

DISTRACTED DRIVING: THE EFFECT OF POSITIVELY AND NEGATIVELY FRAMED PREVENTION MESSAGES ON DRIVERS WHO TEXT

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ABSTRACT

The purpose of this study was to investigate the motivations behind behavioral change in order to identify whether positive or negative message framing is more effective in discouraging texting while driving behaviors among college students. The findings indicate that negatively framed public health messages are not effective means of changing behavior, and may in fact run the risk of encouraging the behaviors they wish to eradicate. In addition, the results from the positive cohort of precontemplators (respondents who were not considering changing their behavior) showed that after viewing the message they had significantly increased awareness of likelihood and risk for an accident, but felt even less desire to change their behavior.

Keywords: texting, driving, prevention, distracted driving

INTRODUCTION

The U.S. Department of Transportation estimates that at any given time, approximately 660,000 drivers use cell phones or other electronic devices while driving. Distraction-related accidents are on the rise with an estimated 421,000 individuals who were injured in motor vehicle crashes in 2012, 3,328 of whom died as a result of those accidents [6]. This growing phenomenon of texting while driving appears to be related to the fact that cell and smartphones with texting capabilities are becoming more widely used. The Transportation Research Institute at the University of Michigan estimates that about 25 percent of teens respond to text messages at least once while they drive [5]. The institute further found that 20 percent of teens and 10 percent of parents admitted to engaging in extended, multi-message conversation while operating a vehicle. Though all distractions endanger drivers, passengers and bystanders, texting has been recognized as one of the most dangerous forms of distraction because it entails the driver's visual, manual, and cognitive attention. Research shows that a driver who is texting is 23 times more likely to be involved in an accident than a driver who is not [19].

Groups like the Centers for Disease Control and Prevention (CDC) and the AdCouncil have tried to prevent social phenomena like texting while driving and other health-related behaviors with large-scale integrated marketing communications campaigns using different creative approaches and advertising appeals ranging from fear to humor. However, it is not clear which approach works best for a relatively young demographic. Although texting while driving has been recognized as an emerging public health issue, the body of research regarding decreasing the behavior is still limited. No research currently exists that explores the relatively new phenomenon of texting and driving among young adults and how to best prevent it.

LITERATURE REVIEW

Negatively framed public health messages are frequently supported by proponents claiming this method is necessarily “intrusive” and jarring to remain in a viewer’s mind and deter the behavior shown [7]. An individual’s day is saturated with media, and in order to compete for attention, many message creators resort to fear appeals – vivid images or descriptions of damage that can occur when participating in a given behavior [7].

Negatively framed public health messages specifically targeting distracted drivers are developed quite frequently. One example is a driving simulator that directs the user to text while driving. If/when the driver crashes, the scene plays out with a recording of an actual police officer questioning the user, being booked into a jail and being sentenced in court by an actual judge [12]. A public health television ad depicts a bloody crosswalk with a child’s body and an unseen woman’s scream [7]. The National Highway Traffic Safety Administration [16] produced a series of commercials beginning with a humorous example of someone becoming distracted while texting, followed by a more realistic scene of a young driver getting distracted while driving and texting. The commercials go to a black screen just as something tragic is about to happen (e.g. hitting a child pedestrian).

These communications seem to be divisible into two negatively framed categories: personal impact and external impact. The first example of the simulator stresses the impact texting while driving can have on the individual (i.e. ticket/fine, sentencing, jail time). The other examples emphasize outcomes to others, such as the general “everyone” as in the National Safety Council billboard, or more specifically depicted victims like the child in the bloody crosswalk.

Public health campaigns within the road safety context have centered on negative, fear-evoking messages for many years. Research also shows that people continue to engage in the hazardous activity of texting while driving in spite of being aware of the safety risks of this behavior [2] [8].

It is important to note that there are also disadvantages of negatively framed messages compared to positively framed messages. As previously stated, the overuse of negative emotional appeals has potentially desensitized target audiences to enact promoted behavioral changes. Negative emotional appeals can be viewed as condescending by young drivers and are therefore more likely to be ignored and/or rejected. In addition, negatively framed messages appear to focus on the negative consequences of an action and neglect the use of positive role models or positive preventative strategies [14].

