EXAMINING THE EFFECTS OF MESSAGE TYPE AND FRAMING ON TRANSPORTATION, ATTITUDES, AND BEHAVIORAL INTENTIONS

A Dissertation in Mass Communications

by

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ABSTRACT

Individuals are often exposed to risk messages in the media, be it through print, broadcast, or film. These messages can be presented as gain- or loss-framed narratives, operationalized here as public narratives in the form of news stories, or as statistical evidence. Scholars from varied disciplines have examined these message types and their ability to influence viewers’ attitudes, intentions, emotions, and behaviors. Media researchers have also examined cognitive and affective processes that make persuasion through narratives different from persuasion through more overt persuasive tactics. Despite this large body of literature, there are many unanswered questions about how the persuasive processes work in narratives and which factors affect changes in attitudes, intentions, and behaviors. The present study found a persuasive advantage for loss-framed narratives where participants in this condition reported increased transportation, perceived message persuasiveness, affective response, and behavioral intentions. The present study also tested a mediation model where transportation was found to mediate the relationship between negative narratives and behavioral intentions. Additional factors were also found to mediate the relationship between transportation and behavioral intentions. Results and implications are discussed.
# TABLE OF CONTENTS

LIST OF FIGURES .................................................................................................................. vi
LIST OF TABLES .................................................................................................................... vii
ACKNOWLEDGEMENTS .......................................................................................................... viii
Introduction.............................................................................................................................. 1
Literature Review .................................................................................................................... 6
  Public Health Issue Rationale. .............................................................................................. 6
  Risk Messages and Framing ................................................................................................. 9
    Negativity Effect................................................................................................................ 13
  Message Type ..................................................................................................................... 16
    Statistical Evidence ......................................................................................................... 16
    Narrative Evidence .......................................................................................................... 18
  Transportation .................................................................................................................... 22
Method ..................................................................................................................................... 29
  Pretest. ................................................................................................................................. 29
Main Experiment .................................................................................................................... 30
  Procedure ............................................................................................................................ 31
Stimulus Materials .................................................................................................................. 31
Participants ............................................................................................................................... 33
Manipulation Measures ......................................................................................................... 34
Dependent Measures .............................................................................................................. 34
  Transportation ................................................................................................................... 34
  Intention ............................................................................................................................... 34
  Perceived Message Persuasiveness ..................................................................................... 35
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affect</td>
<td>35</td>
</tr>
<tr>
<td>Cognition</td>
<td>35</td>
</tr>
<tr>
<td>Results</td>
<td>37</td>
</tr>
<tr>
<td>Manipulation Checks</td>
<td>38</td>
</tr>
<tr>
<td>Potential Covariates</td>
<td>38</td>
</tr>
<tr>
<td>Descriptive Statistics</td>
<td>39</td>
</tr>
<tr>
<td>Hypothesis Testing for H1 and H2</td>
<td>40</td>
</tr>
<tr>
<td>Analysis for RQ1</td>
<td>42</td>
</tr>
<tr>
<td>Hypothesis Testing for H3</td>
<td>44</td>
</tr>
<tr>
<td>Analysis for RQ2 and RQ3</td>
<td>45</td>
</tr>
<tr>
<td>Discussion</td>
<td>50</td>
</tr>
<tr>
<td>Implications</td>
<td>60</td>
</tr>
<tr>
<td>Limitations</td>
<td>66</td>
</tr>
<tr>
<td>Future Research</td>
<td>67</td>
</tr>
<tr>
<td>References</td>
<td>69</td>
</tr>
<tr>
<td>Appendix A: Stimulus Messages</td>
<td>80</td>
</tr>
<tr>
<td>Appendix B: Figures</td>
<td>88</td>
</tr>
<tr>
<td>Appendix C: Tables</td>
<td>92</td>
</tr>
<tr>
<td>Appendix D: Questionnaire</td>
<td>99</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 1: Conceptual Model ................................................................. 88
Figure 2: Message type X Frame Interaction: Perceived Message Persuasiveness..... 89
Figure 3: Message type X Frame Interaction: Behavioral Intentions ..................... 90
Figure 4: Full Mediation Model ................................................................ 91
LIST OF TABLES

Table 1: Experimental Conditions. ................................................................. 92
Table 2: Manipulation Check on Perceived Gain and Loss Framing of Messages. .... 93
Table 3: Manipulation Check for Message Type.............................................. 94
Table 4: Descriptive Statistics for Dependent Variables by Condition. ............... 95
Table 5: Perceived Message Persuasiveness: Message Type X Framing Interaction............................................................ 96
Table 6: Transportation: Message Type X Frame Interaction............................ 97
Table 7: Standard Parameter Estimates for Model. ........................................... 98
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Chapter 1

Introduction

Imagine the following. A camera pans a child’s room. It shows a set of musical toys dangling over a baby’s crib and then moves to show the empty bed. A flash of writing says, “This baby has died due to not being vaccinated.” This Wyeth Pharmaceuticals’ advertisement depicts a risky situation for any new parent. In fact reports from Jeddah, Saudia Arabia, showed a “mad rush” of parents seeking vaccinations for their children after viewing the ad (Shalhoub, 2007).

Or consider this scenario, a young man asks a bartender for another shot of tequila when in his mind’s eye he pictures the possible consequences of his next drink. The camera shows a police officer administering a breathalyzer test, then cuffing and taking him to jail. Quickly his mind switches to see a courtroom where the judge announces his license has been revoked. Soon his employer appears and explains that since his job requires him to drive he will need to find new employment. Finally his family members appear and he sees disappointment, fear, and shame in their faces. Stories such as these have been used to induce behavioral and attitudinal changes toward risky actions.

These examples demonstrate risk messages that emphasize negative outcomes, but risk messages do not always emphasize the negative outcomes. Budweiser’s designated driver campaign communicates risk by focusing on safety. “What’s the perfect party plan?” (“Designated Driver Campaigns,” 2009). According to Budweiser, “Great
parties include friends, fun and a designated driver to make sure everyone gets home safely. Please join the 137 million American adults who have been or used a designated driver” (“Designated Driver Campaigns,” 2009). The Ad Council also provides examples of emphasizing positive outcomes in risk messages. For example, in its booster seat campaign the Council uses a play on Cinderella by picturing a young girl sitting in a booster seat in Cinderella’s pumpkin carriage with the caption, “Make sure your little pumpkin gets there safely. Kids 4’9” and Under Need a Booster Seat” (adcouncil.org, 2005).

But stories and anecdotes are not strategic communicators’ only option to relay risk information. Statistical information is also used to convey risk information. An alternative message from the Budweiser designated driver campaign uses statistical information to relay the positive, normative behavior of choosing designated drivers. The message says, “Seventy-eight percent of people feel that their companion is not truthful on the first date. Eight percent of available men live with their mother. Forty percent of people end up marrying their first love. More than 154 million Americans have been or have used a designated driver” (designateddriver.com). The Ad Council’s booster seat campaign also uses statistical information to relay the positive outcome of booster seat usage: “The #1 killer of children is car crashes. With a booster seat, your child is 59% less likely to be injured in a car crash. If they’re under 4’9” tall they should be in a booster seat. It raises them up for a proper fit. And the right fit makes all the difference to their future” (adcouncil.org).

As these examples demonstrate, individuals frequently encounter risk messages in the media. Risk messages that emphasize positive and negative outcomes can be found in
local and national newscasts, storylines in prime time drama, soap operas, public service announcements, magazines and other print based sources. These messages can raise awareness of health and environmental issues, provide an environment for attitude, intention, and behavioral changes, and produce strong affective and cognitive responses (Green, 2006). It is these issues that are at the heart of the current research.

While explanations for persuasiveness abound in the literature, there has been relatively little empirical examination of narrative persuasion in the realm of risk communication. This is surprising because of the overwhelming number of health and environmental storylines that include risk elements. A quick flip through the TV Guide Channel on a cable system reveals health programming, which often includes risk elements, such as “Grey’s Anatomy,” “ER,” Fox network’s “House, M.D.,” and cable programs such as “I Lost It,” “Intervention,” and “Dr. G Medical Examiner.” These programs are in addition to reports in evening newscasts and news magazine programs, public service announcements, and newspapers, where health and environmental risks are often highlighted.

