2013

The effect of psychological reactance on acceptance of campaign message: A case of "stop texting while driving" campaign in college students

Yuyang Chen
Iowa State University

The effect of psychological reactance on acceptance of campaign message: A case of "stop texting while driving" campaign in college students

By

Yuyang Chen

A thesis submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Journalism and Mass Communication

Program of Study Committee:
Suman Lee, Major Professor
Sela Sar
Craig A. Anderson

Iowa State University
Ames, Iowa
2013

TABLE OF CONTENTS

LIST OF TABLES

ACKNOWLEDGEMENTS

First of all, I would like to express my deepest appreciation to my committee chair Prof. Suman Lee, for his persistent support for my graduate study and research, and for his patience, encouragement, and erudite knowledge. Without his guidance and help this thesis would not have been possible.

Also, I would like to give my sincere gratitude to my committee members, Prof. Sela Sar and Prof. Craig A. Anderson, for their valuable and insightful advice on thesis formation and revision. Their profound knowledge in psychology has been extremely helpful to me in terms of the writing of this thesis.

In addition, I want to specially thank my friend Jing Yang for her great help in data coding.

Moreover, thanks to my Director of Graduate Education, Prof. Daniela Dimitrova, for her continuous support and encouragement throughout the course of my graduate study. I would also like to say thanks to Prof. Mark Redmond who has been my mentor since my undergraduate study, and I have learned a lot from him.

Finally, I would like to give my special thanks to my beloved parents for their support, encouragement, understanding, patience, and unconditional love all along, and to my dearest friends who made my experience in Iowa State University wonderful and memorable.

ABSTRACT

This study is to investigate how the psychological reactance generates impact on acceptance of the campaign message of “stop texting while driving” among college students. A total of 180 undergraduate students completed the online survey asking for their cognitive and affective responses to the high- or low-threat campaign messages. Three hypotheses were tested among strength of reactance, degree of threat to freedom, amount of negative attitudes, and behavioral intention. This study found that: (1) In both high-threat and low-threat conditions, degree of threat to freedom one perceived is positively related to strength of reactance this individual experiences; (2) People who experienced stronger reactance had more negative attitudes toward the campaign message in high-threat condition, while in low-threat condition the result was not significant; (3) No significant result supports the assumption that strength of reactance is negatively related to the behavioral intention to follow the advocacy in the campaign message.

CHAPTER I

INTRODUCTION: THESIS FORMATTING

A great number of public health campaigns proposed and initiated by the U.S. government and public service organizations have been proved unsuccessful to a great extent (Wilde, 1993; Foxcraft, Liser-Sharp, & Lowe, 1997; Nolan, Schultz, & Knowles, 2009). A substantial portion of those public health communication attempts targeted young populations on subjects concerning binge drinking, drunk driving, drug use, and risky sexual behaviors (Haines & Spear, 1996; Burgoon, Alvaro, Grandpre & Voulodakis, 2002). Many of these campaign messages tend to threaten audiences by creating fear for the negative consequences if they do not follow the recommendations in the campaigns. But this fear appeal strategy turned out to be ineffective in altering public perceptions and behaviors on the target issues of campaigns (Burgoon, et al., 2002; Job, 1988).

As cellular phone use has become ubiquitous in our daily life, an emerging threat to people's lives is generating attention from the general public: distracted driving. National Highway Traffic Safety Administration (NHTSA) under the U.S. Department of Transportation has defined distracted driving as "any activity that could divert a person's attention away from the primary task of driving (NHTSA, 2012)". Although all types of distraction that endanger drivers, passengers, and bystanders' safety are considered as distracted driving, texting is acknowledged to be the most alarming distraction, because texting messages requires all visual, manual, and cognitive attention

from the drivers, whereas other types of distraction only require one or two types of attention (NHTSA, 2012).

Realizing the seriousness of distracted driving, 35 states in the U.S. and the District of Columbia have banned message texting while driving (Governors Highway Safety Association, 2012). Even though a lot of public service announcements (PSA) concerning potential harms of distracted driving to individuals have been issued, an authoritative report showed that 3,092 people were killed in car crashes caused by distracted driving and an additional 416,000 people were injured in crashes involving a distracted driver in 2010, which was 18% of injury crashes in 2010 (NHTSA, 2011). The report also revealed that young drivers were particularly at great risk, since the data of 2010 showed that 11% of all drivers under the age of 20 in fatal crashes were reported distracted at the time of the crash. The proportion of drivers engaging in texting while driving is higher among young and/or inexperienced drivers than other age groups (World Health Organization, 2011).

Researchers have been looking for the possible causes that are responsible for ineffectiveness of campaign messages aiming at the general public in terms of public health. One of the possible reasons was first theorized as “psychological reactance” by Brehm in 1966. According to Brehm (1966) and Brehm & Brehm (1981), people have the instinctive tendency to maintain their freedom by choosing not to follow others’ threat and manipulation. Psychological reactance is generated when people’s cognitive or behavioral freedom is threatened or eliminated by others. Once reactance is aroused, people are highly likely to deny the persuasive messages from campaigns, even if the

messages are in fact beneficial for them. Therefore, psychological reactance plays a vital role in determining the impact of campaigns, and it is proved to be one of the main factors that hinder the effectiveness and acceptance of large-scale health promotion campaigns.

In addition to the Theory of Psychological Reactance, Self-determination Theory was included in this study as well in order to explain the innate condition for reactance (Burgoon, et al., 2002; Deci & Ryan, 1985). The needs for autonomy, competence and relatedness drive people to make choices in different circumstances independent from others' influence. The tendency by individuals to be self-motivated and self-determined guides each individual's behaviors, largely out of the need for autonomy. When a person feels his or her need for autonomy and freedom to choose is limited or threatened by others, reactance emerges and further leads to counter-arguments and other undesired outcomes.

Given the severity of possible outcomes of texting while driving and the relative ineffectiveness of numerous relevant campaigns targeting young populations who are the most likely group to text while driving, this study tries to provide a possible explanation for the failure of previous "stop texting while driving" campaigns, and to offer insights on how campaigns can become more effective. The study tries to demonstrate a working model that connects individual's perceived threat to freedom, psychological reactance, and subsequent attitude and behavioral intention. Furthermore, reactance was expected to generate changes in attitude and behavior in participants in regard to texting while driving. The findings should provide valuable information for communication

practitioners to improve the effectiveness of public health campaigns targeting young populations especially college students, as well as other age groups of the population.

CHPATER 2

LITERATURE REVIEW

Public Service Announcement (PSA) Targeting Young Populations

Public service announcement (PSA) is designed to persuade people to change their attitudes and corresponding behaviors on significant public issues, with the purpose of reducing risky/antisocial behaviors (e.g., drunk driving and cyber bullying) and promoting healthy/prosocial behaviors (e.g., healthy eating and exercise). As an important tool for public campaigns to reach a large target population, several studies found that PSAs successfully raise the public awareness of the dangers of risky behaviors, set media and public agenda for discussion, change the public attitudes and behaviors (Durkin, Brenann, & Wakefield, 2011; Palmgreen, Donohew, Lorch, Hoyle, Stephenson, 2001). However, PSAs do not always work effectively to create the positive results as expected.

As to the efficacy of PSAs about abstaining from risky behaviors targeting young populations, practical studies did not show satisfying results. Grube (1993) proposed that adolescents tend to find PSAs boring and hard to be attended to. As a result, they don't even remember the content of PSAs afterwards. Fishbein, Hall-Jamieson, Zimmer, Haeften and Nabi (2002) found that adolescents who are at the highest risk of drug problem and do not view drug use as risky behavior, are least likely to be persuaded by antidrug PSAs. In addition, Andsager, Austin and Pinkleton (2001) suggested that many

college students question the level of realism of the alcohol-related PSAs, because they think the messages in those PSAs sometimes are too negative to be realistic.

Fishbein et al. (2002) tested the relative effectiveness of antidrug PSAs in teenagers before conducting a large-scale, national campaign. Among various types of PSAs, those pointing out the negative consequences of drug use behaviors were perceived the most effective in terms of raising people's awareness of the potential harm the drug use can bring to humans. "The greater the perceived effectiveness of the PSA, the more the substance-related risky behaviors are seen as harmful and dangerous and the less one believes that people one's own age engage in these behaviors (p. 244)." On the contrary, PSAs focusing on avoidance behaviors or telling adolescents to "just say no" to drug use were not well received by teenagers and reported to be the least effective. In addition, the study results also showed that humorous PSAs about drugs were judged to be ineffective and even were considered having considerable negative effects. "Messages perceived as ineffective (or as having a negative impact) are unlikely to prevent, and may actually facilitate, risky behavior (p. 245)."

Researchers have been looking for the source of the problem of ineffectiveness of PSAs. Atkin and Freimuth (1989) claimed that a lot of mass media campaigns did not follow any scientific theory to guide the composition of campaign messages or to analyze the reasons for lack of desired outcomes. Similarly, Nolan, Schultz, and Knowles (2009) indicated that there is lack of feasible behavior change theories to guide the study in effectiveness of public health campaigns. In the present study, the theory of psychological reactance was used in an attempt to provide reasonable explanation for the

issue of inefficacy of PSAs targeting the young populations and to suggest workable solutions to the problem.

The Theory of Psychological Reactance

Brehm (1966) proposed the concept of psychological reactance as "the motivational state directed toward the reestablishment of threatened or eliminated freedom (p. 15)." He considered psychological reactance as a tool to maximize need satisfaction for individuals who are aware of the needs and the corresponding need-satisfying behaviors but lack of appropriate freedom. The motivational state of reactance originates from individuals' basic needs for self-determination and autonomy, which drives people to maintain self-reliance on decision making and to resist any limitation or restriction from external influences on their freedom to choose (Pavey & Sparks, 2009; Burgoon et al., 2002). Once individuals believed they are free to choose from alternative behaviors but perceived the existence of threat to the freedom, they would experience the motivational pressure to restore the threatened freedom and respond in a corresponding way. The elimination of an alternative choice stimulates reactance and results in the increase of attractiveness of the unavailable alternative (Brehm, 1966).