Positively-framed public health messaging

Lewis et al. [14] declare the most important element of a message is the outlining of strategies that individuals believe they can perform; not the level of fear induced. This suggests that alternative message framing strategies (i.e. positive message framing) might be more effective in persuading drivers to engage in safer driving behaviors than messages framed to evoke fear. The activity of texting is associated with positive intentions among young adults to maintain peer-to-peer interaction and amplify feelings of belongingness, which indicates that those who text while driving may be perceiving their behavior as less negative as a result of their personal choices, known as cognitive dissonance theory [2]. Positive message framing can have persuasive impact on behavior changes by appealing to the base emotions and attitudes behind texting while driving. Also, utilizing an alternative message strategy could rejuvenate the attention to and effectiveness of a mature campaign’s emotional appeal.

Nemme and White [17] analyzed social influence variables for texting while driving and developed strategies to discourage texting while driving that do not require negative messages. The researchers recommended campaigns that diminish the supposed texting frequency of other young people by

TEXTING WHILE DRIVING PREVENTION

portraying texting while driving as a behavior few of their peers engage in, highlighting an individual's responsibility to self and others, and/or combating routine tendencies by encouraging individuals to turn their phone off or place it on silent mode when entering a car. Some examples of positively-themed messages promoting no texting while driving used in campaigns today include celebrity role models advocating making pledges to not text while driving, such as Oprah's "No Phone Zone Pledge" [18] and Ryan Beatty in AT&T's "It Can Wait" campaign [10]. Other creative approaches include infographic videos explaining statistics of distracted driving and offering positive preventative behavioral suggestions such as turning off phone notifications, placing phones out of reach in a car, using cell-phone applications to aid in the avoidance of texting while driving, or designating a texter when driving with friends [20].

Message framing theory

Much of the literature regarding message framing in public health behavioral change campaigns revolves around the concepts of fear, uncertainty, avoidance, and motivation, all of which have firm theoretical roots in the field of psychology. Public health campaigns are usually focused on motivating behavioral change by manipulating levels of fear in a population [15]. Landau, Johns, Greenberg, Martens, Pyszczynski, Goldenberg, and Solomon [13] articulated terror management theory (TMT), the basis for how people manage fear or perceived threats in their environment. TMT is derived from the uniquely human ability to cognitively perceive and process threats to mortality. TMT posits that, when faced with thoughts of their own mortality, humans will progress through two stages of distal deference. In each stage, the threatened person will attempt to mitigate or cope with the threat by calling to mind things in the environment that support their worldview and self-esteem, and thus make the threat seem less plausible.

Jessop and Wade [11] examined the presence of TMT in response to negatively framed public health campaign messages. Their examination of binge drinkers found that negatively framing messages around consuming alcohol made respondents more aware of their mortality (in other words, it increased their mortality salience), and ironically resulted in an increase in the desire to binge drink immediately after encountering the messages. The resistance to the behavioral change was very closely tied to self-esteem. If respondents viewed the discouraged behavior as being necessary to bolster their self-esteem, they would actually indicate an increased desire to engage in it after encountering the message. Importantly, Jessop and Wade found that this result was true only in those respondents who were not regular binge drinkers. Regular binge drinkers in the study did not report an increase in the desire to binge drink after encountering messages that increased their mortality salience, indicating that binge drinking was not strongly linked to self-esteem in heavy binge drinkers. This finding is especially notable for public health campaigns because negatively framed messages may have little to no effect on those who already engage heavily in a certain type of detrimental behavior.

Another cognitively oriented psychological theory, protection motivation theory (PMT), asserts that the most effective and persuasive messages are those in which mortality salience is increased, but a cognitive response cue is included to drive motivation [15]. Public health campaigns that incorporate both affective and cognitive appeals may be more effective in driving long-term behavioral change [14]. When addressing the cognitive aspect of information processing and behavioral change, it is important for public health practitioners to consider at which stage their population is in terms of cognitive processing. Precontemplation (P) is when an individual has no intention of stopping a behavior in the next six months; contemplation (C) is when he/she is considering changing a behavior in the next six months; preparation (PP) is when he/she plans to change behavior within a month;

TEXTING WHILE DRIVING PREVENTION

action (A) is when he/she has already engaged in behavior changes, and maintenance (M) is when he/she has regularly engaged in preventive behavior for over six months [9] [15]. Hyunyi and Salmon's research [9] shows that tailoring messaging to a chosen stage or stages increases efficacy, and that fear appeals increased unintended effects and limited the magnitude of intended effects for the precontemplators – the group that public health messages usually target and the group that generally comprises 50 percent of any given population.