One approach to examine the persuasiveness of risk messages is through narrative transportation (Green & Brock, 2000). Transportation has been described as a “distinct mental process, an integrative melding of attention, imagery, and feelings” (Green & Brock, 2000, p. 701). When a reader is transported into the text she should report a loss of physical and or psychological facts or awareness (Green & Brock, 2000). This loss of access in turn reduces the reader’s ability to counterargue the text’s message.

Although the literature on transportation theory focuses on narratives and the persuasive benefits of being “lost” in a text, Green (2000) has pointed out that narratives
are not the only message type that may induce the transportive experience. A stirring speech or other types of communication could be transporting as well. Many risk messages in fact are reports of scientific research, which include statistical information or simply recommendations for behavior modification. The extent to which statistical evidence could be transporting has not been explicitly tested, but the persuasiveness of narrative versus statistical messages has been examined by dozens of studies, which will be discussed in Chapter 2.

In addition to differences between different types of messages, this dissertation examines messages that emphasize positive or negative outcomes of risky behaviors. Studies of the impact of valence on persuasion outcomes tend to come from several bodies of literature, but this study focuses on two: framing and the negativity bias.

Gain and loss frames can be operationalized as emphasizing the benefits of adopting behaviors in persuasive appeals and loss frames as emphasizing the costs of not adopting the behavior. However, perhaps in part because of differences in operationalization, the literature on framing research in the area of health has produced mixed results. Some suggest gain frames are more persuasive (e.g. Schneider, Salovey, Pallonen, Mundorf, & Smith, 2001) and others that loss frames have a persuasive advantage (e.g. Maheswaran & Levy, 1990). One explanation, transportation, will be examined in the current research. These mixed results could be the result of variation in the levels of transportation among the messages. If both gain- and loss-framed messages have the same level of transportation, one would expect that there would be no advantage to a gain versus a loss frame. Alternatively, if the loss-framed message were more
transporting than a gain-framed message, one would expect a persuasive advantage for the loss-framed message.

Other studies have examined valence with regard to the negativity bias literature, which suggests, “negative events appear to elicit more physiological, affective, cognitive, and behavioral activity and prompt more cognitive analysis than neutral or positive events” (Taylor, 1991, p. 67). In other words, people tend to pay more attention to negative information and therefore should be persuaded more by negatively-valenced information, loss frames, than from positively-valenced information. The negativity bias also suggests that negative stimuli evoke stronger emotional reactions (Taylor, 1991).

This dissertation seeks to examine the persuasiveness of narrative versus statistical evidence and message framing and the ways these evidence types affect narrative transportation, attitude change, and behavioral intentions. Specifically the study will examine a potential mediator of the relationship between evidence type and framing and behavioral intentions, transportation. In addition, the study will examine several potential mediators of the relationship between transportation and behavioral intentions. These mediators include perceived persuasiveness and cognitive and affective responses.

The following chapters will examine literature, propose hypotheses and research questions, describe methods, measures and stimulus materials, report results of hypothesis and research question testing, and interpret the findings.
Chapter 2

Literature Review

This chapter will briefly review the rationale for public health issue, literature on health risk messages and framing, the negativity bias, statistical and narrative evidence types, transportation, and possible mediating variables. Based on the literature, several hypotheses and research questions will be proposed.

Public Health Issue Rationale

When deciding which public health issue or issues to use for examining the effects of message type and framing on persuasion and behavioral intentions, a couple of considerations were kept in mind. Namely, these considerations included relevance to the audience and known risks of the behavior. These criteria narrowed the number of health-related issues that would be applicable for this study. In order to decide on the specific issue, two pretests were conducted where the first was designed to discover the issue with the most relevance to the audience. The two topics were heart disease in young adults and driving while using cell phones. The dangers of driving while using cell phones was found to be the most relevant of the two issues, likely because of easy identification with this topic and the perceived distal risk of heart disease. The second pretest was conducted to ensure the manipulations were successful and is discussed further in the method chapter.
Driving while using cell phones has long been documented as a risky behavior (e.g. Redelmeier & Tibshirani, 1997; Stutts, Reinfurt, Staplin, & Rodgman, 2001). As more drivers choose to use cell phones while driving, more attention has been paid to this issue by politicians, industry, and the media alike. Nationwide Insurance Company’s second annual Driving While Distracted survey revealed that as technology use increases, so does the “frequency and severity of driving while distracted” (Nationwide’s 2008 Study Shows Americans DWD, 2008, para. 1). This national survey revealed that 81 percent of respondents admit to talking on their phones while driving and nearly 20 percent text message while driving (Nationwide, 2008). Almost half (45 percent) reported that they either had been in an accident or had a close call because of drivers using cell phones (Nationwide, 2008). It is perhaps because of these experiences that nearly half of the participants reported cell phones as the “most dangerous distraction while driving” (Nationwide, 2008, para. 2). These kinds of numbers reveal that driving while distracted, especially by technology such as cell phones, is risky behavior. But these risks are not only important to insurance companies.

The National Safety Council cites that more than 50 scientific studies have examined the risks of driving while using cell phones (National Safety Council Fact Sheet, 2009). One interesting study, the Virginia Tech 100-car study for the National Highway Traffic Safety Administration (NHTSA), revealed that “wireless devices, internal distractions, and passenger-related tasks (primarily conversations)” were the highest sources of inattention, which ultimately led to the most vehicular incidents (Neale, Dingus, Klauer, Sudweeks, & Goodman, 2007, p. 7). Additionally, the study
revealed that nearly 10 percent (8.7) of the crashes and most of the close calls happened when drivers were talking on their phones (Neale et al., 2007).

The problem in trying to affect change in driving behaviors is the perception among many drivers (81 percent) that while they admit to engaging in the risky behavior – driving while on cell phones – they also see themselves as safe drivers even while multi-tasking (72 percent) (Nationwide, 2008). Based on this information, what kind of solution may be offered? Politicians offer legislative solutions in many states. The Governors Highway Safety Association (GHSA) reports handheld cell phone bans in “five states: California, Connecticut, New Jersey New York, and Washington” (“GHSA Cell Phone Driving Laws,” 2009). Although no state completely restricts the use of all types of cell phones, 17 states restrict certain types of drivers such as school bus drivers and 21 states restrict novice drivers (Cell Phone Driving Laws, 2009).

In Pennsylvania, where this study takes place, there is hot debate regarding a statewide ban on hand-held cell phones while driving. In fact, a bill was defeated in the House of Representatives in late April 2009. Many legislators are hesitant to support such a bill in large part because of their constituents’ views toward state government; that the state interferes too much with their personal decisions. Others cite difficulty in enforcement as their reason for opposing such a bill (Barnes, 2009). Regardless of the reasons for lack of legislation on this issue, driving while using hand-held or hands-free devices poses a significant safety risk.

In addition to industry and political attention, the media is beginning to cover this issue more regularly as is evidenced by news stories and the National Safety Council’s “Death by Cell Phone” ad campaign. The goal of the campaign is to raise awareness
about the risk of distractions while driving and to affect normative and behavioral changes in cell phone usage (National Safety Council Mission, 2009). Similar to the current study, this campaign uses narrative accounts of people’s deaths from accidents caused by cell phones as its persuasive appeal.

Based on the information presented above this study assumes that driving while using a cell phone will be relevant to the audience, college students; that it will likely be a sensitive topic for some participants; that participants engage in the risky behavior; that participants have had close calls or accidents themselves; that even though they engage in the risky behavior and have perhaps had some close calls they will believe it’s unlikely they will cause an accident because of this behavior. These assumptions will be measured for accuracy in the questionnaire. Driving while using cell phones will be used to examine persuasion processes and behavioral intentions through message framing, evidence type, and transportation literature.

