball, & Black, 1990) and illicit drug use (Zuckerman, 1987). Of the three behaviors, initiating a text while driving could be considered one of the most dangerous aspects of TWD because of the multiple steps involved in initiation (opening the phone, opening a text message, finding a contact, writing the message, and then sending the message). This finding is consistent with Zuckerman's (1994) claim that individuals high in sensation seeking tendencies prefer multitasking compared to individuals low in sensation seeking. Thus, this behavior may provide a level of stimulation that meets sensation seekers' need for arousal.

Furthermore, need for cognition was a significant negative predictor for both reading and replying to text messages while driving. Individuals low in need for cognition were more likely to read or reply to a text while driving. A possible explanation for this finding is that nearly 75% of all participants reported being exposed

to a TWD media campaign within the last month. Since individuals high in need for cognition are known for elaborating on persuasive messages (Cacioppo, Petty, & Morris, 1983; See, Petty, & Evans, 2009), they may not engage in TWD behaviors because they have cognitively processed current TWD campaigns and are more cognizant of the dangers than individuals low in need for cognition. Or, alternatively, text messages may not provide individuals high in NFC with adequate context on which to elaborate, thus making them less interesting to those seeking greater elaboration and depth on topics of interest.

Aside from these statistics, there were five major outcomes from this study that pertain to attitudes toward TWD, perceptions of message realism, perceptions of message accuracy, and perceived message sensation value. These findings are detailed below. Please recall that all statistical analyses controlled for sex of the participant, current TWD behavior, exposure to TWD messages within the last month, and exposure to the local “Safe Text Pledge.”

TWD Attitude Favorable/Unfavorable

The first primary outcome was the interaction between perceived threat and NFC on TWD attitudes. Hypothesis 2 predicted an interaction between perceived threat and need for cognition on attitudes toward TWD. Specifically, as perceived threat increased, it was predicted that individuals low in need for cognition would report greater levels of unfavorable attitudes toward TWD. Results indicated that the interaction between NFC and perceived threat was significant only for Message 1 that emphasized benefits; however, the interaction was opposite of what was predicted. Regardless of perceived

threat, individuals low in NFC reported similar levels of attitudes toward TWD, whereas individuals high in NFC held more unfavorable attitudes toward TWD when they perceived the message as being lower in threat. See Figure 3. The formative research from this project provides an explanation for the shift in unfavorable attitudes for individuals high in NFC based on perception of threat. Participants in the focus groups claimed that high threat messages often alienate individuals who prefer less emotion when judging or scrutinizing an argument (Boenker, 2010). Therefore, individuals high in NFC who perceived the message as high threat may have engaged in fear control processing which can frequently take the form of a boomerang effect (Witte, 1992, 1994, 1997). In this specific study, individuals high in NFC may have reported less unfavorable attitudes when they perceived the message as high threat because of psychological reactance, though additional research is needed to test such an assertion.

Perceptions of Message Realism

The second outcome was the interaction of NFC and perceived threat on message realism. Hypothesis 1 predicted that individuals low in NFC would report greater levels of perceived message effectiveness for perceived high threat messages than low threat messages. Individuals high in NFC would report similar levels of perceived message effectiveness for perceived high threat and low threat messages. Results indicated a significant interaction for message 2 that focused on mastery. The first prediction for individuals low in NFC materialized such that individuals low in NFC who perceived the message as low threat rated the message lower in message realism than individuals low in NFC who perceived the message as high threat. However, the prediction for

individuals high in NFC did not materialize. Rather, individuals high in NFC who perceived the message as high threat rated it significantly lower in message realism than when the message was perceived as low threat. See Figure 1.

The third outcome was the interaction between SS and perceived threat on message realism. Hypothesis 9 predicted an interaction between SS and perceived threat on message effectiveness, such that as perceptions of threat increased, individuals high in SS tendencies would report greater levels of message effectiveness. Results indicated a significant interaction for message 2 that focused on mastery. The hypothesis was supported given that individuals high in SS tendencies who perceived high threat reported higher message realism than individuals high in SS who perceived low threat. Additionally, individuals low in SS tendencies who perceived low threat reported higher message realism than individuals low in SS who perceived high threat. Overall, the level of message realism for perceived high threat messages showed little change resulting from SS tendencies; however, the level of message realism for perceived low threat message showed a dramatic shift resulting from SS tendencies. See Figure 4.

The results for the two interactions on message effectiveness can be explained by the Activation Model of Information Exposure (Donohew, Lorch, & Palmgreen, 1998) which claims that individuals have an optimal level of arousal, and therefore, some messages may over-stimulate some people. Since participants low in SS tendencies rated the messages as less realistic when perceived threat was high, this personality trait may cause individuals to experience negative affect and seek less arousal elsewhere when confronted with a high threat message. Although the Activation Model of

Information Exposure does not explain the results for NFC, the formative research did reveal that individuals who considered themselves high in NFC were ambivalent toward high threat messages. A participant in the focus group stated that “Emotional appeals do not work for some people. So I think there should be logic, you know, like statistics...cold, hard logic is something you can’t argue with.” (Boenker, 2010). There were multiple instances during which focus group participants disagreed over the level of arousal [fear] need to produce persuasion for TWD message (Boenker, 2010).