The Theory of Psychological Reactance is based on four fundamental elements, including (1) freedom, (2) threat to freedom, (3) reactance, and (4) restoration of freedom (Brehm, 1966). These elements will be discussed in detail below.

Freedom

In the theory of reactance, freedom refers to not only behavior but also emotion and attitude. Brehm (1966) considered "free behaviors" as a set of behaviors realistically

possible that an individual is able to engage in either physically or psychologically at a certain moment. When people are engaging in free behaviors, the freedom to behave is highly appreciated. Brehm believes this need for freedom to choose from all the possible behaviors has an evolutionary importance for human beings' survival in the complicated world. Only if individuals have the knowledge of the existence of freedom, do they feel reactant when the freedom is limited and have the willingness to restore the freedom. So the freedom must be appreciable and exercisable. "The feeling of threat does not occur unless people perceive that they have alternatives from which to choose freely and that they are capable of making a decision. Without perceived threat, one cannot experience psychological reactance (Buller, Borlland & Burgoon, 1998, p. 436)".

The results from many relevant studies showed that when an individual is forced to make a decision to pick one from two or more choices, reactance is highly likely to result (Brehm & Sensening, 1966; Worchel & Brehm, 1970; Heilman & Toffler, 1976). In addition, research findings revealed that reactance could also be easily aroused if an individual has already made a choice and later received a threatening message in disagreement with his or her existing position. In this case, people tend to move away from their original position to demonstrate the freedom to decide for themselves (Worchel & Brehm, 1970; Burgoon, et al., 2002; Brehm, 1966).

Threat to Freedom

Burgoon et al. (2002) defined threat to freedom as "any event that makes it more difficult for a person to exercise a freedom constitutes a threat to that freedom (p. 222)". They also claimed that stronger threats generally lead to stronger reactant effects. Dillard

& Shen (2005) indicated both personal and impersonal events could be counted as threat to freedom, only if they generate certain degree of difficulty for individuals to exercise a freedom. Also, communicators who speak in a high degree of persuasive purpose that requires people to make certain choices are likely to be treated as threat to freedom (Brehm & Brehm, 1981).

According to Brehm (1966) and Brehm & Brehm (1981), psychological reactance is considered as a type of psychological arousal elicited by loss of freedom on making choices and desire to reestablish the freedom that has been threatened or eliminated. Messages targeting changing individuals' current behaviors and attitudes can be considered as threat to freedom to choose, whether or not the messages make sense to people. When people believe their freedom to choose is being threatened, psychological reactance is likely to result.

Reactance

Strength of reactance was hypothesized by Brehm (1966) and can be demonstrated in the positive relationship between the degree of threat to a behavior and perceived importance of the behavior. Brehm & Brehm (1981) further elaborated on generalizing factors that have an impact on the strength of reactance. They believed the strength of reactance is determined by (1) the perceived importance of the free behaviors to the individual, (2) the proportion of free behaviors threatened, and (3) the magnitude of the threat. If the perceived difficulty of exercising one's freedom has been increased by a certain threat, the strength of reactance one experiences would rise, resulting in various freedom-regaining responses toward the threat such as denying the current message to

engaging in counter-behavior against the suggested behavior. Brehm (1966) explained, "…the elimination of a choice alternative arouses reactance and a consequent increase in the attractiveness of that alternative (p. 37). "

Building on Brehm's original theory, subsequent works have shown that psychological reactance consists of both cognitive and affective components (Dillard & Peck, 2001; Dillard & Shen, 2005). Cognitive responses are thoughts that are generated to respond to persuasive communication (Petty, 1981). They normally are reflected in self-reports, in the style of "thought listing" filled with counter-arguments toward the advocacy of a certain campaign (Cacioppo & Petty, 1981; Petty & Cacioppo, 1986). Hovland, Lumsdaine, and Sheffield (1949) claimed that individuals protect themselves from threatening messages by counter-arguing. Greenwald (1968) presented the rationale of cognitive response that when people receive a persuasive message, they habitually relate the new message to previous knowledge and existing cognitions on the same subject. As a consequence, this cognitive process triggers attitude change and further behavior change. The way a recipient manipulates and integrates the information determines how a persuasive communication affects the recipient's attitude. Generally speaking, individuals are more likely to be persuaded by messages about which they have positive thoughts, and are less likely to be persuaded by messages that held negative thoughts previously.

Many researchers have indicated that reactance could also be considered as an emotion, or an affective response. Brehm (1966) initially raised the standpoint that the state of reactance demonstrates negative arousal and hostile feelings caused by the

perceived elimination or threat to individuals' freedom to choose. In addition, Nabi (2002) proposed, "freedom restriction is a prime anger elicitor (p. 301)". She further elaborated on this concept by claiming it is likely that the fundamental structure of reactance outcomes is anger arousal. Based on this reasoning, Dillard and Shen (2005) suggested that the affective response of reactance could be considered synonymous with concepts representing varying degrees of anger, such as irritation, annoyance, and rage. Unlike Brehm's proposition that psychological reactance is immeasurable, Dillard and Shen believe reactance can be operationalized by measuring an individual's degree of experienced anger on a close-ended scale after his or her exposure to persuasive messages.

The discussion around the nature of reactance has never stopped. Except for those who support either cognitive or affective nature of reactance, Leventhal (1970) proposed the Parallel Processing Model, which suggests that people generate both cognitive and emotional responses toward persuasive health-promotion messages and that each response has its own effect on message acceptance. However, Dillard and Shen (2005) revealed that the nature of reactance should be an intertwined process of negative cognition and anger, in which both the cognitive and affective responses work together to produce reactance, but they are almost impossible to separate from each other. They asserted that the effects of both components on persuasion cannot be divided, because each component owns an equal share for the motivation to restore threatened freedom.

Restoration of Freedom

The theory of psychological reactance claims that when one's freedom is perceived to be eliminated, the individual will be motivated to reestablish that freedom (Brehm, 1966). Brehm explains, "If a person's behavioral freedom is reduced or threatened with reduction, he would become motivationally aroused. This arousal would presumably be directed against any further loss of freedom and the reestablishment of whatever freedom had already been lost or threatened (p. 2)."

In general, people are more likely to be sensitive about the threats to freedom that they are capable to act on than those incapable for them (Dillard & Shen, 2005), by applying justification to explain the unavailability of the threatened freedom (Brehm, 1966). Once a threat is present, various responses may result: direct restoration of freedom by acting out a forbidden behavior or having an external agent act on behalf of the individual whose freedom has been threatened (Brehm, 1966; Brehm & Brehm, 1981), increased attractiveness of threatened behavior (Brehm & Sensenig, 1966), and hostility or undesired behaviors toward the agent who threats the freedom (Wicklund, 1974).

Self-determination Theory

As mentioned earlier, the need for self-determination is the drive that guides people to resist threat to freedom and retain control on his or her own thought and behavior. Self-determination Theory (SDT) reveals a basic personality and innate psychological tendency for self-control, self-motivation and self-regulation in pursuing the goal of individual growth. "SDT begins by embracing the assumption that all individuals have natural, innate, and constructive tendencies to develop an ever more elaborated and

unified sense of self (Deci & Ryan, 2002, p. 5).” It focuses on the inherent motivation that drives people to make choices without any external impact. This theory posits that to a significant degree an individual’s behavior is motivated by internal factors. Ryan and Deci (2000) described SDT as “people’s inherent growth tendencies and innate psychological needs that are the basis for their self-motivation and personality integration, as well as for the conditions that foster those positive processes (p. 68).”

Three needs have been identified as fundamental components of this thoery: autonomy (Deci, 1975), competence (Harter, 1978), and relatedness (Baumeister & Leary, 1995). Among these fundamental components, the need for autonomy has the closest relation with psychological reactance, since the experience of self-determination on one’s own behaviors is independent of external causes and originates from the sense of autonomy (Pavey & Sparks, 2009; Burgoon et al., 2002).

Autonomy orientation refers to the regulation of behavior, which is stemmed from personal interests and desires and also reveals one’s tendency toward intrinsic motivation and closely related extrinsic motivations (Deci & Ryan, 2002). Dowd et al. (1994) theorized that reactant individuals tended to be aggressive, dominant, defensive, quick to take offense, autonomous, and non-affiliative. Dowd et al. (1994) summarized, “Reactant individuals have a personality style characterized by having a lack of interest in making a good impression on others, being somewhat careless about meeting obligations, being less tolerant of other’s beliefs, resisting rules and regulations, being more concerned about problems and worried about the future, and being more inclined

to express strong feelings and emotions (p. 609)". Therefore, the findings clearly suggest that the characteristics of autonomy, like dominance, sensitivity to offense and non-affiliation, are also useful in predicting individual's level of reactance. Furthermore, Burgoon et al. (2002) perceived autonomy as the basis and source of reactance. They mentioned that people have a strong preference to perceive themselves as masters of their own fate, and that people have basic need for self-determination in effecting their surrounding environment.

Baer (1980) proposed that public post-communication attitudes were mainly used to convey the impression that a participant has autonomy and freedom in choice. If participants had not publicly exercised their freedom before it was threatened, reactance-like attitude change is likely to occur. "If an individual can project autonomy before the influence attempt, reactance will be diminished. If autonomy cannot be projected prior to the influencing attempt, post-communication reactance-reduction attempts will be more likely if the target can project autonomy (p. 422)."

Threat to Freedom as Antecedent of Reactance

Degree of threat to freedom is considered as how a threat raises the difficulty to practice certain behavior completely based on one's free will (Brehm & Brehm, 1981). Several studies have demonstrated a causal relationship between degree of threat to freedom and strength of reactance. For example, Worchel and Brehm (1970) found that there was a dramatic negative response to the advocacy with high threat, including threatening language and perceived intent to persuade. They argued that the communicator was taken as more biased in high-threat condition than low-threat

condition. Perceived bias easily triggers reactance against persuasion.