Block and Keller's [3] work shows that when subjects are already highly motivated to process a message, negative framing is more effective as it is seen as more informative. Additionally, when subjects perceive a high level of efficacy (e.g. immunization programs), positive frames will motivate compliance, though Block and Keller note a need to examine levels of confidence in relation to specific behaviors. The two studies had contradicting outcomes: one suggested that high-efficacy messaging resulted in overconfidence and decreased motivation, the other showing that high-efficacy conditions led to greater intentions to change behavior. In addition, public health practitioners must be cognizant of the ethical considerations of how they frame behavioral change messages, as negatively-framed messages can often lead to feelings of guilt and shame among the targeted population [7].

The purpose of this study was to compare positively and negatively framed public health message reactions aimed at young adults to prevent texting while driving and to investigate their intent to change their texting while driving behavior in the future. In particular, this study focused on areas covered in previous health communication studies but not in the context of texting while driving, including behavior justification, response efficacy, self-efficacy, perceived threat severity, perceived threat susceptibility.

Research questions

Based on the reviewed literature, this study will address the following research questions regarding college students who currently text while driving:

1. What effect does message framing have on moods/feelings regarding texting while driving?
2. To what extent do positively- and negatively-framed prevention messages affect attitudes toward texting while driving? Does this differ based on pre-survey intent to cease behavior?
3. Is there a difference between positively and negatively framed prevention messages in intent to change texting while driving behavior? Does this differ based on pre-survey intent to cease behavior?

METHODS

Design

The study used a survey questionnaire in order to generalize the findings to a larger population. The quantitative approach allowed examination of any notable outcomes in the data that could lead to a better understanding of how framing affects intention to change behavior. The survey contained a series of close-ended questions before and after being exposed to either a positively- or negatively-framed message about texting while driving.

Sample

TEXTING WHILE DRIVING PREVENTION

Overall, 266 respondents were included in the sample in four undergraduate courses at a large Midwestern university. Thirty-three surveys had to be excluded from analysis because of incomplete responses. The surveys distributed during the showing of the positively framed message generated 129 valid responses. The survey distributed during the showing of the negatively framed message generated 104 valid responses. Participants' mean age was approximately 20 years old ($M=20.16$, $SD = 2.31$). The findings below are based on a cross-tabulation of the participants in each cohort who currently text while driving (positive cohort: $n=73$, negative cohort: $n=55$), which includes precontemplators ("I currently text while driving and do not intend to stop texting while driving in the next 6 months") and the two stages that are highly motivated to change (contemplators: "I currently text while driving, but I am thinking about stopping texting while driving in the next 6 months" and preparers: "I currently text while driving, but I am thinking about stopping texting while driving in a month or less").

Procedure

After obtaining informed consent, participants were asked to complete a one-page questionnaire that helped to gauge the mood they were currently in and examine their current thoughts on texting while driving, as well as their current behavior.

The second step was to play the public service announcements chosen to represent positive and negative messages, one for each session. Students were randomly assigned to view either a positively- or negatively-framed message as part of the "Stop the Texts. Stop the Wrecks." campaign targeting young drivers. The public service announcements began running in 2011 [1]. The campaign uses both negatively- and positively-framed messaging in its campaign pieces. The campaign emphasizes the disastrous consequences that can arise from engaging in this behavior, but it also offers audiences four behavioral alternatives to prevent automobile accidents resulting from texting while driving: put your cell phone out of sight so that you will not be tempted to text while driving, silence your cell phone so that it will not notify you of a new text, download a mobile application that will prevent you from texting while driving, and designate a passenger to text for you while you are driving.