Risk Messages and Framing

Scholars who study attitude change typically focus their efforts on one of the three parts of the persuasion process: the source, the receiver, or the message itself (Salovey, Schneider, & Apanovitch, 2002). Among those who examine message features, the possibility of changing people’s attitudes and behavioral intentions has generated wide interest in message framing, a key message feature.

Message framing refers to whether a message focuses on the benefits of following a recommendation or the costs of failing to do so (Levin, 1987; Meyerowitz & Chaiken, 1987). These benefits and costs are often referred to as gain frames and loss frames. In other words, gain frames present the benefits, or positive outcomes, of adopting a certain
attitude or behavior, while loss frames relay the costs, or negative outcomes, of failing to adopt an attitude or behavior. A gain frame for a public health campaign may look like this: “One in five lives could be saved in the U.S. if people didn’t smoke” (Steward, Schneider, Pizarro, & Salovey, 2003, p. 2460). On the other hand, a loss frame could read: “One in five deaths occur in the U.S. because people smoke” (Steward et al., 2003, p. 2460).

Many researchers have examined the relationship between these types of message frames and attitudinal and behavioral outcomes. However, researchers have not always operationalized framing in the same way. Some researchers have operationalized framing as same consequences framing or different consequences framing. Same consequences framing (i.e. gains versus non-gains) emphasizes benefits gained by adopting the prescribed behavior or the benefits lost by failing to do so. Alternatively, different consequences framing (i.e. gain versus loss) focuses on the benefits gained by adopting the behavior or the costs of failing to do so (Rothman, Salovey, Antone, Keough, & Martin, 1992).

Levin et al. (1998) argue that these different operationalizations of framing have led to mixed arguments about the persuasiveness of framed messages (Levin, Schneider, & Gaeth, 1998). However, many of these arguments for the persuasiveness of framed messages come from prospect theory.

Prospect theory is concerned with explaining how decisions are made when uncertainty is present (Kahneman & Tversky, 1982; 1984). One example from prospect theory has been repeatedly cited to demonstrate framing effects. In this example, research participants were asked to imagine an Asian disease outbreak that may kill 600 people.
The first group was given a choice between saving 200 people or the chance that one-third of the population would be saved and a two-thirds chance that no one would survive. Participants in this group chose the first option, to save 200 people, which represents a certain outcome, rather than the second, risky outcome.

For group number two, participants were faced with the choice of 400 people faced with certain death versus a one-third chance that everyone would survive and a “two-thirds chance that 600 people would die” (Kahneman & Tversky, 1984, p. 343). Participants here chose the second, riskier option.

Implications for framing research from this example include: “Individuals are risk-seeking in the domain of losses, but risk averse in the domain of gains” (Salovey et al., 2002, p. 393). In other words, loss-framed messages should be more effective when participants consider risky behavior than gain-framed messages (Salovey et al., 2002).

A large group of studies have examined framing with regard to health behaviors and attitudes, (e.g. Rothman, Salovey, Antone, Keogh, & Drake Martin, 1993; Meyerowitz & Chaiken, 1987; Block & Keller, 1995). These studies and many others (e.g. Rothman, Martino, Bedell, Detweiler, & Salovey, 1999; Umphrey, 2003; Maheswaran & Levy, 1990) have found support for using loss-framed messages with health issues that have a level of uncertainty associated with them and gain-framed messages for health issues not associated with a risky choice.

Many studies that examined framing effects of detection behaviors have found support for using negative frames with health issues associated with some uncertainty. Meyerowitz and Chaiken (1987) examined women’s reactions to negatively framed messages about breast self examination and found an increase in positive attitudes,
intentions and behaviors toward the examination. Similarly, Rothman et al. (1993) found evidence supporting the use of loss frames in skin cancer screenings, at least among participants to whom this was an involving topic. Maheswaran and Meyers-Levy (1990) also found support for the effectiveness of loss-framed messages among highly involved participants. These participants were more likely to hold attitudes and intentions in line with the advocated message. Support for using loss-framed messages with health issues that pose a risk has been linked to increasing intentions for skin cancer screenings (Block & Keller, 1995); testing for HIV (Kalichman & Coley, 1995); screening for a fictitious disease (Rothman, Martino, Bedell, Detweiler & Salovey, 1999); using plaque-detecting mouthwash, (Study 1, Rothman et al., 1991); increasing mammogram testing among low-income women (Schneider et al., 2001); producing more positive attitudes toward testicular self-examination among males who carefully processed the message (Umphrey, 2003); and motivating women to obtain a Pap test (Rivers et al., 2005).

In attempting to explain why loss frames were more effective for risky health issues, researchers have looked into many possible explanations. Researchers have examined explanations such as increased fear, increased salience, and increased vividness to explain the effectiveness of loss-frames (e.g. Meyerowitz & Chaiken, 1987), yet none of these variables have accounted for the advantage of loss-framed messages.

Several variables can explain at least some of the effectiveness of loss-framed messages. Some support for the advantage of loss-framed messages comes from an increase in individuals’ level of perceived risk when exposed to negative frames in public health messages (Salovey et al., 2002; Meyerowitz & Chaiken, 1987). Additional tests of this proposition have found support for increased levels of perceived risk in a negatively
framed condition (Rothman et al., 1992). Negatively-framed messages also prompt behavioral intentions that are in line with the message recommendations (eg. Rothman et al., 1992), show increased effectiveness when an issue is involving, and elicit an immediate impact on affective responses (Schneider et al., 2001). Additionally, individual difference variables also may moderate the effects of framing (Latimer, Salovey, & Rothman, 2007; Rothman et al., 2006). Another explanation for the effectiveness of loss frames is the negativity bias.

**Negativity Effect.** The consequences of framed health messages can direct individuals’ cognitive and affective responses. In other words, these consequences have the ability to produce positive or negative affective responses. The negativity effect posits that negative information is more heavily weighted than its positive counterpart (Kellermann, 1984). The negativity effect has been examined for the past four decades, yet still interests scholars in varied disciplines. Scholars in psychology, more specifically those studying impression formation, have generally found support for the negativity effect (Anderson, 1965; Hamilton & Zanna, 1972; Kellermann, 1984).

In order for the negativity bias to present itself, a negative event must be present. Taylor (1991) defines a negative event as “one that has the potential or actual ability to create adverse outcomes for the individual” (p. 67). In other words, mediated messages that contain perceived risks to individuals could create the potential for negative outcomes.

Scholars since the time of Darwin (1872) have noticed that elements in our environments give us cues regarding our relative safety and harm (Salovey, Rothman, Detweiler, & Steward, 2000). One physiological response to cues in the environment is
the fight-or-flight response, which describes the changes that occur when people are exposed to negative events in their environments (Taylor, 1991; Cannon, 1932). As Taylor (1991) writes, “Virtually all of the early work on physiological stress involved negative events arousing fear or, in the case of humans, anxiety, sadness, and anger, the implicit assumption being that positive events do not evoke the same intensity of response” (p. 68).

More recently Baumeister, Bratslavsky, Finkenauer, and Vohs (2001) provide more on the evolutionary explanation for the power of the negative event. In their example, where people have the opportunity to ignore possible outcomes from positive or negative cues, they essentially ask, “What’s the worst that can happen in each situation?” In the case of ignoring positive cues, the person may experience regret, but she or he will experience no real harm. Compare this situation to the worst that can happen from ignoring a negative cue in the environment, death or severe harm, and it is clearly more important to pay attention to negative information (Baumeister et al., 2001).

In their broad review of research of positive and negative events, Baumeister et al. (2001) report that in nearly every case negative events produced stronger reactions than positive ones. “Bad events produce more emotion, have bigger effects on adjustment measures, and have longer lasting effects” (Baumeister et al., 2001, p. 328).