It has also been noticed that the use of emotional or extreme messages could lead to detection of the persuasive purpose and in result, reactance toward the messages. Brehm (1966) indicated that those emotional strong and extreme messages are highly likely to be seen as "trying too hard" to urge others to take the preset position, which will make the persuasive intention too obvious and further generate reactance and changes in attitude and behavior.

Persuasive messages in PSAs can be perceived as a direct threat or elimination to one's freedom of opinion, since most PSAs end up with suggesting behaviors or ideas as advocated solution to a certain social problem. Brehm (1966) suggested that once an individual is aware of the attempt to persuade, he or she would start to pursue the re-establishment of the opinion freedom through distancing oneself from the advocated position or moving toward the opposite position. Therefore, such an attempt to force or impact an individual to take a recommended stand is very likely to cause the arousal of reactance.

Based on previous findings, a hypothesis can be generated as follows:

H1: In the campaign of "Stop texting while driving", degree of threat to freedom is positively related to strength of reactance.

Reactance and Its Consequences

According to Dillard and Shen (2005), the consequences of reactance could be measured from two aspects, which contain attitude toward the message and behavioral intention. This conception was built upon the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and the Theory of Planned Behavior (Ajzen, 1991). Both factors were important and necessary in predicting the possible outcomes of psychological reactance. Later, a study as an extension of Dillard and Shen's research confirmed this claim by showing both negative cognitions and angers were important indicators of reactance (Rains & Turner, 2007).

Attitude toward the message could be considered as the valence of one's evaluation of the content of campaign message. The results of a study about adolescent reactance toward anti-smoking campaigns revealed, campaign messages explicit in persuasive intention will result in more negative message evaluation (attitude), more derogation of message source, and less behavioral intention to perform the advocated behavior, comparing to implicit messages emphasizing freedom to choose in individual behavior (Grandpre, Alvaro, Burgoon, Miller, and Hall, 2003).

Behavioral intention was defined as willingness to practice the recommended behavior in a short future. According to the Theory of Planned Behavior, behavioral intention is defined as indication of "how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior (Ajzen, 1991, p. 181)". It is categorized as motivational factors that influence the practice of a behavior. In general, the stronger intention one holds to engage in a behavior, the more likely he or

she will perform that behavior.

Doob and Zabrack (1971) and Brehm (1966) discovered that increasing pressure in the language of persuasive message could result in high reactance and threat-relieving, freedom-reestablishing behaviors, even if money inducement was involved. Buller, Borlland and Burgoon (1998) found that when people perceive a threat to their freedom to select from several options of attitudes or behaviors while they are processing a message, the psychological state of reactance is highly likely to result, which leads to aversive feeling and intent to behave opposite to what has been suggested in the campaign message to restore the sense of freedom. In this sense, reactance is actually a mediator between threat to freedom and all the possible outcomes (Dillard & Shen, 2005). Therefore, increase in the strength of reactance may generate increase in the amount of negative attitudes toward the message, which is consisted of number of negative attitudes toward the message and the valence of the attitude, as well as decrease one's behavioral intention to follow the advocacy in campaign message. Therefore, two hypotheses can be proposed at this time:

H2: In the campaign of "Stop texting while driving", strength of reactance is positively related to amount of negative attitudes toward the message.

H3: In the campaign of "Stop texting while driving", strength of reactance is negatively related to the behavioral intention to follow the message.

CHAPTER 3

METHOD

This study is primarily based on a previous study conducted by Dillard and Shen (2005) that investigated the nature of reactance and its role in persuasive health communication. Participants were randomly assigned to read one of two versions of persuasive messages regarding texting while driving that vary in the degree of threat to freedom. After reading a message, they were asked to provide information about their cognitive and affective responses toward the persuasive message, as well as their attitude and behavioral intention. Before sending out the invitation emails, a pretest was conducted in order to test the validity of measures. Fourteen students in an undergraduate journalism class of a mid-western university were invited to participate in the pretest.

Participants

Participants were recruited from 26,000 undergraduate students who enrolled in a large mid-western university. A total of 5,000 undergraduate students were randomly selected from the complete list of email addresses of all the undergraduate students, obtained from the Office of Registrar. The invitation and reminder emails were sent four times in two weeks. Given that students usually check emails at the beginning of the week and may have time to complete the survey at the end of a week, the emails were sent on Monday and Thursday mornings in those two weeks.

Procedure

This study is an online experiment. When subjects clicked on the link to the online survey in the invitation emails, they were directed to the webpage designed for this study. At the beginning of the survey, participants were informed that they would be asked to evaluate a campaign of "stop texting while driving" that is highly relevant to college students. Moreover, they were also notified that they have the right to withdraw from the study at any time before clicking on "submit" on the last page.

After reading the instructions and clicking on "I agree to participate", participants received a brief introduction to the study stating that they were invited to evaluate a campaign message about texting while driving developed by a fictitious agency named "U.S. Road Traffic Safety Administration". Next, they read the message of general facts of texting while driving, which is a short list of negative consequences of texting while driving. Both groups received the same threat-to-health content. Participants were asked to provide their reactions to it. Once this section was completed, participants were randomly assigned to one of two types (high or low) of threat-to-freedom conditions, containing the manipulation of the degree of threat to freedom. They were also asked to provide cognitive and affective reactions to the message they just viewed. After that, participants were expected to complete a survey about outcome measures, such as manipulation check, attitude toward the recommended behavior in the campaign message, and behavioral intention. Finally, participants were requested to fill out a questionnaire concerning demographics (gender, age, ethnicity) and previous driving and

texting experiences. Participants were thanked for their participation when they finished the questionnaires and click on “submit”.

Manipulation of Threat to Freedom in Message

Campaign message was manipulated as high and low threat to freedom. Both versions of persuasive messages were titled “Stop texting while driving” and contained a common threat-to-health component and a recommendation component. The threat-to-health part mentioned the negative consequences of texting while driving, which was summarized from the report of mobile phone use from World Health Organization (2011). The manipulation on degree of threat to freedom appeared in the recommendation part of message, which set the messages into high and low threat conditions, was developed based on the threat-to-freedom manipulation used in Dillard and Shen’s study in 2005. The basic information in both conditions was the same. In high threat condition, the language was forceful and compulsive (like a rigid directive) that did not allow any hesitation or alternative in action. However, in the low threat condition, the language was persuasive and moderate (like a suggestion). The exact wording for both messages was presented in Tables 1 and 2.

Manipulation check for degree of threat to freedom was measured by an average of four Likert-scale items: “The message threatened my freedom to choose,” “The message tried to make a decision for me,” “The message tried to manipulate me,” and “The message tried to pressure me”. Participants answered in a 5-point scale where 1 represents “strongly disagree”, 2 represents “disagree”, 3 represents “neutral/don’t know”, 4 represents “agree”, and 5 represents “strongly agree”. Cronbach alpha

Table 1. Threat-to-health part of the campaign message

Shared statement
1. Text messaging leads to increased cognitive demands, including physical distraction resulting from holding the phone, and visual distraction resulting from creating or reading messages. 2. Text messaging while driving distracts from the ability to detect and respond to unexpected events in the road. The average text takes your eyes off the road for nearly five seconds, which makes it harder to maintain an appropriate speed, an appropriate following distance, and the correct lane position. 3. Distracted driving caused by texting can lead to life-threatening damages and death to drivers and passengers. 4. Many college students reported engaging in experiences of texting or checking email while driving.

Table 2. Threat-to-freedom manipulation in the campaign message

Low threat	**High threat**
Stop texting while driving Scientific and forensic evidences show that texting while driving, to a certain degree, can lead to impairment of manual, visual and cognitive abilities required for focused and safe driving. In fact, evidences show that texting while driving can take your attention away from the road and become a distraction. Texting while driving may lead to serious harm and death—this is something you might want to be aware of. When you text while driving, you may become a potential threat to yourself and others. Simply put, one may not be a safe driver while texting. To prevent possible harm or death to yourself or others, please consider not texting while driving. This is a recommendation that you may want to comply with when you are driving, to prevent an avoidable accident. If you must text please consider stopping and parking your car in a safe area first.	*Stop texting while driving* Scientific and forensic evidences show that texting while driving leads to severe impairment of manual, visual and cognitive abilities required for focused and safe driving. In fact, evidences show that texting while driving takes all of your attention away from the road, making you a danger to yourself and others. Texting while driving leads to serious harm and death! There is no getting around it! When you text while driving, you become a menace to yourself and others! Simply put, one cannot safely drive while texting. To prevent serious harm or death to yourself or others, you must not text while driving. This is a rule that you have to stick with every time you are driving, in order to prevent an avoidable tragedy. If you must text, **STOP** and **PARK** your car in a safe area first!

reliability was .85. Independent sample t-tests were conducted to compare means between two groups.

Reactance, Attitude, and Behavioral Intention

The measure of psychological reactance was adopted from Dillard and Shen (2005). They measured both anger and cognitive responses as criteria indicating the level of reactance, as well as the outcomes of reactance which are attitude toward the message and behavioral intention.

Anger was measured by four items that was developed in previous studies, including irritated, angry, annoyed, and aggravated (Dillard & Peck, 2000; Dillard, Kinney & Cruz, 1996). Items were designed to ask the participants if they have such a feeling after reading the message. Ratings were made on 5-point scales anchored at the extremes ranging from 1 = none of this feeling to 5 = a great deal of this feeling. The higher the score, the more anger that person experienced from reading the campaign message. Cronbach alpha reliability was .88.

Cognitive responses were collected through the open-ended questions in the feedback from participants writing about the their thoughts right after reading the persuasive message. First of all, all the responses that were irrelevant to the message content were excluded from further analysis, such as “The message is short”. Then, the remaining data were coded into three categories: (1) supportive thoughts, (2) neutral thoughts, and (3) negative thoughts. Supportive thoughts were regarded as the responses that expressed positive thoughts, feelings and agreement with the campaign message, and those mentioned the intention to comply with the appeal. Negative thoughts were

regarded as the responses that expressed negative feelings and disagreement with the message, as well as the intention to be against the appeal or to engage in risky driving behavior. Neutral thoughts were regarded as non-evaluative and neutral thoughts about the message. In this study, only the negative responses were used in the further data analysis. Two raters were involved in the coding process and coded the data separately. An inter-rater reliability analysis using the Kappa statistic was performed to determine consistency among raters.