Because "Stop the Texts. Stop the Wrecks." utilizes both positive and negative framing, two campaign PSAs (one negatively-framed and one positively-framed) were used for the purposes of this study. The positively framed PSA was a one minute and fifty-five second video clip taken from the "Stop the Texts. Stop the Wrecks." public health campaign titled, "Stop the Texts. Stop the Wrecks. Video Infographic." An infographic displays information through graphic design of data, copy, or both [19]. This positively framed PSA shows current statistics of texting while driving activity with graphic designs of people, cell phones, cars, and data. This PSA also advocates four positive behavioral recommendations to reduce the prevalence of texting while driving: 1) turn your phone notifications off while you're driving, 2) put your phone where you can't get it when you're in the car, 3) use an app to help you stop texting while driving, or 4) if you're riding with a friend have them text for you. The PSA ends with requesting viewers to share their own tips to help stop texting while driving. "Stop the Texts. Stop the Wrecks. Video Infographic." was chosen by the researchers as a positively framed message because it uses stickman images to portray humans. The lack of actors or actresses prevents viewers from individually envisioning themselves as the cause of the perceived problem. There are no negative visuals of injury to self or others, or death. The suggestions given to stop texting while driving are constructive guides to preventative behavior, and the call to share one's own advice advocates a positive sense of community and belonging.

The negatively-framed PSA was a 32-second video clip titled "Texting and Driving Prevention: Fountain" also taken from the "Stop the Texts. Stop the Wrecks." public health campaign. The first

TEXTING WHILE DRIVING PREVENTION

half of the clip provides humorous security camera footage of a man, distracted with texting while walking through a shopping center, tripping and falling into a large fountain. The second half of the clip shows a group of teenagers riding in a car when the male driver receives a text. As the driver is replying to the text message, he fails to notice he is drifting to the side of the road. The clip goes black right before the driver collides into a father and his sons unloading their parked minivan. "Texting and Driving Prevention: Fountain" was chosen as a negatively-framed message through its use of shock advertising; disarming viewers with a humorous appeal directly followed by a negative, fear appeal. The PSA's use of real humans to act out the perceived problem leads to viewers who are more likely to relate with or put themselves in the place of driver, passengers, father, son, or distracted walker resulting in greater impact of the message. There are negative portrayals of possible injury to self or others, or death. Notably, the PSA does not offer any recommendations for positive preventative behavior.

The final step was to administer a posttest, which also consisted of a one-page survey that assessed the previously mentioned dependent variables, such as attitudes towards the messages, and behavioral change intentions. This same pretest and posttest surveys were given in each course setting.

FINDINGS

Effects of message framing on moods/feelings regarding texting while driving

Independent-samples t-tests were conducted to determine whether there was a difference between positively and negatively framed prevention messages after young adults were exposed to one or the other message. In the cohort of those who currently text and drive ($n=128$), there were significantly higher levels of all moods (i.e. frightened, tense, nervous, anxious, uncomfortable, nauseous) after watching the negatively-framed message compared to the positively framed one as shown in Table 1.

TABLE 1

<i>Texters and Drivers Post-Test (n=128)</i>	<i>Positive T&D (n=73)</i>		<i>Negative T&D (n=55)</i>			
<i>Rate how strongly you feel each mood in relation to texting and driving:</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p-value</i>	<i>t-value</i>
Frightened	3.08	1.86	4	2.15	0.011	2.5817
Tense	3.32	1.84	4.29	1.88	0.0039	2.9411
Nervous	3.3	1.73	4.42	1.99	0.0009	3.3908
Anxious	3.11	1.83	4.24	1.98	0.0011	3.3280
Uncomfortable	3.01	1.88	4.18	2.04	0.001	3.3548
Nauseous	1.78	1.45	2.78	2.07	0.0016	3.2203

Effects of message framing on attitudes toward texting while driving and intent to change behavior

In the same cohort of those who currently text while driving ($n=128$), there was no significant difference in perception of being able to stop texting and driving to prevent getting into a car accident after the positively-framed versus the negatively-framed messages, though there was a significantly

TEXTING WHILE DRIVING PREVENTION

higher perceived likelihood of getting into an accident after the negative framing (see Table 2). However, there was no significant difference of intent to change behavior based on framing type.