One example of such a reaction comes from the response people have to the same amounts of bitter versus sweet stimulus (Cacioppo et al., 1999). The bitter (negative) stimulus prompts a stronger response than the sweet (positive) stimulus. While reading a loss-framed or negatively framed message is certainly different from tasting something bitter, the strong response is similar. In discussions of physiological and psychological
reactions to negative stimuli, most conclude that negative emotion “serves as a call for mental or behavioral adjustment, whereas positive emotion serves as a cue to stay the course” (Cacioppo et al., 1999, p. 849).

In the context of risk communication, messages can be presented in terms of gains and losses. If negative events produce stronger effects on affective responses than positive events, as some research suggests (Taylor, 1991; Appel, Blomkvist, Persson, & Sjoberg, 1980), and emotions create a change in action readiness (Frijda, 1988), then it may be expected that the effects of negative outcomes in risk messages would prompt the most action or response.

To summarize this literature, scholars who study the persuasion process by focusing on the message itself often focus their efforts on message framing, a key message feature, and psychological concepts such as the negativity effect. The literature suggests that loss-frames are more persuasive than gain-frames in the area of health issues that have risky outcomes. Explanations of the persuasiveness of loss frames include increased risk perceptions and cognitive effort among individuals and an advantage for loss frames when issues are involving. Additionally, the negativity effect explains that people pay attention to and have increased affective responses to negative information, which also supports the use of loss frames in public health messages where risks may present themselves. In addition to replicating prior framing research through investigating the effects a message’s valence has on persuasiveness, this study investigates how framing may interact with message type.
Based on the preceding literature it can be predicted that loss frames are more effective with health messages that pose some uncertainty than gain frames. This study proposes a main effect for message valence where:

H1: Risk information presented in terms of losses will lead to more persuasion as measured through perceived message effectiveness and perceived behavioral intentions.

Message Type

When presenting information there are multiple forms of messages or evidence that could be used in public health messages. Two types of evidence – statistical and narrative – have attracted much attention. Statistical evidence refers to the numeric representation of an issue or phenomenon, whereas narrative evidence, also referred to as “qualitative evidence,” includes anecdotes, cases, testimonials, and stories (Brosius & Bathlelt, 1994; Kazoleas, 1993; Limon & Kazoleas, 2004; Reinard, 1988).

Statistical evidence. Statistical evidence refers to numeric information about a person or phenomenon (Limon & Kazoleas, 2004; Zillmann & Brosius, 2000). Statistical evidence has been widely studied. One meta-analysis of the persuasiveness of narrative evidence versus statistical evidence has shown an advantage for statistical evidence (Allen & Preiss, 1997). The meta-analysis, however, examined only studies that compared effectiveness of different evidence types, not the accuracy of people’s perceptions of statistical or narrative evidence. Therefore, many of the studies typically cited in research supporting narrative or statistical evidence were excluded from the analysis, including several cited below (e.g. Borgida & Nisbett, 1977; Ginosar & Trope, 1980).
This advantage for statistical evidence may not always be present. One proposal has been to combine evidence types to maximize persuasiveness. In fact, many narratives include statistical information and many statistical messages include anecdotal evidence. Kopfman et al. (1998) combined a small amount of these different types of evidence in their messages, although they do not measure this in their study. In their study of evidence type and persuasiveness of organ donation messages, information in the narrative evidence condition contained statistical information about the number of people in need of donated organs each year. This may not only lend credibility to the message, but also by combining more than one evidence type it may give participants something additional to consider. Perhaps relaying how many people are in need of donated organs in the narrative condition made them respond more cognitively or emotionally than they would have otherwise.

Although the persuasive advantage for statistical evidence itself is robust, research concerning the persuasiveness of narrative reports versus statistical forms of evidence has produced inconsistent results. Some studies report statistical evidence to be more persuasive than its narrative counterpart (Baesler & Burgoon, 1994; Dickson, 1982; Greene & Brinn, 2003; Han & Fink, 2007; Hoeken, 2001; Hornikx & Hoeken, 2007; Kopfman, Smith, Ah Yun, & Hodges, 1998), whereas many other studies report a persuasive advantage for narrative report evidence over statistical (Borgida & Nisbett, 1977; Carroll, 1977; Chang, 2008; Cox & Cox, 2001; de Wit, Das, & Vet, 2008; Ginosar & Trope, 1980; Kazoleas, 1993; Polyorat, Alden, & Kim, 2007; see Baesler & Burgoon, 1994 and Taylor & Thompson, 1982 for additional examples). Other studies such as Slater and Rouner (1996) have found that the persuasiveness of narrative versus statistical
evidence varies. For Slater and Rouner (1996) the persuasiveness varied based on messages’ congruence with participants’ values. The following section highlights the historic and experimental rationale for the persuasiveness of narrative evidence.

*Narrative evidence.* Before discussing the rationale for narrative evidence in health risk messages it is important to define the concept. The most basic definition of narrative is an account of events. According to the Merriam-Webster dictionary, a narrative is “the representation of an event or story” (Narrative, n.d.). Hinyard and Kreuter (2007) define narrative as “any cohesive and coherent story with an identifiable beginning, middle, and end that provides information about the scene, characters, and conflict; raises unanswered questions or unresolved conflict; and provides resolution” (p. 778). These stories can be true or fictitious, but more importantly they consist of the details of events and actions. In literary and social psychology literature, scholars identify narratives by temporal ordering and causality elements, and structural items such as possessing a beginning, middle, and end (Green, 2006). Temporal ordering and structure are important components of narrative evidence, but the use of characters is even more so. Narratives depend on characters to illustrate events and move the story forward (Green, 2006).

Using narratives and more specifically characters to persuade people is not a new concept. Since the time of Aesop in the 6th century BC, stories have been used to influence behaviors (Slater, 2002). The form of narratives holds a special ability to influence people because narratives not only evoke cognitive responses, but also encourage connections with characters and elicit emotional responses. Scholars from varied disciplines such as psychology, sociology, literary and film studies, and media
studies have examined the relationships among narratives and cognitive and affective responses (Green, Strange, & Brock, 2002).

Despite differing opinions on how narratives influence audiences and the additional research needed to examine the subject, narratives are often cited for their ability to influence readers. In fact, the assumed power of narratives has been used to restrict the use of narratives in societies and schools. Historically many stories have been cited as having the ability to influence readers’ thinking and feelings. This includes thoughts about politics (e.g. 1984, G. Orwell), religion (e.g. The Bible; Zen Buddhism: Selected Writings, D. T. Suzuki; The Satanic Verses, S. Rushdie), race (e.g. Uncle Tom’s Cabin, H. B. Stowe), and sexuality (Of Mice and Men, J. Steinbeck). One example, Uncle Tom’s Cabin (Stowe, 1852), has been cited as a narrative that possibly changed the outcome of the American Civil War. The book “expanded abolitionist sentiment in the years prior to the Civil War” and held the British from “fighting alongside the South” (Brock et al., 2002, p. 3).

Regardless of the assumed power of narratives and historical examples of stories influencing cognitions, affective responses, and behaviors, very few studies have operationalized report evidence as a form of narrative, as noted by Baesler and Burgoon (1994). Of the studies that do incorporate a form of narrative evidence, through scenarios or cases, results show that narrative evidence has an effect on attitudes and intentions that is greater than statistical evidence (e.g. Chang, 2008; de Wit, Das, & Vet, 2008; Hamill, Wilson, & Nisbett, 1980).

There is debate regarding how narratives influence audiences. In other words, what mechanisms make narratives persuasive? What factors encourage or discourage
narrative persuasion? What makes narratives a more compelling type of evidence than statistical information? Given the varied findings about the persuasiveness of narrative and statistical evidence what factors make a difference? Scholars have cited transportation (Green & Brock, 2000), limited counterarguing (Slater, 1997), increased absorption into the text (Rubin et al., 1985; Singhal & Rogers, 1999), increased attitude accessibility (Slater, 2002), and identification with characters (Cohen, 2001) among many other factors as possible explanations for the effectiveness of narrative persuasion.