To measure participants' average attitude toward the message, six 5-point semantic differential questions were provided. Participants were requested to rate each pair of words on the 5-point scale to the degree that appropriately describe their attitudes toward the claim of "stop texting while driving" that is suggested in the persuasive campaign message. For each word pair, the scale of 1 to 5 represents the attitude from the negative extreme to the positive extreme. The word pairs used included one negative and one positive adjective, such as bad/good, foolish/wise, unfavorable/favorable, negative/positive, undesirable/desirable, and unnecessary/necessary. Cronbach alpha reliability was .85.

Different from the original measure used by Dillard and Shen, which was a 100-point, single-item estimate, behavioral intention was measured by the mean of three five-point Likert-scale items: (1) It is highly likely that I would stop texting while driving within next three weeks; (2) I am willing to stop checking text messages whenever I am driving; (3) I am willing to pull over my car when I need texting while driving. Participants answered the questions in the scale from 1 (strongly disagree) to 5 (strongly

agree). Cronbach alpha reliability was .85. Independent sample t-tests were conducted to compare means between two groups.

Other Variables

Beside of those main variables above, other related variables were also included. In this study, demographics consist of gender, age, and ethnicity. Driving habit was measured by the following two questions: (1) Do you have a driver's license? (2) If yes, how often do you drive? Similarly, texting habit was measured by cellular phone ownership and frequency of cellular phone use. Finally, texting while driving habit was also measured by two questions: (1) Have you ever checked or sent text messages while you are driving? (2) If yes, while you are driving, how often do you text while driving?

CHAPTER 4

RESULTS

Sample Characteristics

In this study, 181 participants out of 5000 students who received the invitation email and following reminders eventually submitted the survey, which means the rate of response was 3.62 percent. One incomplete response was deleted from the sample before any further analysis; therefore, the final sample size was 180. Among 180 respondents, 47.2 percent were randomly assigned to read the campaign message with low degree of threat to freedom (N = 85), while 52.8 percent were exposed to the other campaign message with high degree of threat to freedom (N = 95). The number of respondents who were assigned to the campaign message with high degree of threat was slightly bigger than that of those who were assigned to the low-threat version of campaign message.

Table 3 displays the demographic statistics of gender, age, and ethnicity. Among all respondents, male respondents were 50.6 percent (N = 91) and female respondents were 49.4 percent (N = 89). It also shows the majority of respondents were in the age group of 20 to 22 (55.5%, N = 100). The age group of 18 to 20 has second most respondents (26.1%, N = 47). The age group of 23 and above was 17.8 percent (N = 32) of all the respondents. One respondent (0.6%) chose not to reveal his or her age.

The data also indicates that Caucasian students (75.0%, N = 135) were the majority of respondents, which reflected the population characteristics of the university.

Table 3. Sample characteristics (N = 180)

Variables	Frequency	Percentage
Gender		
Male	91	50.6
Female	89	49.4
Age		
18-20	47	26.1
21-22	100	55.5
23 and above	32	17.8
Not identified	1	0.6
Ethnicity		
Caucasian	135	75.0
African American	3	1.7
Hispanic or Latino	9	5.0
Asian or Pacific Islander	29	16.1
American Indian	0	0
Other	2	1.1
Not identified	2	1.1
Driver's license		
Yes	163	90.6
No	17	9.4
Frequency of driving		
Less than once a week	25	13.9
Once a week	12	6.7
A few times a week	50	27.8
Most days of a week	31	17.2
Every day	47	26.1
Not identified	15	8.3
Cellular phone use		
Yes	179	99.4
No	1	0.6
Number of text messages per day		
0-10	26	14.4
11-50	102	56.7
51-100	31	17.2
101-150	5	2.8
151-500	13	7.2
Not identified	3	1.7
Text while driving		
Yes	155	86.1
No	24	13.3
Not identified	1	0.6
Frequency of texting while driving		
Rarely	76	42.2
A few times	45	25.0
Sometimes	20	11.1
Many times	12	6.7
Every time	4	2.2
Not identified	23	12.8

Asian or Pacific Islander (16.1%, N = 29) was the second largest group in the sample followed by Hispanic or Latino (5%; N = 9) and African American (1.7%; N = 3). No American Indian was identified in the sample of this study.

According to Table 3, 90.6 percent of respondents (N = 163) have driver's license while 9.4% (N = 17) did not. When asked about the frequency of driving, more than half of the students indicated they drive more than once a week. To be more specific, 27.8 percent of respondents (N = 50) drive "a few times a week", which has the biggest number of respondents in the group. The second largest group was of people who drive everyday (26.1%, N = 47), followed by the group of those who drive in "most days of a week" (17.2%, N = 31). As to those respondents who do not drive very often, 12 people (6.7%) claimed they drive once a week, and 25 people (13.9%) even drive less than one week (eg. once in several weeks, once in several months, never, etc.). 15 respondents (8.3%) did not make their choices on this item. The average score of driving frequency in this study was 3.38 (SD = 1.37), which fell in between "a few times a week" and "most days a week".

As expected, almost all the participants have cellular phones (99.4%, N = 179), except for one respondent (0.6%) who does not have a cellular phone. For those who have cellphones, over half of respondents send and receive more than 10 but not over 50 text messages everyday on average (56.7%, N = 102), and people who send and receive 51 to 100 messages per day formed the second biggest group (17.2%, N = 31). 14.4 percent of respondents (N = 26) stated that they averagely send and receive no more than 10 messages each day. Amazingly, 7.2 percent (N = 13) indicated they usually read and

send more than 150 messages in a day, and the answer can be as many as 500 messages. Besides, 2.8 percent of respondents (N = 5) chose “101-150” as their average number of text messages everyday. There were 3 people (1.7%) did not answer this question, including the one who does not have a cellular phone. The mean number of text messages per day was 52.53 (SD = 68.72).

The worrying fact was that 86.1 percent of the participants (N = 155) in this study admitted that they had experiences of using cellular phone receive or send text messages while they were driving, which reveals that texting while driving is a common phenomenon in college students. Except for one person (0.6%) did not answer the question, only 13.3 percent of respondents (N = 24) actually carried out “no texting while driving” in daily life. Regarding the question of frequency of texting while driving, 42.2 percent of respondents (N = 76) claimed they rarely read or send text messages while driving, followed by the group of respondents who “a few times” text while driving (25.0%, N = 45) and the group of respondents who sometimes text while driving (11.1, N = 20). Luckily, the percentage of students who often engage in checking and texting messages while driving was less than 10, with 6.7 percent (N = 12) many times texting while driving and 2.2 percent (N = 4) texting every time they drive. The mean value of frequency of texting while driving was 1.87 (SD = 1.07), which shows most respondents do not frequently text and drive at the same time.

Descriptive Statistics

Table 4 presents the means and standard deviations of key variables. The variable of strength of reactance after reading the campaign message was obtained as the average value of four items about feelings toward the campaign message: irritated (M = 2.04, SD = 1.14), angry (M = 1.62, SD = 1.05), annoyed (M = 1.94, SD = 1.08), and aggravated (M = 1.65, SD = 1.05). The mean of strength of reactance after reading the campaign message was 1.82 (SD = 0.93), which was lower than the mid-point on the five-point Likert scale. On average, respondents did not feel much reactance as expected after reading the campaign message.

Degree of threat to freedom after reading the campaign message was calculated by averaging the values of four items, including "The message threatened my freedom to choose" (M = 1.97, SD = 1.10), "The message tried to make a decision for me" (M = 2.27, SD = 1.20), "The message tried to manipulate me" (M = 2.44, SD = 1.27), and "The message tried to pressure me" (M = 2.80, SD = 1.37). The mean of degree of threat to freedom was 2.37 (SD = 1.03), which was still lower than the mid-point on the five-point Likert scale.

Number of negative cognitive responses toward the campaign message was obtained as the average value of the number of comments negative toward the campaign advocacy, coded by two coders who worked independently from each other. The inter-rater reliability between the coders were Kappa=0.88 for positive, 0.72 for neutral, and 0.86 for negative responses, respectively. The Cohen's Kappa results indicated that the

two raters reached a high level of agreement on coding the open-ended responses. According

Table 4. Descriptive statistics (N = 180)

Variables	*Mean*	*SD*
Strength of reactance [a]	1.82	0.93
I feel irritated after reading this message. [b]	2.04	1.14
I feel angry after reading this message. [b]	1.62	1.05
I feel annoyed after reading this message. [b]	1.94	1.08
I feel aggravated after reading this message. [b] (N=179)	1.65	1.05
Degree of threat to freedom [c]	2.37	1.03
The message threatened my freedom to choose. [d] (N=178)	1.97	1.10
The message tried to make a decision for me. [d] (N=179)	2.27	1.20
The message tried to manipulate me. [d]	2.44	1.27
The message tried to pressure me. [d] (N=179)	2.80	1.37
Average attitude toward the campaign message [e]	4.46	0.68
Stop texting while driving is (bad vs. good). [f]	4.54	0.91
Stop texting while driving sounds (foolish vs. wise) to me. [f] (N=179)	4.59	0.83
I feel (unfavorable vs. favorable) toward stop texting while driving. [f] (N=179)	4.35	0.96
I feel (negative vs. positive) toward stop texting while driving. [f]	4.46	0.91
Stop texting while driving sounds (undesirable vs. desirable) to me. [f]	4.32	0.99
Stop texting while driving sounds (unnecessary vs. necessary) to me. [f]	4.51	0.79
Behavioral intention [g]	3.52	1.09
It is highly likely that I would stop texting while driving within next three weeks. [d] (N=179)	3.62	1.26
I am willing to stop checking text messages whenever I am driving. [d] (N=177)	3.72	1.14
I am willing to pull over my car when I need texting while driving. [d] (N=179)	3.22	1.35

a. Strength of reactance after reading the campaign message is the average value of four statements about feelings toward the campaign message.
b. Responses were coded as 1 = None of this feeling to 5 = A great deal of this feeling.
c. Degree of threat to freedom is the average value of four statements on the perception toward the campaign message.
d. Responses were coded as 1 = Strongly disagree to 5 = Strongly agree.
e. Average attitude toward the campaign message is the average value after adding each response from six questions on attitudes toward the advocacy of "stop texting while driving".

f. Responses were coded from 1 to 5 in each statement, in the way that 1 represents the extreme of a negative attitude and 5 represents the other extreme of a correspondingly positive attitude.
g. Behavioral intention after reading the campaign message is the average value of three statements about willingness to follow the advocacy in the campaign message.

to the study design, only negative responses were selected for further analysis.