Perceptions of Message Accuracy

The fourth outcome was the interaction of NFC and perceived threat on message accuracy. Message accuracy, composed of whether a message was wise and right, was a second factor that loaded on message effectiveness. Hypothesis 1 predicted an interaction of NFC and perceived threat on message effectiveness such that as perceived threat increased, individuals low in NFC would report greater levels of message effectiveness. Results indicated a significant interaction for message 1 which emphasized benefits and thus supported the prediction. Individuals low in NFC who perceived the message as high threat rated the message accuracy higher than individuals low in NFC who perceived the message as low threat. On the other hand, individuals high in NFC who perceived the message as low threat rated the message accuracy higher than individuals high in NFC who perceived the message as high threat. See Figure 2. The hypothesis was supported by this finding and confirmed the two strategies revealed in the formative research. Also, this result is consistent with the testimonies from the

focus group participants who suggested that individuals who enjoy thinking will be less impressed by messages that rely on more pathos than logos (Boenker, 2010).

Perceived Threat and Perceived Message Sensation Value

The final major outcome was the significant relationship between PMSV and perceived threat. There is only limited research that addresses the relationship between perceived threat and perceived message sensation value (PMSV). As previously discussed in Chapter II, the EPPM combines high severity and high susceptibility to create high threat messages which should elicit fear. Since fear is a component discussed by Donohew et al. (1998) as part of emotional intensity, the research question asked if high threat messages would be rated as being high in PMSV. Results indicated that perceived threat was significantly and positively related to PMSV such that as perceived threat increased, PMSV increased. In order to further investigate the relationship, the three components of PMSV (emotional arousal, novelty, and dramatic impact) were analyzed separately. Perceived threat was a significant predictor of both novelty and dramatic impact; however, no relationship was discovered between perceived threat and emotional arousal. The findings revealed that as perceived threat increased, perceptions of dramatic impact and novelty increased.

The format of the message and the items that assessed emotional arousal provide an explanation. The items to assess emotional arousal included “powerful impact/weak impact,” “emotional/unemotional,” “exciting/unexciting,” “arousing/not arousing,” “involving/not involving,” and “stimulating/not stimulating.” Emotional arousal items are connected to strong visuals and sound effects (Palmgreen, Stephenson, Everett,

Baseheart, & Francies, 2002) neither of which was employed for this message. Therefore, the lack of photographs and sounds could have ultimately hindered the sensations associated with emotional arousal. Palmgreen et al. (2002) claimed that when studying marijuana and cocaine PSAs, “Only one of the subdimensions of PMSV- Emotional Arousal- has clear emotional overtones and was not as strong a predictor of affective reactions as dramatic impact” (p. 424). Thus, this study is consistent with the results of previous research where emotional arousal is not directly related to affective responses, fear or perceptions of threat.

Message Conditions

Although explanations were provided about the five outcomes, a discussion about the significance of interactions for certain message conditions is warranted. The message conditions were not significantly different in perceptions of message realism, message accuracy, and threat; however, there were interactions between personality traits and perceived threat on message realism and message accuracy for certain message conditions. For Message 2 (Mastery), there was an interaction between NFC and perceived threat along with SS and perceived threat on message realism. For Message 1 (Benefits), there was an interaction between NFC and perceived threat on message accuracy. Also, there was an interaction between NFC and perceived threat on favorable attitudes toward TWD for Message 1 (Benefits). Therefore, the different belief targeted in each message made an overall impact on the participant’s perceptions.

So, why were there interactions for some messages and not others? There is no clear theoretical answer available, although a brief and reasonable explanation can be

provided from the Integrative Model (Fishbein, 2000), a health-behavior theory that is historically tied to Theory of Reasoned Action and Theory of Planned Behavior. In line with earlier theorizing, Fishbein et al. (2002) claim that the integrative model “recognizes that attitudes, perceived norms, and self-efficacy are all, themselves, functions of underlying beliefs” (Fishbein et al., 2002, p. 94). Historically, the approach used by Fishbein and others is to develop an exhaustive list of beliefs related to the target behavior and subsequently determine the strength of the correlations between the target beliefs and related intentions, attitudes, norms, and self efficacy. Those correlations offer researchers information about which beliefs are potentially malleable and thus can be targeted very specifically in messages.

The approach used in this TWD study, however, was different in that no quantitative data on beliefs was collected. In contrast, focus groups were used to identify which beliefs were salient for message design. Still, the Fishbein et al. (2002) framework provides a theoretical platform for using beliefs to change intentions and attitudes. They emphasize the use of formative research to allow the researcher to understand the perspective (beliefs) of the target population and build an intervention that targets a specific behavior using the beliefs discovered. Therefore, the focus groups for this study did provide a starting point for the message creation. A reasonable second step could have been assessing the relationship that the three beliefs (and perhaps others) had with intentions. Fishbein et al. (2002) claim that external variables (sensation seeking and need for cognition) influence an individual’s belief structure, thus providing

some insight into why certain personality traits interacted with perceived threat for different messages on attitude and perceptions of message effectiveness.