TABLE 2

<i>Texters and Drivers Post-Test (n=128)</i>	<i>Positive T&D (n=73)</i>		<i>Negative T&D (n=55)</i>			
<i>Rate how strongly you agree with each statement about texting and driving:</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p-value</i>	<i>t-value</i>
I have considered alternatives to texting and driving.	4.55	1.56	4.8	1.90	0.4122	.8228
I am able to stop texting and driving to prevent getting in a car accident:	4.27	.90	4.49	.90	0.1799	1.3486
It is likely that I will get into a car accident:	3	1.13	3.73	1.16	0.0005	3.5604

Perception of negatively framed message by respondents who text while driving: Precontemplators

After viewing the negatively framed message, those who do not plan to cease behavior in the near future ($n=21$) showed significant increases in perceived ease of ceasing behavior, belief that car accidents caused by texting and driving are severe, and the likelihood of getting into an accident; however there was no significant change in considering alternatives to texting and driving.

TABLE 3

<i>Negative Cohort: Precontemplators (n=21)</i>	<i>Pretest</i>		<i>Post-test</i>			
<i>Rate how strongly you agree with each statement about texting and driving:</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p-value</i>	<i>t-value</i>
It is easy for me to avoid texting while driving:	3.24	1.51	3.76	1.23	0.0123	3.2692
I believe that car accidents caused by texting and driving are severe:	3.67	.91	4.19	.87	0.0021	3.5319
It is likely that I will get into a car accident:	2.67	1.15	3.57	1.36	0.0021	3.8
I have considered alternatives to texting and driving.	4.43	2.29	4.29	2.17	0.7381	0.3390

Perception of negatively framed message by respondents who text while driving: Highly Motivated Respondents (Contemplators and Preparers)

As shown in Table 4, after viewing the negatively framed message, those who have considered behavior cessation ($n=34$) showed a significant increase in perceived ease of ceasing behavior, a significant increase in perceived likelihood of getting into an accident and being at risk for getting into a car accident, and a significant increased belief in the possibility of getting into a car accident. However, there was no significant change in considering alternatives to texting and driving.

TABLE 4

<i>Negative Cohort: Highly Motivated (n=34)</i>	<i>Pretest</i>		<i>Post-test</i>			
<i>Rate how strongly you agree with each statement about texting and driving:</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p-value</i>	<i>t-value</i>
It is easy for me to avoid texting while driving:	3.44	1.21	3.94	1.15	0.0091	2.7722
It is likely that I will get into a car accident:	2.97	1.06	3.82	1.03	less than	4.7443

TEXTING WHILE DRIVING PREVENTION

					.0001	
I am at risk for getting into a car accident:	3.35	.95	4.06	.85	less than .0001	4.3862
It is possible that I will get into a car accident:	3.62	.92	4.09	.93	0.0057	2.9542
I have considered alternatives to texting and driving.	4.82	1.59	5.12	1.67	0.4513	.7622

Perception of positively framed message by respondents who text while driving: Precontemplators

After viewing the positively framed message, those who do not plan to cease behavior in the near future ($n=26$) showed significant increases in perceived likelihood of getting into an accident and of being at risk of getting into an accident, but there was a significant decrease in considering alternatives to texting and driving (see Table 5).

TABLE 5

<i>Positive Cohort: Precontemplators (n=26)</i>	<i>Pretest</i>		<i>Post-test</i>			
<i>Rate how strongly you agree with each statement about texting and driving:</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p-value</i>	<i>t-value</i>
It is likely that I will get into a car accident:	2.46	.99	3.04	1.22	0.0159	2.5862
I am at risk for getting into a car accident:	3.23	.95	3.77	1.03	0.0277	2.3385
I have considered alternatives to texting and driving.	4.62	1.79	3.77	1.58	0.0262	2.3625

Perception of positively framed message by respondents who text while driving: Highly Motivated Respondents (Contemplators and Preparers)

After viewing the positively framed message, those who have considered behavior cessation ($n=47$) showed a significant decrease in perceived ability to stop texting and driving to prevent car accidents and no significant change in considering alternatives to texting and driving (see Table 6).

TABLE 6

<i>Positive Cohort: Highly Motivated (n=47)</i>	<i>Pretest</i>		<i>Post-test</i>			
<i>Rate how strongly you agree with each statement about texting and driving:</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p-value</i>	<i>t-value</i>
I am able to stop texting and driving to prevent getting in a car accident:	4.62	.8	4.4	.92	0.0237	2.3401
I have considered alternatives to texting and driving.	4.91	1.54	4.98	1.39	0.8214	.2271

DISCUSSION

The purpose of this study was to investigate the motivations behind behavioral change in order to identify which use of framing, positive or negative, is more effective in discouraging texting while driving behaviors among college students.