Average attitude toward the campaign message was calculated by the average value of six semantic differential questions, including "Stop texting while driving is (bad vs. good)" (M = 4.54, SD = 0.91), "Stop texting while driving sounds (foolish vs. wise) to me" (M = 4.59, SD = 0.83), "I feel (unfavorable vs. favorable) toward stop texting while driving" (M = 4.35, SD = 0.96), "I feel (negative vs. positive) toward stop texting while driving" (M = 4.46, SD = 0.91), "Stop texting while driving sounds (undesirable vs. desirable) to me" (M = 4.32, SD = 0.99), and "Stop texting while driving sounds (unnecessary vs. necessary) to me" (M = 4.51, SD = 0.79). Moreover, the mean of attitude toward the campaign message was 4.46 (SD = 0.68), which was over the mid-point on the five-point Likert scale.

Behavioral intention after reading the campaign message is the average value of three statements about willingness to follow the advocacy in the campaign message. Three items are "It is highly likely that I would stop texting while driving within next three weeks" (M = 3.62, SD = 1.26), "I am willing to stop checking text messages whenever I am driving" (M = 3.72, SD = 1.14), and "I am willing to pull over my car when I need texting while driving" (M = 3.22, SD = 1.35). In addition, the mean value of behavioral intention after reading the campaign message was 3.52 (SD = 1.09), which was also over the mid-point on the five-point Likert scale.

Manipulation Check and Group Comparison

Table 5 indicates that the high-threat group (M = 2.67, SD = 1.09) perceived the campaign message as a bigger threat to freedom than the low-threat group (M = 2.04, SD = .85), and the result was statistically significant, t = -4.30, df = 178, p < .001. This result represents participants who received the campaign message with compulsive wording perceived the message a more threat than those who received the message in a moderate tone. The mean of strength of reactance experienced by participants after reading the campaign message was 1.52 (SD = .64) in the low-threat condition and 2.08 (SD = 1.06) in high-threat condition. The result was also significant, t = -4.36, df = 158, p < .001.

Table 5. Independent sample t-tests for strength of reactance, degree of threat to freedom, number of negative cognitive responses, average attitude toward campaign message and behavioral intent by type of threat.

	Type of Threat				
Variables	Low-threat group (n=85) Mean (SD)	High-threat group (n=95) Mean (SD)	*t-value*	*df*	*Sig.*
Strength of reactance	1.52 (.64)	2.08 (1.06)	-4.36	158	<.001***
Degree of threat to freedom	2.04 (.85)	2.67 (1.09)	-4.30	178	<.001***
Average attitude toward campaign message	4.55 (.55)	4.39 (.77)	1.59	178	.11
Number of negative cognitive responses	1.16 (.36)	1.62 (.47)	-2.94	43	.005**
Behavioral intention	3.40 (1.17)	3.63 (1.01)	-1.44	178	.15

*P < .05
**P < .01
***P < .001

According to Table 5, the group of participants in low-threat condition (M = 4.55, SD = .55) rated the campaign message more positive than those in high-threat condition (M = 4.39, SD = .77). Nevertheless, the result was not statistically significant, $t = 1.59$, $df = 178$, $p = .11$.

Respondents who read the campaign message of high-level threat (M = 1.62, SD = .47) had more negative cognitive responses toward the message than those who read the low-threat version of campaign message (M = 1.16, SD = .36), and the difference between the two groups was significant, $t = -2.94$, $df = 43$, $p = .005$.

The result in Table 5 suggests that there was no significant difference found in terms of behavioral intention between the low-threat condition (M = 3.40, SD = 1.17) and high-threat condition (M = 3.63, SD = 1.01), $t = -1.44$, $df = 178$, $p = .15$. However, counter to the prediction, the participants in the high-threat condition revealed stronger intention to follow the campaign message than those in the low-threat condition.

Hypotheses Testing

For the testing of each hypothesis, results were divided into high-threat and low-threat conditions, because participants in different groups were exposed to different treatments.

Hypothesis 1 stated that degree of threat to freedom is positively related to strength of reactance, which means a person who experiences high degree of threat to freedom is more likely to experience strong reactance as well.

The result of Pearson correlation in Table 6 indicates that, in the low-threat condition, degree of threat to freedom was positively related (r = .27; p = .013) to strength of reactance. Similarly, as for the high-threat condition, the Pearson correlation shows that degree of threat to freedom was also positively related (r = .50; p < .001) to strength of reactance. Since the results for both tests were significant, it is reasonable to state that Hypothesis 1 was confirmed in this study, which means respondents who perceive the campaign message as a higher degree of threat to freedom to choose were more likely to generate stronger psychological reactance than those experiencing low degree of threat to freedom after reading the campaign message, in both high-threat and low-threat conditions.

Table 6. Pearson correlation tests for strength of reactance and degree of threat to freedom in high-threat and low-threat conditions (N = 180).

Variable	**Strength of reactance**	
	Low-threat condition (N = 85)	High-threat condition (N = 95)
Degree of threat to freedom	.27* (p = .013)	.50** (p < .001)

*P < .05
**P < .01
***P < .001

In addition, it is noteworthy that the positive correlation between those two variables in the high-threat condition (r = .50) was stronger than that in the low-threat condition (r = .27). Because the manipulation in campaign message successfully triggered significant difference in level of perceived threat to freedom between participants in two groups, it

shows that people who viewed message with forceful language in high-threat condition were more likely to perceive the message as a threat to freedom. In that case, they have a higher chance to experience strong reactant emotion after reading the message.

Hypothesis 2 stated that in the campaign of "Stop texting while driving", strength of reactance is positively related to amount of negative attitudes toward the message. Since the scale of average attitude toward campaign message ranges from 1 to 5 (low to high) representing emotion from a negative extreme to a positive extreme, participants who scored lower on this average attitude meant negative attitude toward the message. Therefore, the Pearson correlation coefficients between strength of reactance and average attitude toward campaign message was expected to be negative to support the hypothesis. As shown in Table 7, there were significant results showing positive relationships between strength of reactance and negative attitude toward the message at both low-threat (r = -.28; p = .010) and high-threat (r = -.29; p = .004) conditions.

Table 7. Pearson correlation tests for strength of reactance and amount of negative attitudes (average attitude toward campaign message and number of negative cognitive responses) in high-threat and low-threat conditions (N = 180).

	Strength of reactance	
Variable	Low-threat condition (N = 85)	High-threat condition (N = 95)
Amount of negative attitudes		
Average attitude toward campaign message (reverse-coded)	-.28** (p = .010)	-.29** (p = .004)
Number of negative cognitive responses	.29 (p = .20)	.46* (p = .013)

*P < .05
**P < .01

***$P < .001$

As for the second measure of number of negative cognitive responses, there were positive relationships between strength of reactance and negative attitude toward the message at low-threat ($r = .29$; $p = .20$) and high-threat ($r = .46$; $p = .013$) conditions. However, only the relationship at high-threat condition was statistically significant, not at low-threat condition.

Therefore, based on the test results for average attitude toward the campaign message and number of negative cognitive responses, Hypothesis 2 was partially supported, and it was confirmed only at high-threat condition.

Hypothesis 3 suggested that strength of reactance is negatively related to the behavioral intention to follow the advocacy in the campaign message. As Table 8 shows, there was no significant result in terms of the negative correlation between behavioral intention and strength of reactance in both low-threat condition ($r = -.12$; $p = .28$) and high-threat condition ($r = -.002$; $p = .98$). Hypothesis 3 was not supported.

Table 8. Pearson correlation tests for strength of reactance and behavioral intention in high-threat and low-threat conditions (N = 180).

	Strength of reactance	
Variable	Low-threat condition (N = 85)	High-threat condition (N = 95)
Behavioral intention	-.12 ($p = .28$)	-.002 ($p = .98$)

*$P < .05$
**$P < .01$
***$P < .001$

To sum up, Hypothesis 1 was fully supported in both high-threat and low-threat conditions. Hypothesis 2 received partially support because only results from high-threat condition confirmed the hypothesis. Hypothesis 3 was not supported in this study.

CHAPTER 5

DISCUSSION

This study examined how psychological reactance influences college students' acceptance of the campaign message of "stop texting while driving". Three hypotheses were proposed to explore the correlations between three pairs of variables: strength of reactance and degree of threat to freedom, strength of reactance and amount of negative attitudes, and strength of reactance and behavioral intention.

Significance of The Study

Theoretical Contribution

Many previous studies examined the issue about how public campaigns can succeed in changing people's mind and behavior, but a few tried to explore why the campaign did not work as expected. Moreover, texting while driving just became a noteworthy issue in recent years, so the number of empirical studies about this issue is still in short. This study tried to shed a new light on psychological reactance, an explanatory factor for many failed public campaigns.