The data analytic process also revealed new information about efficacy and TWD. Participants in the main study rated perceived self efficacy ($M = 5.92, SD = 1.4$) and perceived response efficacy ($M = 6.37, SD = 1.1$) above the median. Therefore, participants believed that they could easily refrain from TWD (self efficacy) and that by doing so, prevent a fatal car collision (response efficacy). Additionally, there was a significant difference between message conditions for response efficacy, $F(2, 152) = 3.64, p < .05, \eta^2 = .046$, and the differences were between Message 1 ($M = 6.04, SD = 1.25$) and Message 3 ($M = 6.55, SD = .70$). Message 2 ($M = 6.53, SD = 1.23$) did not significantly differ from Message 1 or Message 3. Therefore, the benefits message and the ubiquity message were significantly different; whereas, the mastery message did not significantly differ from the benefits message or ubiquity message.

Because pretest and posttest data was collected on a small subset of participants ($n=36$), there is an opportunity to compare pre-message efficacy beliefs to those that were measured after the message. Sample size is small for each message condition, nevertheless, some significant differences materialized. Specifically, for individuals who read Message 2 (Mastery), there was a significant difference in pre-test response efficacy ($M = 6.30, SD = .97$) and post-test response efficacy ($M = 6.63, SD = .88$); $t(9) = -2.37, p < .05$. In this study, response efficacy is the belief that refraining from TWD prevents potentially fatal motor vehicle accidents. Additionally, for Message 3 (Ubiquity), the difference in scores for the pre-test perceived response efficacy ($M =$

6.13, $SD = .87$) and post-test perceived response efficacy ($M = 6.62$, $SD = .48$) approached significance, $t(12) = -2.13$, $p = .054$. Therefore, for both Message 2 (Mastery) and Message 3 (Ubiquity), perceived response efficacy increased after exposure to the message. Since the self efficacy and response efficacy paragraphs were identical across conditions, the ubiquity and mastery messages may have systematically (though unintentionally) increased perceptions of response efficacy.

The results of this study provide some clear implications for the design of TWD messages. First, based on the results from the current study, to build a message perceived as realistic for low NFC individuals (who, based on data from this study, are individuals more likely to read and reply to texts while driving), threat must be perceived as high and the message should target the individual's false sense of security (e.g. "You think you have developed safe strategies for TWD...there are no safe ways to text"). By doing so, individuals low in NFC will perceive the message to be more realistic compared to a low threat message. Second, if targeting individuals high in SS tendencies (who, according to data in this study, are individuals who are likely to initiate texts while driving), the message must be perceived high in threat to elicit high ratings of message realism. Finally, in terms of designing a campaign with high perceived message accuracy for individuals low in NFC, the belief of benefits (e.g. "You may think the benefits outweigh the costs...but they don't") should be targeted within a message perceived as high threat.

Overall, the three message conditions have shown different interactions effects. Perhaps one direction for future research would be to determine if targeting multiple

beliefs in one message would produce similar results as targeting only one belief per message. If we combined all three beliefs discovered by the formative research in a single high threat TWD message, would the message be perceived by individuals high in SS tendencies or low in NFC as high in PMSV, accurate, realistic, and increase response efficacy? This and other future research will be discussed following what lessons were learned and an overview of the study's limitations.

Scared Thoughtless

While the above provides a discussion of what findings materialized from this study, there were also a number of hypotheses that received no support. It is only fitting to reflect on what elements in the entire process of the study, from conceptualization to completion, did not transpire as expected. The following section provides my thoughts in a much more informal way, but nevertheless reflects part of the learning process that occurred while completing this study.

From the outset, the committee felt the study was overly ambitious and encouraged me to pare back the study. There are several reasons why I didn't do that. In hopes of contributing to the field of research on the EPPM, I wanted to fill the gaps in the literature about the role individual personality traits, NFC and SS, have on message processing. Also, I wanted to experience the process of using a theory to guide message creation along with using formative research to provide direction for message content. My extensive list of goals served to propel me into a multifaceted study that yielded few results. However, the lack of support for the hypotheses provides an opportunity for

growth as a scholar and researcher. Below are explanations for why hypotheses may not have materialized along with lessons learned.

First of all, the failure to create a low threat message which started as a ripple became a tsunami as the project progressed. Not only did this directly affect the study design, hypotheses, and analyses, but raised questions in regard to message creation and message mediums. The original design of the study was a 3x2; however, after multiple message validations, the design became a 3x1 when no low threat message was successfully created. This problem caused all the original hypotheses to be modified such that threat was replaced with *perceived* threat. Thus, no categorical variable was available for comparison and all the planned analyses went from fairly straightforward ANOVAs to multiple regressions.