The study was intended to answer questions about perceptions of texting while driving, to assess what stage of change participants are in, and how attitude, intentions, response efficacy, perceived self-

TEXTING WHILE DRIVING PREVENTION

efficacy of ceasing behavior, perceived threat severity and susceptibility of accidents caused by texting and driving, and defensive avoidance are affected after exposure to messaging.

Though respondents in the negative cohort who currently text while driving experienced significantly elevated levels of each surveyed emotion after viewing the PSA, increases in threat susceptibility, threat severity (precontemplators only), and perceived self-efficacy, neither group showed a significant shift in intent to stop texting while driving. This finding is important for public health practitioners to note because it supports Jessop and Wade's 2008 study that found that negatively-framed public health messages heightened study participants' mortality salience and triggered cognitive dissonance to the advertising message, but had little to no effect on those who already engage heavily in a certain type of detrimental behavior.

The results of the negative cohort who currently text while driving and have no plans to stop reported a significantly increased self-perceived likelihood of getting into an accident and increased ease of behavior cessation, but no significant shift in intentions of ceasing their behavior. These findings are consistent with those found by [9], which state that fear appeals increase unintended effects and limit the magnitude of intended effects for precontemplators.

Among highly motivated respondents, or those who are considering or planning to stop texting while driving, the results of the negative cohort showed a significant increase in perceived self-efficacy in one of three questions ("I am able to stop texting and driving to prevent getting in a car accident"), yet no significant shift in intentions to cease behavior. This contradicts the findings from [3] that proposed when subjects perceive a high level of efficacy, they will either become overconfident and show decreased motivation, or have increased intentions to change behavior.

Overall, these findings indicate that negatively framed public health messages are not effective means of changing behavior, and they may in fact run the risk of encouraging the behaviors they wish to eradicate. Furthermore, the results from the positive cohort of precontemplators showed a significantly increased awareness of likelihood and risk for an accident and a significant decrease in the desire to stop texting while driving. This signifies that for those respondents who were not considering changing their behavior, after viewing the positively framed message they felt even less desire to change their behavior.

The positive cohort of highly motivated respondents showed a significant decrease in their perceived ability to stop texting while driving, and no significant shift in their consideration of stopping the behavior. This indicates that for those drivers considering stopping in 0-6 months, the positively framed message made them less confident in their ability to stop texting while driving—having the opposite intended effect and discouraging behavior change.

Due to the negative connotations surrounding the act of texting while driving, responses may have been biased to reflect social desirability. Since a majority of respondents agreed that not texting while driving would prevent accidents, respondents may have underreported the amount they do text. The survey was not pre-tested, which may have mitigated some respondents not entering their age or not answering certain questions. This research was limited by time constraints. It is recommended that a longitudinal study may be more appropriate for determining the long-term impact the positively- and negatively-framed messages had on participants' actual behavior change in relation to their perceived self-efficacy, threat susceptibility, threat severity and defense avoidance.

The sample size was restricted to college students attending a Midwestern university. Therefore, results may not be generalized to the overall population of drivers in the United States or the world. Further analysis should be done to determine applicability to more general populations. Lastly, a larger sample might offer further insight, specifically regarding the cross tabulations of precontemplators and highly motivated individuals who text while driving.

TEXTING WHILE DRIVING PREVENTION

Recommendations for Public Health Practitioners

One salient best practice garnered from this study is that public health practitioners must be very cognizant of the fact that fear-based appeals may be more effective for certain issues rather than for others. This study showed that positive framing techniques carry much less risk than negative framing techniques. However, positive framing can have detrimental effects on precontemplators' desire to change behavior and on motivated individuals' perceived ability to stop the undesired behavior. Therefore, thorough research of a target audience should be conducted in order to determine if positive- and/or fear-based messaging would be effective or detrimental in influencing behavior. While fear-based appeals are commonly used in public health messaging, practitioners need to be aware of the effects that message framing may have on its target audience. If substantial research and content testing are not completed to understand potential reactions to the message, practitioners may be doing more harm than good and encouraging the behaviors they wish to stop.

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TEXTING WHILE DRIVING PREVENTION

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