In regard to the relationship between degree of threat to freedom and strength of reactance, this study found the consistent results with the previous studies. Worchel and Brehm (1970) found that persuasion with high-threat language was considered biased and people tend to react negatively to the advocacy. In addition, Brehm (1966) proposed that use of extreme language, like threatening words in messages is easily taken as a forceful request to ask people to accept certain view, which leads to rebelling against the

restrain and re-establishment of freedom. In this study, participants in the high-threat group perceived the message more threatening, and as a result, participants who experienced high degree of threat to freedom generated stronger reactance toward the campaign advocacy.

It was interesting to find that participants actually perceive the campaign message in the way that was designed and expected. Even though the main content was the same in both conditions, the two versions of campaign messages were written in different styles (high-threat message as a directive while low-threat message as a suggestion) to create difference in response between two groups of participants. This manipulation successfully triggered reactant emotions to different levels of intensity in two groups. It demonstrates that the manipulation on the tone of campaign message is effective in terms of producing reactance in varying degrees among audiences.

Hypothesis 2 was also partially confirmed by the study results that participants who held stronger reactance after reading the campaign message had more negative attitudes toward the advocacy in campaign. Dillard and Shen (2005) proposed that negative cognitive response is a part of the result of reactance. Additionally, Grandpre, Alvaro, Burgoon, Miller, and Hall (2003) discovered that messages with explicit intent of persuasion, which triggers reactance, easily result in negative evaluation of the messages. Nevertheless, this study unexpectedly found that in low-threat condition, respondents who were low in average attitudes (low to high representing negative to positive) toward the message did not have more negative cognitive responses when they experienced higher reactance. This phenomenon could be explained in the way that

participants found the language used in low-threat condition was too moderate to attack, even though they were fed up with the persuasion attempt in campaign.

Hypothesis 3 stated that strength of reactance is negatively related to the behavioral intention to follow the claim advocated in the campaign. Differently from the previous studies, this hypothesis was not supported in both conditions. One possible explanation is that overall average scores for the degree of threat to freedom and strength of reactance were relatively skewed to lower levels and they did not create enough variance to be related to behavioral intention. Another possibility is that the relationship between strength of reactance and behavioral intention may not be direct as expected and there may be other mechanism to explore. For example, people would not easily act against a campaign message just because they feel more reactant emotion toward the campaign message, and in a similar way, this individual would not follow the campaign advocacy just because they feel less reactant emotion. There could be a threshold of strength of reactance to lead to behavioral intention , but this study may not reach that threshold.

This study is a meaningful attempt to explore the possible correlations between psychological reactance and variables related to the effectiveness of public campaign of "stop texting while driving" among college students, since not many researchers have focused on this area previously. It brings the attention of scholars to the issue of texting while driving in college students, which has been a serious problem causing deaths and injuries in young populations. The results of this study provide useful knowledge for future researchers in the measure of reactance and people's attitude and behavioral intention about this type of campaigns. As Fishbein et al. (2002) suggested, it is highly

necessary to conduct researches on the effectiveness of the content design of PSAs before executing large-scale campaigns. This study is surely part of the constructive studies that contribute to effective PSAs in regard to the issue of texting while driving in the future.

Methodological Contribution

There have been a certain amount of literature regarding the conception of psychological reactance, but few of them touched upon the measure of reactance. Even though Brehm (1966) was the first person proposing the concept of "psychological reactance", he did not to give any valid and concrete measuring method of reactance at that time. In fact, he believes psychological reactance cannot be measured because of its instantaneous nature. However, Dillard and Shen (2005) challenged Brehm's explanation by employing the measure of anger and combining it with quantity of negative cognitive responses, which has been widely used in relevant studies of psychological reactance.

This current study also borrowed the method developed by Dillard and Shen, but made modifications and additions to the original measures. The original measures were maintained the same in this study, where Likert scales were used to measure strength of reactance and anger while frequency count was used to calculate the mean of negative cognitive responses. In addition to the number of negative cognitive responses, this study also kept the word pairs with five-point scales from Dillard and Shen's study to measure average attitude toward campaign message. However, different from the original measure, the word pair "detrimental/beneficial" was deleted from the survey

because of the repetition of other word pairs. For the measure of behavioral intention, replacing a single-item estimate of likelihood (0 to 100 point) to act out the campaign suggestion used by Dillard and Shen, this study created a more complex measure consisting of three 5-point Likert scale questions.

Implications for Professional Practice

Concerning challenges of ineffectiveness of public service announcements, this study tried to explore a feasible strategy to reduce viewers' level of reactance and to increase the possibility of accepting campaign advocacy. Hopefully, the findings of the study will benefit the government, corporations and non-profit organizations to conduct effective public campaigns targeting the young populations, especially college students.

In particular, as the number of deaths and injuries of automobile accidents caused by cellular phone use has been rising dramatically in recent years, there is a call for public education about the danger of distracted driving. Young populations are especially vulnerable to this type of accidents, on account of their spirit of taking risks and high addiction to texting all the time. Therefore, this is a matter of great urgency to actually test the feasibility of campaign message manipulation in persuading the target population-college students, to give up the behavior of texting while driving.

The results of this study reveal that message with highly threatening language did intensify the reactance college students experienced after reading campaign messages, which leads to more negative attitudes toward the campaign. This suggests that communication professionals should be careful about the wording of campaign messages, since it concerns whether or not the audience will accept the campaign at first.

To attain the best results, the language used in campaign messages should not be too compulsive or forceful, in order not to stimulate the reactant responses in the target audience.

Limitations and Suggestions for Future Study

This study has several limitations that future studies should notice. First of all, the manipulation of two different versions of campaign messages has a problem of validity in real-life situations. This study designed two versions of surveys in which the only different part was the campaign message. The high-threat version used threatening and compulsive language, while the low-threat version used persuading and temperate language. To maximize the desired results, the language in the high-threat and low-threat conditions might be exaggerated, which could be different from the public service announcements in practice. It would be interesting to examine the effect of actual campaign messages that contain different types of wording on audiences' responses. Also, the averages of threat to freedom and strength of reactance were relatively low even though languages at high condition were quite strong. One possibility is that manipulated messages were perceived by participants not only as high- vs. low-threat to freedom but also as high- vs. low-threat to safety. This study has no means to verify this possibility but this may affect results of hypothesis testing.

Second, the format of the campaign messages was simple that is only in written form, which might not be effective enough to trigger strong emotions. The impact of different types of threat on participants' responses could be better achieved by adding visuals, like images and videos, regarding texting while driving. For high-threat

condition, pictures or videos of traffic accidents could be added aside of the message; for low-threat condition, pictures or videos about teacher teaching students not to text while driving or other gentle scenes could be added to facilitate the power of communication of the campaign. Future studies should include those media forms in related studies.

Third, the relationship between strength of reactance and behavioral intention is worth to test for future studies. Future study should keep exploring other ways of manipulation of campaign message that can result in high level of behavioral intention and bigger social influence. Also attitude toward message could be a mediating role between strength of reactance and behavioral intention.

Fourth, there are variables other than those discussed in this study causing psychological reactance toward campaign message of "Stop texting while driving" among young populations. Even though this study only emphasized on degree of threat to freedom as the main reason for reactance, researchers should not stop searching other variables potentially cause reactant responses toward public health campaigns and public service announcements.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50(2),* 179–211.

Andsager, J., Austin, E., & Pinkleton, B. (2001). Questioning the value of realism: Young adults' processing of messages in alcohol-related public service announcements and advertising. *Journal of Communication, 51(1),* 121–142.

Atkin, C., & Freimuth, V. (1989). Formative evaluation research in campaign designs. In R. E. Rice & C. K. Atkin (Eds.), *Public communication campaigns* (2nd ed., pp. 131–150). Newbury Park, CA: Sage.

Baer, R., Hinkle, S., Smith, K., & Fenton, M. (1980). Reactance as a function of actual versus projected autonomy. *Journal of Personality and Social Psychology, 38(3),* 416-422.

Baumeister, R., & Leary, M. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117(3),* 497-529.

Brehm, S., & Brehm, W. (1981). *Psychological reactance: A theory of freedom and control*. New York: Academic Press.

Brehm, W. (1966). *A theory of psychological reactance*. New York: Academic Press.

Brehm, W., & Sensenig, J. (1966). Social influence as a function of attempted and implied usurpation of choice. *Journal of Personality and Social Psychology, 4(6),* 703-707.

Buller, D., Borland, R., & Burgoon, M. (1998). Impact of behavioral intention on effective of message features: Evidence from the family sun safety project. *Human Communication Research, 24(3),* 433-453.

Burgoon, M., Alvaro, E., Grandpre, J., & Voulodakis, M. (2002). Revisiting the theory of psychological reactance. In J. P. Dillard & M. Pfau (Eds.), *The persuasion handbook: Developments in theory and practic*e (pp. 213-232). Thousand Oaks, CA: Sage.

Cacioppo, J., & Petty, R. (1981). Social psychological procedures for cognitive response assessment: The thought-listing technique. In T. V. Merluzzi, C. R. Glass, & M. Genest (Eds.), *Cognitive assessment* (pp. 309–342). New York: Guilford Press.

Deci, E. (1975). *Intrinsic Motivation*. New York: Plenum.

Deci, E., & Ryan, R. (1985). *Intrinsic Motivation and Self-determination in Human Behavior*. New York, NY: Plenum Press.

Deci, E., & Ryan, R. (2002). *Handbook of Self-determination Research*. Rochester, NY: The University of Rochester Press.

Dillard, J., Kinney, T., & Cruz, M. (1996). Influence, appraisals, and emotions in close relationships. *Communication Monographs, 63(2),* 105–130.

Dillard, J., & Peck, E. (2001). Persuasion and the structure of affect: Dual systems and discrete emotions as complementary models. *Human Communication Research, 27(1),* 38–68.

Dillard, J., & Shen, L. (2005). On the nature of reactance and its role in persuasive health communication. *Communication Monographs, 72(2),* 144-168.

Doob, A., & Zabrack, M. (1971). The effect of freedom-threatening instructions and monetary inducement on compliance. *Canadian Journal of Behavioral Science, 3(4),* 408–412.