The inability to create a low threat message begs the questions as to whether this was a contextual, theoretical, or methodological problem. Prior to exposure to the message for the main study, participants in the subgroups rated their perceived severity ($M = 6.3, SD = 1.04$) and perceived susceptibility ($M = 5.54, SD = 1.55$) above the median. Therefore, perceptions of threat ($M = 5.92, SD = 1.17$) were high even before exposure to the message. This finding provides one explanation for why the low threat message condition may have failed to elicit perceptions of low threat in both message validation tests. Also, since participants in the main study revealed that nearly 75% had been exposed to a TWD message within the last month, this high level of exposure may have influenced the level of threat perceived by the participants due the salience of the behavior. In terms of methodology, past fear appeal research (e.g. Hale & Dillard, 1995;

Witte, 1992) provided very clear guidance on how to create a low threat message. The message features for this project included nonpersonalistic language, nonthreatening outcomes, and dull language (for example, a “collision” in the high threat message became a “fender bender” in the low threat condition). The efficacy remained constant in both message conditions. Therefore, the low threat messages attempted to underscore the severity of TWD and the susceptibility of experiencing a TWD collision; however, participants still reported high severity and high susceptibility. The challenges of message creation along with the unsuccessful message validations illustrated that bridging theory with practice can be extremely difficult. Although in this particular case the EPPM did provide guidance for message design, no low threat message was successfully created and propositions from the EPPM could not be empirically explored. Theories can provide excellent guidance for a research study; however, the utility of theories should be tested and retested in a variety of contexts. Since theories are typically created and research within the academy, message designers may struggle with deciphering the theoretical concepts and employing such concepts in the creation of campaigns. Particularly for this project, much decoding took place in order to create messages and even then, the low threat message was unsuccessful.

Second, the lack of successful message validation along with limited support for the hypotheses may have resulted from the medium utilized to communicate the message. Noar (2006) claims that in Derzon and Lipsey’s (2002) meta-analysis of campaigns they found that “in terms of moderators of the effects of behavior, campaigns utilizing radio, video, and television were found to have greater effects than those using

print media” (p. 23). However, in previous fear appeal work using the EPPM (Stephenson & Witte, 1998) found that pictures in fear appeal messages had a negligible effect when combined with text. The discipline of communication, in general, lacks clarity on what medium or media would be most effective for fear appeal messages. This is clearly a methodological question for future studies.

Third, the lack of supported hypotheses from the main study could have resulted from the belief paragraph in each message. One paragraph in each of the three messages was created from the beliefs exposed by the focus group participants; however, due to limited resources, no manipulation check was conducted for the benefits, mastery, or ubiquity paragraphs. This is one area, however, where O’Keefe (2003) says manipulation checks may not be necessary. Nonetheless, the messages may have unintentionally manipulated perceptions of threat and efficacy. The complexity of combining the results of a qualitative project with a quantitative study may have also impacted results.

Fourth, the ontological, axiological, and epistemological assumptions of qualitative and quantitative research are fundamentally different (Burrell & Morgan, 1979; Guba & Lincoln, 1994; Seale, 1999). Therefore, those assumptions raised new challenges for my research.

Specifically, Burrell and Morgan (1979) state that “it is possible, for example, to identify methodologies employed in social science research which treat the social world like the natural world, as being hard, real and external to the individual, and others which view it as being of a much softer, personal and more subjective quality” (p. 2).

Thus, two dichotomous assumptions of qualitative and quantitative research can make bridging multiple methodologies difficult. Deetz (1996) argues against the hard “objective-subjective” line drawn by Burrell and Morgan (1979) and claims that researchers can be pigeonholed by such paradigms. Although Deetz prefers lines to blur for qualitative and quantitative methodologies, this was a challenge for my research. For the formative research, focus groups were conducted and transcripts were coded. During this process of my study, the number of 30 participants was acceptable to produce “rich” data. When writing the results and findings, incorporating my voice and values as a researcher was expected. I was to immerse myself in the data and significance was placed on the individual’s experience, not the overall generalizability of the findings. In contrast, once the formative research concluded and the message validation tests and main study began, there was an apparent shift in my expectations for the research. No longer was an emic approach valued, rather my role as a research had changed. The 155 participants for my main study proved to be substantial, even though the argument can and will be made that this decreases the generalizability of my study. The data gathered would not be considered “rich” by qualitative standards but rather provided clear results for relationships between variables. Although employing mixed methodologies created an internal struggle, the qualitative and quantitative findings complemented the understanding of TWD behavior, beliefs, and attitudes in a holistic light rather than in pieces.