One group of researchers has identified four aspects of narrative evidence that help explain why narratives can be an effective tool in health communication (Kreuter, Green, Cappella, Slater, Wise, Storey, Clark, O’Keefe, Erwin, Holmes, Hinyard, Houston, & Woolley, 2007). Capabilities of narratives include, “overcoming resistance, facilitating information processing, providing surrogate social connections and representing emotional and existential issues” (Kreuter et al., 2007). Whereas these capabilities have been proposed for examining cancer prevention and treatment messages, it is likely these capabilities, especially the first two, hold true for other health related issues as well. Similar to what has been written in general persuasion literature, these capabilities represent affective, cognitive, and social aspects of the persuasiveness of narrative evidence.

Chang (2008) found that advertisements that used narrative evidence were able to get participants more involved with the characters and the message, express more sympathy, and express more willingness to comply with appeals to seek help. In other words, the narrative evidence appears to affect the affective and cognitive responses of the participants. In addition to these responses, it appears that the narrative evidence
affected participants’ behavioral intentions. Similarly, de Wit et al. (2008) found that narrative evidence had a greater effect on behavioral intentions than did statistical evidence. This study seeks to build on studies such as the ones cited in this section to investigate factors that make health risk messages effective persuasive tools.

Based on the historical and empirical examination of narrative evidence and the preceding literature on narrative evidence versus statistical evidence, this study proposes a main effect for message type:

H2: Risk information presented as narrative evidence (as opposed to statistical evidence) will produce more persuasion as measured in terms of perceived message persuasiveness and behavioral intentions.

Based on the literature presented on framing of risk messages and effects of message type on persuasion it is not clear how message frame may affect different message types. Literature on loss framing and rationale from the negativity bias literature suggest that loss-frames attract the most attention and impetus for action. However, it is not clear from the literature if or how loss frames will interact with message type for a health risk message presented as a news story. The primary study that sheds light on this issue is Cox and Cox (2001), which examined the role of evidence and framing in the detection of health problems and found that negative anecdotal evidence in the form of advertisements produced more informational value to participants and more message consistent behavioral intentions. Another study that examined message type and framing found that loss-framed informational messages produced more purchase intentions, attitudes toward the brand and attitudes toward the advertisement than loss-framed exemplar messages (Dardis & Shen, 2008). However, because the evidence was
presented in the form of advertisements rather than news stories and the issues examined in these studies are different from examining a public health issue like driving while distracted, it is unclear whether the evidence types and frames will interact in the same way. Therefore, research question one is proposed.

RQ1: Will frame (loss versus gain) interact with message type (narrative versus statistical) to affect persuasion as measured through perceived message effectiveness and perceived behavioral intentions?

*Transportation*

Transportation is one mechanism that can explain why narratives influence people. Transportation can be defined as a state where readers or viewers of stories become “absorbed in the narrative world, leaving the real world, at least momentarily, behind” (Green & Brock, 2002, p. 317). Furthermore transportation is conceived of as an active process whereby audience members contribute to the story to the extent that “all of the person’s mental systems and capacities become focused on the events occurring in the narrative” (p. 324). In other words, transportation puts central focus and significant energy onto the narrative that seems to prohibit access to knowledge about the real world. Green and Brock (2000) write: “This loss of access may occur on a physical level – a transported reader may not notice others entering the room, for example – or, more importantly, on a psychological level, a subjective distancing from reality” (p. 702).

Additionally, transportation theorists explain that the emotional and motivational involvement of audience members in the narrative plays an important role in their effectiveness (Green, 2008; Green & Brock, 2000). From the perspective of someone interested in risk communication messages used to affect changes in beliefs, attitudes, or
actions, transportation offers “people return from being transported somewhat changed by the experience” (Green & Brock, 2000, p. 702).

Tests of the persuasiveness of narrative transportation have shown highly transported individuals have more beliefs consistent with the story, more positivity toward the story protagonist, and less counterarguing than those with lower levels of transportation (Green & Brock, 2000). Transportation has also been associated with positive attitudes toward advertisements and brands (Escalas, 2004).

The reduction or inhibition of counterarguing is often cited as a key mechanism through which narratives work (Green & Brock, 2000; Kreuter et al., 2008; Slater, 1997). Reduced counterarguing is said to occur with narratives because transportation (and related concepts of flow and absorption) are “incompatible” with counterarguing (Slater & Rouner, 2002, p. 180; Slater, 1997). Slater and Rouner’s (1996) results indicated that the use of anecdotal evidence reduced the tendency to counterargue as compared to those presented with statistical information, at least in the case of people who were value-protective, those who “tend to defend their existing values” (p. 214). Furthermore, Slater and Rouner (2002) suggest “counterarguing is suppressed to the extent that one is absorbed or transported by a narrative” (p. 184).

Affective responses toward messages and characters can also explain why narratives work. Since “character is the driving force in fiction” (Surmelian, 1969, p. 139), characters likely are an important part in producing narrative-based belief change (Green & Brock, 2000, p. 702). In this study Green and Brock found that transported people reported increased positivity toward sympathetic protagonists. These positive feelings would be at odds with a mechanism such as counterarguing because it would
disrupt the transportation process and in doing so would likely disturb any persuasive attempts.

Just as when people simulate how they will feel when constructing a hypothetical scenario in the real world, people simulate their own version of the story being presented and experience emotions based on this simulation (Oatley, 2002). “As the simulation runs, emotions occur to readers and watchers that depend on psychological processes such as identification with a protagonist, sympathy for story characters, and activation of emotional autobiographical memories that resonate with story themes” (p. 41). One characteristic of emotional involvement with characters is that readers and watchers do not simply acknowledge how that character may be feeling (e.g. Lance Armstrong must have been shocked and angry to learn that he had another cancer diagnosis.), readers and watchers experience their own emotions about the situation. “By drawing on our ability to simulate social interaction, and to experience others’ emotions, we practice understanding of others” (p. 65). Oatley (2002) concludes that through engagement with a story and its characters, readers may likely begin to feel emotions toward people or characters that previously had been extended none.

Involvement with characters also has implications for the effectiveness of narratives. Involvement has been given varied definitions, some of which include an emotional aspect as discussed above. However, one way to begin to look at involvement with characters is to look at identification. Oatley (1999) and Cohen (2001) use this concept to relay how an audience views the story through the characters’ eyes. In Cohen’s (2001) in depth review of identification and its use in media studies, it’s clear that researchers are interested in whom people identify with and the consequences of this
identification, but what is less clear is the nature of identification itself. “Within media studies, identification with media characters has generally been understood to denote feelings of affinity, friendship, similarity, and liking of media characters or imitation of a character by audience members” (Cohen, 2001, p. 249).

Identification can be defined as “adopting the identity and perspective of a character” (Cohen, 2001, p. 251). This definition has similar components as transportation as Cohen conceptualizes identification as a process where people lose self-awareness and experience “heightened emotional and cognitive connections with a character” (p. 251). On a side note, identification with media characters or those found in narratives is different from identification with peers or parents because “identification with media characters is a result of a carefully constructed situation” (p. 251).

While liking, similarity, and other affective responses toward characters are sometimes conceptualized as different ways by which people interact with characters (Cohen, 2001), others conceptualize these as different aspects of identification (Green, 2006). Results from Green (2004) suggest that similarities between readers and characters can increase transportation. Green (2004) found that readers with personal experience related to the story were more transported by the story than those with only similar demographic characteristics. Therefore, it is important to use stories “that match the audience on key characteristics (values, experiences, and so on)” (Green, 2006, p. S166).

A brief summary of the transportation literature explains how narratives can influence individuals’ attitudes and intentions. When people are transported into the text they tend to have fewer counterarguments and more affective reactions to messages because their attention is absorbed in the messages, which include elements such as
characters and situations with whom audience members can identify. These elements are absent in a story that focuses only on statistical information.

Based on the preceding literature this study proposes a main effect for evidence type on transportation:

H3: Narrative evidence will be more transporting than statistical evidence.