Dowd, T., Wallbrown, F., Sanders, D., & Yesenosky, M. (1994). Psychological reactance and its relationship to normal personality variables. *Cognitive Therapy and Research, 18(6),* 601-612.

Durkin, S., Brennan, E., & Wakefield, M. (2012). Mass media campaigns to promote smoking cessation among adults: An integrative review. *Tobacco Control, 21(2),* 127-138.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.

Fishbein, M., Hall-Jamieson, K., Zimmer, E., Haeften, I., & Nabi, R. (2002). Avoiding the boomerang: Testing the relative effectiveness of antidrug public service announcements before a national campaign. *American Journal of Public Health, 92(2),* 238-245.

Foxcraft, D., Lister-Sharp, D., & Lowe, G. (1997). Alcohol misuse prevention for young people: A systematic review reveals methodological concerns and lack of reliable evidence of effectiveness. *Addiction, 92(5),* 531–537.

Governors Highway Safety Association. (2012, March). *Cell phone and texting laws*. Retrieved from http://www.ghsa.org/html/stateinfo/laws/cellphone_laws.html

Grandpre, J., Alvaro, E., Burgoon, M., Miller, C., & Hall, J. (2003). Adolescent reactance and anti-smoking campaigns: A theoretical approach. *Health Communication, 15(3),* 349-366.

Greenwald, A. (1968). On defining attitude and attitude theory, in A. G. Greenwald, T. C. Brock, and T. M. Ostrom (Eds.), *Psychological foundation of attitude*, New York: Academic Press.

Grube, J. (1993). Alcohol portrayals and alcohol advertising on television: Content and effects on children and adolescents. *Alcohol Health and Research World, 17(1),* 61–66.

Haines, M., & Spear, S. (1996). Changing the perception of the norm: A strategy to decrease binge drinking among college students. *Journal of American College Health, 45(3),* 134-140.

Hammock, T., & Brehm, W. (1966). The attractiveness of choice alternatives when freedom to choose is eliminated by a social agent. *Journal of Personality, 34(4),* 546-578.

Harter, S. (1978). Effectance motivation reconsidered: Toward a developmental model. *Journal of Human Development, 1,* 661-669.

Heilman, M., & Toffler, B. (1976). Reacting to reactance: An interpersonal interpretation of the need for freedom. *Journal of Experimental Social Psychology, 12(6),* 519-529.

Greenwald, A. (1968). On defining attitude and attitude theory, in A. G. Greenwald, T. C. Brock, and T. M. Ostrom (Eds.), *Psychological foundation of attitude*, New York: Academic Press.

Job, R. (1988). Effective and ineffective use of fear in health promotion campaigns. *American Journal of Public Health, 78(2),* 163-167.

Leventhal, H. (1970). Findings and theory in the study of fear communications. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, (Vol. 5, pp. 119–186). New York: Academic Press.

Nabi, R. (2002). Discrete emotions and persuasion. In J. P. Dillard, & M. Pfau (Eds.), *The persuasion handbook: Developments in theory and practice* (pp. 289–308). Newbury Park, CA: Sage.

National Highway Traffic Safety Administration (NHTSA). U.S. Department of Transportation. (2011, December). Driver Electronic Device Use in 2010. Retrieved from http://www-nrd.nhtsa.dot.gov/Pubs/811517.pdf

National Highway Traffic Safety Administration (NHTSA). U.S. Department of Transportation. (2012). Retrieved from http://www.distraction.gov/content/get-the-facts/facts-and-statistics.html

Nolan, J., Schultz, P., & Knowles, E. (2009). Using public service announcements to change behavior: No more money and oil down the drain. *Journal of Applied Social Psychology, 39(5),* 1035–1056.

Palmgreen, P., Donohew, L., Lorch, E., Hoyle, R., & Stephenson, M. (2001). Television campaigns and adolescent marijuana use: tests of sensation seeking targeting. *American Journal of Public Health, 91(2),* 292-296.

Pavey, L., & Sparks, P. (2009). Reactance, autonomy and paths to persuasion: Examining perceptions of threats to freedom and informational value. *Motivation and Emotion, 33(3),* 277–290.

Petty, R., & Cacioppo, J. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. New York: Springer-Verlag.

Rains, S., & Turner, M. (2007). Psychological reactance and persuasive health communication: A test and extension of the Intertwined Model. *Human Communication Research, 33(2),* 241–269.

Ryan, R., & Deci, E. (2000). Self-determination Theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55(1),* 68-78.

Wallack, L. (1981). Mass media campaigns: The odds against finding behavior change. *Health Education Quarterly, 8(3),* 209–260.

Wicklund, A. (1974). *Freedom and reactance*. Potomac, MD: Lawrence Erlbaum.

Wilde, G. (1993). Effects of mass media communications on health and safety habits: An overview of issues and evidence. *Addiction, 88(7),* 983–996.

Worchel, S. (1974). The effect of three types of arbitrary thwarting on the instigation to aggression. *Journal of Personality, 42(2),* 300–318.

Worchel, S., & Brehm, J. (1970). Effect of threats to attitudinal freedom as a function of agreement with the communicator. *Journal of Personality and Social Psychology, 14(1)*, 18–22.

World Health Organization (2011). Mobile Phone Use: A Growing Problem of Driver Distraction. Retrieved from http://www.who.int/violence_injury_prevention/publications/road_traffic/distracted_driving_en.pdf

APPENDIX A

INVITATION EMAIL

Dear Iowa State University students,

Hello! My name is Yuyang Chen. I am a graduate student at the Greenlee School of Journalism and Communication at Iowa State University. I'm inviting you to participate my research about stop texting while driving campaign targeting college students. The purpose of this research is to identify certain characteristics of campaign messages that may influence college students' attitudes toward the messages, as well as their behavioral intention to follow the suggestions. The study results will be helpful for the government, corporations and non-profit organizations to conduct effective public health campaigns targeting the young populations, especially college students.

The following survey will take approximately 5 to 10 minutes. Your participation in this study is completely voluntary. However, you need to be over 18 years old to take this survey. You may choose to stop at any time during the process of filling out the survey. There are no foreseen risks in participating in this research. If you would like to complete this survey, it will be greatly appreciated. The information you provide will only be used in this research and will not be shared with third party. No information can be traced to your identity.

If you are 18 or older and willing to take this survey, please click on the following link:
https://secure.jlmc.iastate.edu:443/opinio/s?s=4325 (Low-threat version), or
https://secure.jlmc.iastate.edu:443/opinio/s?s=4322 (High-threat version)

If you have any question regarding this study, please feel free to contact me at cyy8711@iastate.edu.

Thank you very much for your participation!

Sincerely,
Yuyang Chen

APPENDIX B

INFORMED CONSENT DOCUMENT

Title of Study: The Effect of Psychological Reactance on Acceptance of Campaign Message: A Case of "Stop Texting While Driving" Campaign in College Students

Investigator： Yuyang Chen

This is a research study that has been approved by Institutional Review Board (IRB ID: 13-155) of Iowa State University. Please take your time in deciding if you would like to participate. Please feel free to contact Yuyang Chen at cyy8711@iastate.edu before you click on the "Start" button.

INTRODUCTION
The purpose of this study is to identify certain characteristics of campaign messages of "stop texting while driving" that may influence college students' attitudes toward the messages, as well as their behavioral intention to follow the suggestions. You are being invited to participate in this study because your email address is on a randomly generated email list from the Office of the Registrar of Iowa State University. You should not participate if you are under age 18.

DESCRIPTION OF PROCEDURES
If you agree to participate, you will be asked to complete a survey about your reactions toward the message from a "stop texting while driving" campaign. The survey questions will ask about your thoughts and feelings after reading some general facts of texting while driving and a potentially distributed campaign message, as well as your driving and texting habits and the general demographic information. Your participation will last for 5 to 10 minutes.

RISKS
There are no foreseeable risks at this time from participating in this study.

BENEFITS
If you decide to participate in this study, there may be no direct benefit to you. It is hoped that the information gained in this study will benefit society by helping the government, corporations and non-profit organizations to conduct effective public health campaigns targeting the young populations, especially college students.

COSTS AND COMPENSATION
You will not have any costs from participating in this study. You will not be compensated for participating in this study.

PARTICIPANT RIGHTS
Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled. You can skip any questions that you do not wish to answer.

CONFIDENTIALITY
Participants' responses will be kept confidential and will not be made publicly available. The information you provide will only be used in this research and will not be shared with third party. No information can be traced to your identity.

QUESTIONS OR PROBLEMS
You are encouraged to ask questions at any time before starting this survey.

- For further information about the study contact
  - Yuyang Chen, graduate student, Greenlee School of Journalism and Communication, Iowa State University; email: cyy8711@iastate.edu, or
  - Dr. Suman Lee, research supervisor, Greenlee School of Journalism and Communication, Iowa State University; email: smlee@iastate.edu.
- If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu, or Director, (515) 294-3115, Office for Responsible Research, Iowa State University, Ames, Iowa 50011.

PARTICIPANT AGREEMENT
If you click on the "Start" button, it indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document, and that your questions have been satisfactorily answered. Please print a copy of the informed consent for your own file.
If you do not want to participate in this study, just close the webpage. You are free from penalty to stop at any time before you completely finish this survey. If you click on the "Finish" button at the end of survey, the survey will be completely finished and your participation will be thanked.

I agree to participate

APPENDIX C

INTRODUCTION TO SURVEY

In this survey, several general facts about texting while driving in a brochure produced by U.S. Road Traffic Safety Administration will be provided. Also, the Administration would like to know your opinion about a message for a "stop texting while driving" campaign that potentially will be distributed to the public in the near future. Please provide your thoughts about each piece of information in a sequence. Then, you will be asked to evaluate the campaign and its message. You will also see questions about your general demographic information and driving and texting habits. After finishing all the questions, please click on "Finish" button to complete this survey.

APPENDIX D

LOW-THREAT VERSION OF SURVEY

Please read the following information distributed by U.S. Road Traffic Safety Administration.