Finally, the lessons learned. Overall, the process of researching can be both an exciting and ego deflating adventure. As a researcher, frustration ensued from the

difficult transition from qualitative to quantitative methods. Employing both qualitative and quantitative methodologies encouraged an expansion of my paradigm associated with research. My experience justifies that qualitative and quantitative research must be used together to increase the public's understanding of health behaviors. Without the formative research for this project, the views of the target audience would have been neglected. Utilizing both methodologies allows researchers a more holistic perspective of participants and the health behavior. Also, being abreast in multiple methodologies challenges and encourages researchers to value all contributions to the field. If my project was conducted again with increased resources, more qualitative data would have been collected. Formative research from focus groups could have provided insight about the media or medium to communicate TWD fear appeal messages. The strategy of using formative research as an indicator of channel preferences is underused in campaign creation (Noar, 2006). Aside from additional formative research, focus groups should be conducted in conjunction with the main study questionnaire to provide additional insight into the target population's perceptions of the message. Therefore, a great expanse of knowledge can be discovered with the use of several methodologies. Beyond the explanations for findings addressed above, what follows is an overview of limitations for this study.

Limitations

There are several limitations worth noting. Each limitation is discussed along with steps taken to reduce additional concerns.

The first limitation resulted from sampling. A convenience sample was used to acquire participants from undergraduate communication courses at Texas A&M University. Therefore participants may have acquired insight on media campaign design and persuasive methods of message creation from enrollment in the course. Although convenience sampling is a limitation of the present study, the participants recruited most resembled the current target population for TWD messages and were randomly assigned to message conditions.

The second limitation resulted from the sample size. The sample size for the study was 155 with approximately 50 participants per message condition. The majority of the students were White females. Therefore, the modest sample size and limited variability of participants in the sample hinders the generalizability of the study. Also, the small significance levels of proposed interactions could be a result of the small sample size. The lack of significant levels to support the hypotheses may be a result of falsely accepting the null hypotheses, Type II error. Although Type II error may have occurred, the fact remains that even with the limited sample size multiple interactions were significant between personality traits and perceived threat.

The third limitation resulted from lack of a low threat message condition. The main study only tested a high threat message after two separate message validation tests revealed the inability to create a low threat message. Therefore, no comparison can be made between a high threat TWD message and a low threat TWD message. Many of the original hypotheses had to be modified to test perceived threat. Without a low threat condition, questions remained unanswered about the likelihood of interactions between

personality traits and exposure to a low threat message. Although fear appeal publications have focused on the right and wrong way to build fear appeal messages (e.g. Hale & Dillard, 1995), little research has discussed how to build a low threat message comparable to the high threat alternative.

The fourth limitation resulted from sensitization and fatigue. Since participants answered multiple questions about TWD prior to exposure to the message and completion of the post-test, testing sensitization may have occurred. Even though red herring questions (i.e. drug use and sexual behavior) could reduce the likelihood of testing sensitization, such questions were not included in the post-test given the length of the questionnaire. The large quantity of questions may have ultimately led to testing fatigue in which reduces the accuracy of responses.

Although limitations exist in the current research study, procedures were taken to reduce further limitations. The high threat message template was tested in two separate message validation tests prior to use in the main study. All three high threat messages were of equal length in order to assure a similar level of exposure for each participant. In order to test for equivalence among participants, a subgroup in each message condition answered questions about attitudes and intentions toward TWD prior to message exposure. When available, interval and ratio level measures were used to assess attitudes, intentions, and behaviors.

Future Research

With an increasing concern for collisions from TWD and a legislative battle over laws to regulate TWD, additional research is essential. Particularly, examination of the

underlying motivations for TWD and the beliefs of the target population should be further explored. Although the current study helped to shed light on the prevalence of TWD and how personality traits interact with perceptions of threat, many questions remain unanswered. Noar et al. (2010) claims that “In addition to formative research taking place before a campaign launches, research conducted after a successful campaign takes place can help to shed light on what the “active ingredients” are in persuasive health messages” (p. 22). Therefore, an investment into the assessment of current TWD campaigns is crucial in understanding which campaigns are effective and why.

For the present study, a low threat message condition was unsuccessfully created. The inability to build a low threat message was attributed to the high rate of perceived threat reported by the participants prior to message exposure and to the high rate of exposure to media campaigns in the last month. However, this difficulty may expand beyond the current study to include other health behaviors. Thus, exploration into the creation of low threat and high threat messages is essential for popular health topics. Researchers should attempt to create low threat messages for health topics which have been repeatedly covered by the media (e.g. breast cancer, heart disease, and drunk driving). Such studies may provide insight into whether previous exposure to the health topic influences the inability to perceive a message as low threat.

In particular, the creation of low threat messages should be examined in conjunction with participants’ perception of threat. In order to create campaigns which successfully promote healthy attitudinal and behavioral shifts, researchers should

understand the role perceptions of threat play in persuasion. For example, can low threat messages be created about health topics which the target population already feels is severe? Can low threat messages be created about topics which the target population already feels susceptible?