In addition to the literature cited above supporting the idea that narrative evidence will be more transporting than statistical information, the literature also suggests that transportation is linked to attitude change (Green & Brock, 2000). Transportation is proposed to persuade through a variety of mechanisms, means such as reduced counterarguing, reduced disbelief, and an increase in affective response. If transportation can explain why narratives are more persuasive through its links to attitude change and behavioral intentions, it appears that transportation has the potential to mediate the effects of framed messages. This study proposes that loss-framed messages and narrative evidence types will elicit the most perceived message persuasiveness and message consistent behavioral intentions. Although it is unclear whether these two types of frames will interact, it is possible that transportation may be able to explain the effects of frames on behavioral intentions. Other researchers have found that transportation can act as a mediating variable (e.g. Green & Brock, 2000; Escalas, 2004). Transportation has been found to mediate relationships between mental simulation and attitudes toward advertisements (Escalas, 2004) and instructions and beliefs (Green, 2000). Related concepts such as message involvement have also been found to mediate relationships between evidence type and evaluations (e.g. Polyorat et al., 2007). However, these studies used different kinds of stories from the present one. Green (2000) used fictional
stories and Escalas (2004) used advertisements to examine the role of transportation in the persuasiveness of narratives, whereas the present study uses loss- or gain-framed news stories. Therefore a second research question is proposed.

RQ2: Does transportation mediate the effects of message type and framing on behavioral intentions?

Because transportation is linked to attitude change, as are some of the mechanisms that explain how transportation persuades, mechanisms such as reduced counterarguing and increases in affective response, this research sought to investigate if mechanisms such as these would mediate transportation’s effects on behavioral intentions. It is unclear how affective or cognitive responses, which have mediated attitudes in the studies mentioned above (i.e. Green, 2000; Escalas, 2004), may affect news stories with gain or loss frames. Because prior research has not examined transportation as a mediator of the effects of message type and framing on behavioral intention or the mechanisms that mediate transportation’s effects in a health context, this study uses Escalas’ (2004) mediation framework where there is a two-step mediation model. Escalas (2004) proposed a model where transportation mediated the effects of mental simulation and attitudes toward advertisements and brand evaluation. Escalas (2004) then proposed that positive affect and reduced counterarguing would mediate the effects of transportation and attitudes and evaluations. Results were consistent with the proposed model. Therefore, with this model in mind, this dissertation seeks to discover if cognitive response, affective response, and perceived message persuasiveness mediate the effects of transportation on behavioral intentions in a health context. Although Escalas’ (2004) results showed that positive affect mediated transportation’s effects on
attitudes, there is no reason to think that transportation could not also generate negative affective responses. In the health communication context many messages, including two of the messages in this research, have serious consequences for the audience. These health risk messages certainly have the ability to elicit fear, anxiety, sadness, and anger. Therefore, in order to build on Escalas’ (2004) results, research question three was proposed.

RQ3: Do affective responses, cognitive responses, and perceived message persuasiveness mediate the effects of transportation on behavioral intentions?

The proposed model shows that the negative narrative condition will lead to an increase in transportation. Transportation, then, will affect participants’ cognitive responses, affective responses, and perceived message persuasiveness, which is a measure of participants’ attitudes. The model proposes that these three variables will mediate the effects of transportation on behavioral intentions. Furthermore, the model proposes that transportation will act as a mediator itself in the relationship between narratives and behavioral intentions. Similar to Escalas’ model, this model proposes that transportation will have both direct and indirect effects on behavioral intentions. See Figure 1 for the figural representation of the proposed model.
Chapter 3

Method

Pretest

The purpose of the pretest was twofold: to ensure the messages were perceived as credible among participants and to serve as a check on the manipulation of the independent variables. Four messages were created for the pretest. Thirty-two students participated in a pre-test of the stimulus materials (gain narrative $N = 8$, loss narrative $N = 8$, gain statistical $N = 8$, loss statistical $N = 8$). The participants’ ages and other demographic indicators were similar to the participants in the full experiment.

The pretest results indicated that message credibility measured through perceived message credibility (Loss-frame narrative $M = 8.2$, $SD = 1.60$; Gain-frame narrative $M = 8.75$, $SD = 1.49$; Loss-frame statistical $M = 7.50$, $SD = 2.62$; Gain-frame statistical $M = 8.75$, $SD = 1.04$), believability (Loss-frame narrative $M = 9.0$, $SD = 1.20$; Gain-frame narrative $M = 9.5$, $SD = 0.53$; Loss-frame statistical $M = 7.6$, $SD = 2.56$; Gain-frame statistical $M = 9.0$, $SD = 1.07$), and truthfulness (Loss-frame narrative $M = 9.38$, $SD = 0.92$; Gain-frame narrative $M = 9.38$, $SD = 0.74$; Loss-frame statistical $M = 7.88$, $SD = 2.69$; Gain-frame statistical $M = 8.88$, $SD = 0.99$) did not vary as a function of message framing, $F (3, 26) = 1.62$, $p = 0.21$, partial $\eta^2 = .16$, or message type, $F (3, 26) = 1.75$, $p = .18$, partial $\eta^2 = .17$. 
The results from the pretest also indicated that the manipulation checks were successful; participants correctly identified message frames and evidence type based on condition. Descriptive statistics for the framing manipulation indicated that the framing manipulation was successful, participants in the loss-frame condition perceived the message as emphasizing costs ($M = 2.50, SD = 1.89$) and losses ($M = 2.42, SD = 1.89$) of driving while distracted with cell phones and participants in the gain-frame condition perceived the message as emphasizing the benefits ($M = 5.69, SD = 3.84$) and gains ($M = 6.25, SD = 3.66$) of avoiding cell phone usage while driving. ANOVA results indicated that there was a significant difference between the conditions for both costs and benefits, $F(1, 30) = 8.85, p < .01$, and losses and gains, $F(1, 30) = 13.68, p < .001$.

Manipulation checks for evidence type were also successful in the pretest. Descriptive statistics for evidence type indicated that participants in the narrative condition perceived the message to emphasize the character’s story ($M = 6.75, SD = 2.14$) and the character’s actions ($M = 6.25, SD = 2.57$). Participants in the statistical condition perceived the message to emphasize facts ($M = 1.81, SD = 1.22$) and research ($M = 2.06, SD = 1.61$). ANOVA results indicated that there was a significant difference between the conditions for both character’s story and factual information, $F(1, 30) = 63.99, p < .001$, and character’s actions and research, $F(1, 30) = 30.51, p < .001$.

**Main Experiment**

Upon the successful tests for message credibility and manipulation of the independent variables, the full experiment was conducted.

This study used a 2 (Message Type: Narrative, Statistical) X 2 (Framing: Gain, Loss) between subjects post-test only design. Participants completed the study in the
classroom where they were recruited or signed up for one of six lab sessions where they were randomly assigned to one of the treatment conditions (see Table 1).

**Procedure**

All experimental sessions were conducted in computer laboratories or classrooms where participants were recruited. Upon arrival, participants were greeted by the researcher and were informed that they would be participating in research about message framing. After collecting the completed informed consent forms, the researcher distributed the first part of the questionnaire that included measures for behavioral inhibition system and behavioral activation system. Upon completing this questionnaire, the second packet was distributed to the participants. This packet included stimulus materials and the second questionnaire. Participants were instructed to read the stimulus materials before examining the subsequent pages in the packet. The second questionnaire included measures for manipulation checks and measures of perceived message persuasiveness, attitudes, intentions, affect, cognitions, transportation, and demographic information.

**Stimulus Materials**

Four messages were created for this study. Two of the messages were news stories created to reflect narrative structure and included characters and dramatic elements. The other two messages were created to reflect straight news type stories that depend on statistical information and recommendations from organizations. Characters and dramatic elements are not present in these statistical stories.

Narrative stories were written in the third person. The loss-framed narrative gives an account of a 21 year old who has survived a crash caused by a distraction from her cell
phone. The story was adapted from multiple reports from the Pittsburgh Post-Gazette and the Patriot News about a local woman who suffered multiple traumatic injuries and the death of her parents by a driver distracted by his cell phone. The story was designed to emphasize the costs of driving while distracted by cell phone usage.