General Facts about Texting while Driving

- Text messaging leads to increased cognitive demands to write text messages, physical distraction resulting from holding the phone, and visual distraction that results from creating or reading messages.
- Text messaging while driving longer the reaction time to detect and respond to unexpected events in the road. The average text takes your eyes off the road for nearly five seconds, which makes it harder to maintain an appropriate speed, keep an appropriate following distance, and maintain in the correct lane position.
- Distracted driving caused by texting can lead to life-threatening damages and death to drivers and passengers.
- Many college students reported having experiences of texting or checking email while driving.

1. Please list all of the thoughts you had while reading the information above.

Please read the following campaign message that potentially will be distributed to the public in the near future by U.S. Road Traffic Safety Administration.

Stop Texting While Driving

Scientific and forensic evidences show that texting while driving, to a certain degree, can lead to impairment of manual, visual and cognitive abilities required for focused and safe driving. In fact, evidences show that texting while driving can take your attention away from the road and become a distraction. Texting while driving may

lead to serious harm and death—this is something you might want to be aware of. When you text while driving, you may become a potential threat to yourself and others. Simply put, one may not be a safe driver while texting.

To prevent possible harm or death to yourself or others, please consider not texting while driving. This is a recommendation that you may want to comply with when you are driving, to prevent an avoidable accident. If you must text please consider stopping and parking your car in a safe area first.

2. Please list all of the thoughts you had while reading the campaign message above.

Based on the campaign message you just read about, please indicate your responses to the following statements on a 5-point scale from 1 (None of this feeling) 5 (A great deal of this feeling).

3. I feel irritated after reading this message.
   1. None of this feeling 2. A little bit of this feeling 3. Some of this feeling 4. Much of this feeling 5. A great deal of this feeling

4. I feel angry after reading this message.
   1. None of this feeling 2. A little bit of this feeling 3. Some of this feeling 4. Much of this feeling 5. A great deal of this feeling

5. I feel annoyed after reading this message.
   1. None of this feeling 2. A little bit of this feeling 3. Some of this feeling 4. Much of this feeling 5. A great deal of this feeling

6. I feel aggravated after reading this message.
   1. None of this feeling 2. A little bit of this feeling 3. Some of this feeling 4. Much of this feeling 5. A great deal of this feeling

Based on the campaign message you just read about, please indicate your responses to the following statements on a 5-point scale from 1 (Strongly disagree) to 5 (Strongly agree).

7. The message threatened my freedom to choose.
   1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
   5. Strongly agree

8. The message tried to make a decision for me.
   1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
   5. Strongly agree

9. The message tried to manipulate me.
   1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
   5. Strongly agree

10. The message tried to pressure me.
    1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
    5. Strongly agree

Please indicate your views about the "Stop texting while driving" campaign on a 5-point scale.

11. Stop texting while driving is _____.
    Bad ___:___:___:___:___ Good

12. Stop texting while driving sounds _____ to me.
    Foolish ___:___:___:___:___ Wise

13. I feel _____ toward stop texting while driving.
    Unfavorable ___:___:___:___:___ Favorable

14. I feel _____ toward stop texting while driving.
    Negative ___:___:___:___:___ Positive

15. Stop texting while driving sounds _____ to me.
    Undesirable ___:___:___:___:___ Desirable

16. Stop texting while driving sounds _____ to me.
    Unnecessary ___:___:___:___:___ Necessary

Please indicate your responses to the following statements on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree).

17. It is highly likely that I would stop texting while driving within next three weeks.
    1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
    5. Strongly agree

18. I am willing to stop checking text messages whenever I am driving.
    1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
    5. Strongly agree

19. I am willing to pull over my car when I need texting while driving.
    1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
    5. Strongly agree

For each of the following questions, please choose the one that best describes you.

20. My gender is _____.
    1. Male 2. Female

21. My age is _____.
    1. 18-20 3. 20-22 4. 23 and above

22. My ethnicity is _____.
    1. Caucasian
    2. African American
    3. Hispanic or Latino
    4. Asian or Pacific Islander
    5. American Indian
    6. Other

    If you choose "other", please indicate your ethnicity here.

    [ ]

23. Do you have a driver's license?
    1. Yes (Continue to Question 24)
    2. No (Skip to Question 25)

24. If yes, how often do you drive?
    1. Less than once a week (eg. once in several weeks, once in several months, never, etc.)
    2. Once a week
    3. A few times a week
    4. Most days of a week
    5. Every day

25. Do you have a cellular phone?
    1. Yes (Continue to Question 26)
    2. No (Skip to Question 27)

26. On average, how many text messages do you send and receive per day? Please indicate the number (integer) of text messages here.

    [ ]

27. Have you ever checked or sent text messages while you are driving?
    1. Yes (Continue to Question 28)
    2. No (Skip Question 28 and click on "Submit")

28. If yes, while you are driving, how often do you send or read text messages?
    1. Rarely
    2. A few times
    3. Sometimes
    4. Most times
    5. Every time

[Submit]

APPENDIX F

HIGH-THREAT VERSION OF SURVEY

Please read the following information distributed by U.S. Road Traffic Safety Administration.

General Facts about Texting while Driving

- Text messaging leads to increased cognitive demands to write text messages, physical distraction resulting from holding the phone, and visual distraction that results from creating or reading messages.
- Text messaging while driving longer the reaction time to detect and respond to unexpected events in the road. The average text takes your eyes off the road for nearly five seconds, which makes it harder to maintain an appropriate speed, keep an appropriate following distance, and maintain in the correct lane position.
- Distracted driving caused by texting can lead to life-threatening damages and death to drivers and passengers.
- Many college students reported having experiences of texting or checking email while driving.

1. Please list all of the thoughts you had while reading the information above.

Please read the following campaign message that potentially will be distributed to the public in the near future by U.S. Road Traffic Safety Administration.

Stop Texting While Driving

Scientific and forensic evidences show that texting while driving leads to severe impairment of manual, visual and cognitive abilities required for focused and safe driving. In fact, evidences show that texting while driving takes all of your attention away from the road, making you a danger to yourself and others. Texting while driving

leads to serious harm and death! There is no getting around it! When you text while driving, you become a menace to yourself and others! Simply put, one cannot safely drive while texting.

To prevent serious harm or death to yourself or others, you must not text while driving. This is a rule that you have to stick with every time you are driving, in order to prevent an avoidable tragedy. If you must text, **STOP** and **PARK** your car in a safe area first!

2. Please list all of the thoughts you had while reading the campaign message above.

Based on the campaign message you just read about, please indicate your responses to the following statements on a 5-point scale from 1 (None of this feeling) 5 (A great deal of this feeling).

3. I feel irritated after reading this message.
   1. None of this feeling 2. A little bit of this feeling 3. Some of this feeling 4. Much of this feeling 5. A great deal of this feeling

4. I feel angry after reading this message.
   1. None of this feeling 2. A little bit of this feeling 3. Some of this feeling 4. Much of this feeling 5. A great deal of this feeling

5. I feel annoyed after reading this message.
   1. None of this feeling 2. A little bit of this feeling 3. Some of this feeling 4. Much of this feeling 5. A great deal of this feeling

6. I feel aggravated after reading this message.
   1. None of this feeling 2. A little bit of this feeling 3. Some of this feeling 4. Much of this feeling 5. A great deal of this feeling

Based on the campaign message you just read about, please indicate your responses to the following statements on a 5-point scale from 1 (Strongly disagree) to 5 (Strongly agree).

7. The message threatened my freedom to choose.
   1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
   5. Strongly agree

8. The message tried to make a decision for me.
   1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
   5. Strongly agree

9. The message tried to manipulate me.
   1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
   5. Strongly agree

10. The message tried to pressure me.
    1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
    5. Strongly agree

Please indicate your views about the "Stop texting while driving" campaign on a 5-point scale.

11. Stop texting while driving is _____.
    Bad ___:___:___:___:___ Good

12. Stop texting while driving sounds _____ to me.
    Foolish ___:___:___:___:___ Wise

13. I feel _____ toward stop texting while driving.
    Unfavorable ___:___:___:___:___ Favorable

14. I feel _____ toward stop texting while driving.
    Negative ___:___:___:___:___ Positive

15. Stop texting while driving sounds _____ to me.
    Undesirable ___:___:___:___:___ Desirable

16. Stop texting while driving sounds _____ to me.
    Unnecessary ___:___:___:___:___ Necessary

Please indicate your responses to the following statements on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree).

17. It is highly likely that I would stop texting while driving within next three weeks.
    1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
    5. Strongly agree

18. I am willing to stop checking text messages whenever I am driving.
    1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
    5. Strongly agree

19. I am willing to pull over my car when I need texting while driving.
    1. Strongly disagree 2. Disagree 3. Neutral / I don't know 4. Agree
    5. Strongly agree

For each of the following questions, please choose the one that best describes you.

20. My gender is _____.
    1. Male 2. Female

21. My age is _____.
    1. 18-20 3. 20-22 4. 23 and above

22. My ethnicity is _____.
    1. Caucasian
    2. African American
    3. Hispanic or Latino
    4. Asian or Pacific Islander
    5. American Indian
    6. Other

    If you choose "other", please indicate your ethnicity here.
    [ ]

23. Do you have a driver's license?
    1. Yes (Continue to Question 24)
    2. No (Skip to Question 25)

24. If yes, how often do you drive?

1. Less than once a week (eg. once in several weeks, once in several months, never, etc.)
2. Once a week
3. A few times a week
4. Most days of a week
5. Every day

25. Do you have a cellular phone?
    1. Yes (Continue to Question 26)
    2. No (Skip to Question 27)

26. On average, how many text messages do you send and receive per day? Please indicate the number (integer) of text messages here.

27. Have you ever checked or sent text messages while you are driving?
    1. Yes (Continue to Question 28)
    2. No (Skip Question 28 and click on "Submit")

28. If yes, while you are driving, how often do you send or read text messages?
    1. Rarely
    2. A few times
    3. Sometimes
    4. Most times
    5. Every time

Submit