Health campaigners must know if messages intended to be less threatening are being perceived as highly threatening because of personality traits or previous exposure to the health topic. If messages are viewed as highly threatening, the EPPM suggests explicit self efficacy and response efficacy statements must be included to help reduce unintended responses (e.g., message derogation, reactance). Thus, health campaign designers bare a responsibility to reduce the chance of psychological harm to the population, but we must understand the “active ingredients” which make a campaign successful to do so. Are current TWD fear appeals offering viewers the efficacy they need? Again, exploration of current TWD campaigns can provide valuable insight into the components utilized in fear appeals and the impact those components have on consumers.

The present study lends support that personality traits do impact perceptions of TWD fear appeal messages. Health campaign specialists should continue to explore the impact personality traits have on message effectiveness and how to target individuals based on their level of need for cognition or sensation seeking tendencies. According to Zuckerman et al. (2002), “one size does not fit all, and interventions that are successful at changing a given behavior in one culture or population may be a complete failure in another” (p. 94). Consequently, insight is further needed into how personality traits

influence an individual's reaction to a TWD fear appeal. Also, few communication theories focus on how individuals respond differently to messages and how to create messages from theoretical constructs (Noar, 2006).

The National Highway Traffic Safety Administration (2010) claims that “while all distractions can endanger drivers' safety, texting is the most alarming because it involves all three types of distractions (visual, manual, and cognitive).” As this study has shown, personality traits interact with perceptions of threat for TWD fear appeals and further exploration into TWD fear appeals and behavior is warranted.

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APPENDIX A

Message Validation 1 High Threat Message

On Friday night at 11:45p.m., Jennifer, a junior at Texas A&M University, was driving home from a friend's house with her two good friends, Mary and Justin. According to police records, while on HWY 6, Jennifer lost control of the vehicle, swerved off the road, and flipped the car. When Jennifer regained consciousness she could hear Mary who was crammed into the back of the car **screaming** for help and **shouting from** the pain. Mary's femur was **protruding through the mangled** skin of her right leg. Justin, who was riding in the passenger seat next to Jennifer, was not breathing when medical personnel arrived. Blood ran from a gash in his forehead and stained his white button-up shirt. When the ambulance arrived, medics **declared him dead and zipped Justin's lifeless body into a bag**. They bandaged Mary's wounds. Jennifer, though **severely** bruised, was alive. She **wore** the blood of her **two victims**. No, she wasn't driving drunk when she **slaughtered** her best friend and **maimed** the other...she was texting while driving.

Who's at risk of injury from texting while driving? **You are** if you text while driving. **You and your friends are in danger even as passengers who ride with someone who texts while driving**. News stories continue to surface portraying images **of college students who have died or been seriously injured** from texting while driving. In 2008, more than 500,000 people were injured and 6,000 people were killed from car accidents attributed to this dangerous behavior. **If you** are fortunate enough to **survive the collision you** may experience negative consequences such as **paralysis and brain damage**. Perhaps the worst consequence is living with the fact that **you murdered an innocent person**. **You could become a killer if you** text while driving or if **you** get into the car with a driver who does. Are **you** prepared to be a **murderer**? Are **you** prepared to live with **blood on your hands**?

Save a life. You can refrain from texting while driving. Before you start your car, put your cell phone in an out of reach spot, like your glove compartment. Make a promise to yourself that you can make it to the destination without texting. If you need to text, pull over and make a complete stop and put the car in park. According to the Virginia Tech Transportation Institute, you are 23 times more likely to experience a car accident if you are texting while driving. You can wait to text. No text message is worth a life or a life with an irreparable injury.

Be a friend. You can prevent your friends from texting while driving. Before you get into the car with your friend, ask him/her to refrain from texting while driving. You can be heard. Tell your friend that you would text for him/her or promote the same activities you do to keep yourself from texting while driving. Keep yourself from being a victim and keep your friend from taking a life.

Set the example and do not text while driving and ask those you care about to do the same.

Message Validation 1 Low Threat Message

On Friday night at 11:45p.m., Jennifer, a junior at Texas A&M University, was driving home from a friend's house with her two good friends, Mary and Justin. According to police records, while on HWY 6, Jennifer lost control of the vehicle, swerved off the road, and flipped the car. When Jennifer regained consciousness she could hear Mary who was crammed into the back of the car **calling** for help and **complaining about** the pain. Mary's femur was broken with numerous skin abrasions on her right leg. Justin, who was riding in the passenger seat next to Jennifer, was not breathing when medical personnel arrived. His **forehead was scratched and his white button-up shirt was torn**. When the ambulance arrived, medics **determined that he had passed away** and **then removed him from the vehicle**. They bandaged Mary's injury. Jennifer, though bruised, was alive. She **had** the blood of her two **friends on her clothes**. No, she wasn't driving drunk when **she took the life of** her best friend and **hurt** the other...she was texting while driving.