In the gain-frame condition, the character and her family narrowly avoid an accident because of good driving habits, which include letting calls go to voicemail when driving. This story was also loosely adapted from the Pittsburgh Post-Gazette and The Patriot News articles. The story contains the same information about the morning of the close call and her employment plans. It also provides background information about the issue. The two conditions were developed to be roughly the same length.

Narrative stories were created to reflect gain or loss framing by emphasizing the benefits of avoiding using a cell phone while driving and by the family’s safety versus emphasizing the costs of using a cell phone while driving and by the family’s tragic accident. The character was created to match the audience on key characteristics (similarity, identification, realism) as suggested by the literature. Graduating from college and beginning a new job would be something the audience would identify with. Additionally, the story provided concrete, vivid imagery. The gain- and loss-frames were modeled after examples from the literature.

The second set of messages, statistical evidence, contained facts and recommendations, but no characters. These messages were developed after researching websites dedicated to driving safety. The message was modeled after a story on LiveScience.org, which presented results from various studies about the numbers of accidents and deaths caused by drivers using cell phones and the risks drivers take while
driving distracted by cell phones. The loss-framed statistical evidence message emphasized the costs of driving while distracted by cell phone usage and the number of lives lost and accidents caused yearly from this risky behavior. The gain-framed statistical evidence message emphasized the benefits of not using a cell phone while driving. These items included increased awareness and reaction times compared to those using cell phones while driving. The gain-framed evidence message also emphasized the number of lives that could be saved by taking this recommendation.

Participants

A total of 199 students participated in the full experiment. Six participants did not fully complete the questionnaire and were excluded from the analysis. Therefore 193 participants’ responses were used in the analysis. Participants were recruited from undergraduate courses at The Pennsylvania State University and Shippensburg University and received extra credit for their participation. The sample consisted of 62.3 percent females and 37.7 percent males. Participant age ranged from 19 to 44 years ($M = 21.24$, $SD = 2.39$). The majority of the sample were Caucasian (82.1%), and the rest of the sample included 10% African American, 2.6% Asian, 1.1% Latino, and 4.2% Other.

Participants also answered a battery of questions about their cell phone usage while driving. A large majority (91.4%) admitted to driving while talking on cell phones at least some of the time. This number, while not surprising, is much higher than the Nationwide Driving While Distracted survey (82%). Only approximately 5% admitted they had been involved in an accident because of being distracted by their phone. Another 4% were unsure if their cell phone usage was a contributing factor in an accident. Nearly one-third (29.6%) had a family member or friend involved in an
accident because of a cell phone. For this group, nearly one-third (29.4%) of participants were not worried about causing an accident and, surprisingly, the remainder of the participants (70.5%) expressed concerns about their ability to multitask while driving. However, participants did express even more worry about others causing accidents because of distractions from cell phones (88.3%).

**Manipulation Measures**

To assess the effectiveness of the framing manipulation, participants rated their opinions on two items with 10-point scales ranging from 1 (*message emphasizes costs, losses*) to 10 (*message emphasizes benefits, gains*). To assess the effectiveness of the story type manipulation, participants rated their opinions on two 10-point scale items ranging from 1 (*message emphasizes factual/statistical information*) to 10 (*message emphasizes a character’s story/actions*).

**Dependent Measures**

*Transportation.* Transportation into the messages was measured using 5 items adapted from Green and Brock (2000). The items included: *While I was reading the message, I could easily picture the events in it taking place; I was mentally involved in the message while reading it; I wanted to learn about the story’s ending; The message affected me emotionally; I could picture myself in the story*. Items on the scale were summed and averaged to measure transportation (Cronbach’s $\alpha = .83$).

*Intention.* Behavioral intentions were measured using three 10-point scales designed to capture a variety of intentions. Items that formed the intention scale include: *I will not use my phone when driving; I will only answer my cell phone when driving if*
there is an emergency; I plan to turn my cell phone off while driving. These items were summed and averaged to create a measure of behavioral intentions (Cronbach’s $\alpha = .73$)

Perceived Message Persuasiveness. Participants also rated seven items on 10-point semantic differential scales that were used to create a measure for perceived message persuasiveness: persuasive; effective; convincing; compelling; credible; believable; clear. These items were summed and averaged to create a measure for perceived message persuasiveness (Cronbach’s $\alpha = .91$)

Affect. Affective responses were measured using 10-point scales ranging from 0 (None of this feeling) to 10 (A great deal of this feeling) for each of the following: surprised, startled, astonished, fearful, afraid, scared, sad, dreary, dismal, happy, content, cheerful, irritated, angry, annoyed, and aggravated (Shen & Dillard, 2007; Yan, 2008). Surprised, startled, and astonished items were summed and averaged to create a measure of surprise (Cronbach’s $\alpha = .92$). Fearful, afraid, and scared were summed and averaged to create a measure of fear (Cronbach’s $\alpha = .97$). Sad, dreary, and dismal were summed and averaged to create a measure of sadness (Cronbach’s $\alpha = .91$). Happy, content, and cheerful were summed and averaged to create a measure of happiness (Cronbach’s $\alpha = .90$). Irritated, angry, annoyed, and aggravated were summed and averaged to create a measure of anger (Cronbach’s $\alpha = .95$).

Cognition. Cognitive responses were measured through a thought-listing task. Participants were asked to list all the thoughts that came to mind while reading the message. They were reminded that there are no right or wrong answers and not to worry about spelling, grammar, and punctuation.
The thought listings were coded among three possible categories: positive, negative, and neutral, similar to Escalas’ (2004) method. The researcher conducted a training session with one additional coder to ensure thought listings were properly coded. Positive thoughts included story consistent thoughts, positive self-reflection, comments indicating the positive quality of the story, and thoughts that offered solutions to the problem. Negative thoughts included thoughts that questioned the facts, counterargued the message, and comments of message bias. Neutral thoughts included factual statements about family or friends cell phone usage and thoughts represented as neutral words that did not have a valence associated with them (ex: car). Intercoder reliability was measured through computing percentage of total agreement and Scott’s pi for 15 percent of the participants. Total percentage agreement for the two coders was 98 percent and Scott’s Pi = .94.

The total number of positive thoughts were added together and then subtracted from the total number of negative thoughts to create a supportive thought index. Fewer negative thoughts were considered to be an indicator of reduced counterarguing.
Chapter 4

Results

This study sought to examine how health information presented in different frames and through different types of evidence would affect message persuasiveness and behavioral intentions, among other variables. The study predicted main effects for message frame and message type whereby loss-framed messages and narratives would be the most persuasive. The study also asked if message frame and message type would interact, if statistical messages could also be transporting, albeit less so than narrative messages, and what variables might mediate the proposed relationships. These hypotheses and research questions could help shed light on how the news persuades audience members to adopt healthy attitudes toward risky behaviors. In addition to explaining how the news may persuade, these hypotheses and research questions may be useful to strategic communicators who wish to affect behavioral or attitudinal changes toward risky behaviors.

This chapter examines the effects of message type and message framing on the dependent variables: transportation, affective and cognitive responses, perceived persuasiveness, and behavioral intentions through a series of factorial analyses of variance (ANOVA). Additional t-tests were conducted as planned contrasts for the interaction effects. Path analyses tested mediation of dependent variables and analyses for model fit examined the proposed and respecified models.
Manipulation Checks

Two between-subjects univariate analyses of variance (ANOVA) were conducted to check the manipulations of message type and framing. To examine the manipulation of framing between conditions, message valence and message type were entered as the fixed factors and “Message emphasizes losses/gains” was entered as the dependent variable. The analysis revealed a significant effect of message framing on message emphasized losses or gains for the two conditions, $F(1, 192) = 42.17, p < .001$, partial $\eta^2 = .18$. Table 2 presents the means for the manipulation check.