Who's at risk of injury from texting while driving? **Individuals who** text while driving and their passengers are in danger. News stories continue to surface portraying images of **people who have passed away or been hurt** from texting while driving. In 2008, more than 500,000 people were injured and 6,000 people were killed from car accidents attributed to this dangerous behavior. Individuals who have been fortunate enough to **walk away from** the **accident** have experienced negative consequences such as **loss of muscle function** and **head injuries**. Perhaps the worst consequence is living with the fact that the **driver hurt** an **unsuspecting** person. Individuals can become **takers of life** if they text while driving or get into the car with a driver who does. Are people prepared to take a life? Are people prepared to live with **the guilt of hurting someone**?

Save a life. You can refrain from texting while driving. Before you start your car, put your cell phone in an out of reach spot, like your glove compartment. Make a promise to yourself that you can make it to the destination without texting. If you need to text, pull over and make a complete stop and put the car in park. According to the Virginia Tech Transportation Institute, you are 23 times more likely to experience a car accident if you are texting while driving. You can wait to text. No text message is worth a life or a life with an irreparable injury.

Be a friend. You can prevent your friends from texting while driving. Before you get into the car with your friend, ask him/her to refrain from texting while driving. You can be heard. Tell your friend that you would text for him/her or promote the same activities you do to keep yourself from texting while driving. Keep yourself from being a victim and keep your friend from taking a life.

Set the example and do not text while driving and ask those you care about to do the same.

Message Validation 2 Revised Low Threat Message

On Friday night at 11:45 p.m., Jennifer, a junior at Texas A&M University, was driving home from a friend's house with her two good friends, Mary and Justin. According to police records, while on HWY 6, Jennifer had a fender bender with another car driven by someone from Huntsville. The fender bender stunned Jennifer momentarily, in part because her airbags deployed. She was more dazed by the airbag deployment than the fender bender itself. Neither Jennifer nor her two passengers were seriously hurt. Mary, who was in the back seat, scraped her knee on the center console and Justin, who was riding in the passenger seat next to Jennifer, had minor shoulder pain from the seat belt mechanism which locked when the cars bumped into each other. As with all accidents, the ambulance and fire truck arrived with the police, but everybody was okay and no one required medical treatment. The unfortunate part of this story is that the only reason the fender bender occurred was because Jennifer was texting while driving and lost sight of what was in front of her.

Who's at risk of injury from texting while driving? Individuals who text while driving and their passengers may have accidents like the one Jennifer had, although some certainly can be worse. News stories describe incidents of individuals who have been in small accidents and sustained minor injuries. In 2008, there were many injuries from accidents attributed to texting while driving and a number of individuals perished from the accident. College students are often involved in these types of accidents. If individuals are involved in such a fender bender, they may experience some negative consequences such as bumps and bruises. Perhaps the worst consequence is living with the fact that the driver caused a fender bender. Individuals may be in danger if they text while driving or get into a car with a driver who does.

Prevent an injury. You can refrain from texting while driving. Before you start your car, put your cell phone in an out of reach spot, like your glove compartment. Make a promise to yourself that you can make it to the destination without texting. If you need to text, pull over and make a complete stop and put the car in park. According to the Virginia Tech Transportation Institute, you are 23 times more likely to experience a car accident if you are texting while driving. You can wait to text.

Be a friend. You can prevent your friends from texting while driving. Before you get into the car with your friends, ask them to refrain from texting while driving. You can be heard. As a passenger, tell your friends that you would text for them or promote the same activities you do to keep yourself from texting while driving. You can keep yourself from being put in a situation that may be similar to Jennifer's.

Set the example and do not text while driving and ask those you care about to do the same.

APPENDIX B

Perceived Susceptibility

1. I am at risk for experiencing a potentially fatal motor vehicle collision from texting while driving
2. It is possible that I will experience a potentially fatal motor vehicle collision from texting while driving
3. I am susceptible to experiencing a potentially fatal motor vehicle collision from texting while driving

Perceived Severity

1. A potentially fatal motor vehicle collision from texting while driving is a serious threat
2. A potentially fatal motor vehicle collision from texting while driving is harmful
3. A potentially fatal motor vehicle collision from texting while driving is a severe threat.

Fear: This makes me feel:

1. Frightened
2. Tense
3. Anxious
4. Comfortable
5. Nervous

TWD Intentions

1. How likely are you to regularly engage in texting while driving in the future?
2. How likely are you to engage in texting while driving at least once within the next week?
3. How likely are you to engage in texting while driving at least once within the year?

TWD Attitudes

Stem: In general, texting while driving is:

1. Good/Bad
2. Undesirable/Desirable
3. Favorable/Unfavorable

Perceived Risk of TWD Behavior

1. In general, how dangerous is it to initiate a text while driving?
2. In general, how dangerous is it to reply to a text while driving?
3. In general, how dangerous is it to read a text while driving?

Past TWD Behavior

1. Have you ever read a text while driving?
 - a. On an average week day, how many texts do you read while driving?
 - b. On an average weekend day, how many texts do you read while driving?
2. Have you ever replied to a text while driving?
 - a. On an average week day, how many texts do you reply to while driving?
 - b. On an average weekend, how many texts do you reply to while driving?
3. Have you ever initiated a text while driving?
 - a. On an average week day, how many texts do you initiate while driving?
 - b. On an average weekend, how many texts do you initiate while driving?

Current TWD Behavior

Stem: How often do you

1. Initiate a text while driving?
2. Reply to a text while driving?
3. Read a text while driving?

Sensation Seeking Tendencies

1. I tend to begin a new job without much advance planning on how I will do it
2. I usually think about what I am going to do before doing it
3. I often do things on impulse
4. I very seldom spend much time on the details of planning ahead
5. Before I begin a complicated job, I make careful plans
6. I enjoy getting into new situations where you can predict how things will turn out
7. I often get so carried away by new and exciting things and ideas that I never think of possible complications
8. I am an impulsive person
9. I like to have new and exciting experiences and sensations even if they are a little frightening
10. I would like to take off on a trip with no preplanned or definite routes or timetables
11. I like doing things just for the thrill of it
12. I tend to change interests frequently
13. I sometimes like to do things that are a little frightening
14. I'll try anything once
15. I would like the kind of life where one is on the move and travelling a lot, with lots of change and excitement
16. I sometimes like to do "crazy" things for fun
17. I like to explore a strange city or section of town by myself, even if it means getting lost
18. I prefer friends who are excitingly unpredictable
19. I like "wild" uninhibited parties.

Need for Cognition

1. I would prefer complex to simple problems
2. I like to have the responsibility of handling a situation that requires a lot of thinking
3. Thinking is not my idea of fun
4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities
5. I try to anticipate and avoid situations where there is likely chance that I will have to think in depth about something
6. I find satisfaction in deliberating hard and for long hours
7. I only think as hard as I have to
8. I prefer to think about small, daily projects to long-term ones
9. I like tasks that require little thought once I've learned them
10. The idea of relying on thought to make my way to the top appeals to me
11. I really enjoy a task that involves coming up with new solutions to problems
12. Learning new ways to think doesn't excite me very much
13. I prefer my life to be filled with puzzles that I must solve
14. The notion of thinking abstractly is appealing to me
15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought
16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort
17. It's enough for me that something gets the job done; I don't care how or why it works
18. I usually end up deliberating about issues even when they do not affect me personally.

Perceived Message Sensation Value

Stem: We would like you to rate the message you just read on the following scales

1. Unique/Common
2. Powerful impact/Weak impact
3. Didn't give me goose bumps/Gave me goose bumps
4. Novel/Ordinary
5. Emotional/Unemotional
6. Boring/Exciting
7. Not creative/Creative
8. Not graphic/Graphic
9. Arousing/Not arousing
10. Unusual/Usual
11. Involving/Uninvolving
12. Not intense/Intense
13. Undramatic/dramatic
14. Stimulating/Not stimulating

Perceived Message Effectiveness

Stem: The message you just read was

1. Convincing/Not convincing
2. Believable/Not believable
3. Sensible/Not sensible
4. Wise/Foolish
5. Right/Wrong
6. Important/Unimportant

Perceived Self Efficacy

1. I am able to refrain from texting while driving to prevent a potentially fatal motor vehicle collision
2. It is easy to refrain from texting while driving to prevent a potentially fatal motor vehicle collision
3. I can refrain from texting while driving to prevent a potentially fatal motor vehicle collision

Perceived Response Efficacy

1. Refraining from texting while driving prevents potentially fatal motor vehicle collisions
2. Refraining from texting while driving works in deterring potentially fatal motor vehicle collisions
3. Refraining from texting while driving is effective in getting rid of potentially fatal motor vehicle collisions

APPENDIX C

Benefits Paragraph for Message 1

Individuals may engage in texting while driving because they feel that the benefits outweigh the costs, such that, it's more important to be socially connected while driving than paying attention to the road. No friends would ask an individual to put his/her life in danger in order to text message while driving. Individuals feel texting while driving keeps them awake during long road trips; however, relying on texting is risky to every person on the road. It's only a matter of time before someone who thinks the benefits outweigh the costs of texting while driving experiences a negative consequence, such as a car collision.

Mastery Paragraph for Message 2

Individuals may engage in texting while driving because they feel that they have mastered the behavior. Although individuals feel they have developed strategies for texting while driving, such as holding the cell phone at the top of the steering wheel or texting two words and then looking up, none of these strategies are safe. The false sense of security these individuals feel is dangerous to every person on the road. It's only a matter of time before someone who thinks they've mastered texting while driving experiences a negative consequence, such as a car collision.

Ubiquity Paragraph for Message 3

Individuals may engage in texting while driving because they feel that many people are doing so. Although individuals feel that texting while driving is the norm, published research shows that this is not the case. Texting while driving is not an accepted normative behavior because it puts people at risk. Individuals, who text while driving because "everyone does it," are modeling a risky behavior that may influence younger family members and friends. It's only a matter of time before someone who thinks texting while driving is an acceptable behavior and experiences a negative consequence, such as a car collision.

VITA

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