The second univariate analysis of variance was conducted to examine the manipulation of message type. For this analysis, “Message emphasizes character’s actions/statistical research” was entered as a dependent variable and message type and message frame were entered as the fixed factors. The analysis revealed a significant main effect for condition, $F(1, 192) = 201.16, p < .001$, partial $\eta^2 = .51$. Table 3 presents the means for this manipulation check. The results indicate that the manipulation checks for message framing and message type were successful.

Potential Covariates

Several questions on the questionnaire pertained to potential covariates: familiarity with the subject, prior accident(s) related to driving while talking on cell phone for self, family members and friends, and demographic information (ethnicity, age). A multivariate analysis of variance revealed that none of these potential covariates significantly covaried with the dependent variables.
Descriptive Statistics

Prior to the analysis of the hypotheses and research questions, measures of central tendency, distribution, and measures of dispersion were examined for the dependent variables. Means, standard deviations and skewness are reported. Descriptive statistics for the dependent variables are presented in Table 4.

Results from the supportive cognitions index showed that the loss-framed narrative condition produced the greatest number of positive thoughts ($M = 3.40, SD = 3.14$) toward the message, which was followed by the gain-framed statistical condition ($M = 2.32, SD = 2.82$), gain-framed narrative condition ($M = 1.92, SD = 2.78$), and loss-framed statistical condition ($M = 1.33, SD = 2.46$). The analysis for affective responses showed that the loss-framed narrative condition produced the most fear ($M = 5.87, SD = 3.09$), followed by the gain-framed statistical ($M = 4.61, SD = 3.06$), loss-framed statistical ($M = 4.29, SD = 3.00$), and gain-framed narrative ($M = 3.73, SD = 3.17$).

Descriptive statistics for transportation revealed the highest level of transportation in the loss-framed narrative condition ($M = 7.64, SD = 1.64$), followed by the gain-framed narrative ($M = 6.97, SD = 1.99$), gain-framed statistical ($M = 6.12, SD = 1.82$), and loss-framed statistical ($M = 5.70, SD = 1.99$) conditions. The analysis for perceived message persuasiveness showed the most persuasiveness in the loss-framed narrative condition ($M = 8.28, SD = 1.41$) followed by the gain-framed narrative ($M = 7.74, SD = 1.81$), gain-framed statistical ($M = 7.74, SD = 1.45$), and loss-framed statistical ($M = 7.02, SD = 1.76$) conditions. Results for behavioral intentions revealed the highest message consistent behavioral intentions in the loss-framed narrative condition ($M = 4.98, SD = 2.05$). Other conditions showed less message consistent behavioral intentions.
(gain-framed statistical: $M = 4.75$, $SD = 2.35$; gain-framed narrative: $M = 4.24$, $SD = 1.89$; loss-framed statistical: $M = 3.97$, $SD = 1.89$).

When checking for the normality of the distribution, skewness should fall between -1.0 and +1.0. All dependent variables with the exception of perceived message persuasiveness fell within this guideline. However, because there were more than 25 participants in each condition and a similar number of participants in each cell, the statistical tests were considered robust.

**Hypothesis Testing for H1 and H2**

Based on the gain and loss framing literature, H1 predicted that loss frames would be more effective with health messages that have some risks associated with them than would gain-framed messages. Scholars give varied explanations for the persuasiveness of loss-framed messages. Several explanations include an increase in affective responses, increased attention to the risk in order to avoid it, and more generally the negativity bias. To rephrase H1, perceived message persuasiveness and behavioral intentions will vary as a function of message valence.

A 2 (message type) X 2 (message frame) multivariate analysis of variance (MANOVA) was conducted to examine the effects of framing (H1) and message type (H2) on perceived message persuasiveness and behavioral intentions. The analysis did not reveal a main effect for message frame, Wilk’s $\lambda = .99$, $F (2, 194) = .78$, $p = .93$, partial $\eta^2 = .001$. For the current study, frame alone did not have an effect on perceived message persuasiveness (gain condition $M = 7.74$, $SE = .16$; loss condition $M = 7.65$, $SE = .16$) or behavioral intentions (gain condition $M = 4.50$, $SE = .21$; loss condition $M = 4.49$, $SE = .21$). Therefore, the results do not support H1. This means that news stories
about health risks framed as either gains or losses have little effect on readers perceived persuasiveness of the message or their behavioral intentions.

Based on the literature on the persuasiveness of different message types and narrative transportation, H2 predicted that narratives would be more effective with health messages than would statistical messages. Researchers explain the persuasiveness of narratives in terms of the audience members’ affinity toward characters, the narrative structure wherein there lies a beginning, middle, and end, and audience members’ reduced ability to counterargue the character’s experience. In other words, H2 predicted that perceived message persuasiveness and behavioral intentions will vary as a function of message type where narratives would encourage an increase in perceived message persuasiveness and message consistent behavioral intentions.

The analysis revealed a significant main effect for message type, Wilk’s λ = .96, \(F(2, 194) = 3.77, p < .05\), partial \(\eta^2 = .04\) and a significant Message Type X Framing interaction, Wilk’s λ = .95, \(F(2, 194) = 5.18, p < .01\), partial \(\eta^2 = .05\). The univariate analyses for perceived message persuasiveness produced a significant main effect for message type where participants in the narrative condition reported more message persuasiveness (\(M = 8.00, SE = .16\)) than those in the statistical condition (\(M = 7.37, SE = .16\)), \(F(1, 195) = 7.54, p < .01\), partial \(\eta^2 = .04\). Univariate analyses for behavioral intentions revealed that message type alone does not predict behavioral intentions. Participants in the narrative conditions (\(M = 4.61, SE = .21\)) did not report more message consistent behavioral intentions than those in the statistical conditions (\(M = 4.36, SE = .21\)), \(F(1, 195) = .73, p = .39\), partial \(\eta^2 = .004\). However, this effect can be examined in
light of the significant Message Type X Framing interaction, which will be examined in RQ1.

The univariate analyses provide partial support for H2. Perceived message persuasiveness varies as a function of message type, but behavioral intentions do not. In the context of this study, these results mean that news stories about health risks that are presented as someone’s personal story versus scientific, statistical information about the risks is perceived to be more persuasive.

*Analysis for RQ1*

These results also provide insights for RQ1, which asked if message type and framing interact to increase perceived message persuasiveness and behavioral intentions. The significant Message Type X Framing interaction, \( F(1, 195) = 7.42, p < .01, \) partial \( \eta^2 = .04, \) shows that for those who were exposed to a loss-framed narrative (\( M = 8.28, SE = .23 \)) compared to the other groups (gain-framed narrative (\( M = 7.74, SE = .23 \)) and loss-framed (\( M = 7.02, SE = .23 \)) and gain-framed (\( M = 7.74, SE = .23 \)) statistical conditions, the message was perceived to be more persuasive. Table 5 reports the means associated with this interaction. The figural representation of the message type and framing interaction is found in Figure 2.

Table 5 also shows that although perceived message persuasiveness did not vary as a function of message framing for all groups, participants in the negative narrative condition reported higher perceived message persuasiveness than the other groups. The means reported in Table 5 provide strong evidence that all messages were perceived to be persuasive, but the negative narrative condition was perceived even more so as all means
were much higher than the midpoint on the 10-point scale and statistical evidence supports a difference between these groups.

Further analysis of this interaction for perceived persuasiveness explained the results. Participants in the negative narrative condition expressed greater perceived persuasiveness ($M = 8.28, SD = 1.41$) versus those in the negative statistical condition ($M = 7.02, SD = 1.76$), $t(95) = 3.88, p < .001$. Furthermore, in comparing differences between the positive and negative conditions for narrative, the negative narrative ($M = 8.28, SD = 1.41$) condition produced more perceived persuasiveness than the positive narrative condition ($M = 7.74, SD = 1.81$), $t_{	ext{one-tailed}}(99) = 1.65, p = .05$. In other words, this suggests that the combination of loss-framed risk messages and narratives that include a personal story about health risk leads to more perceived message persuasiveness than do other message frames.

The results of the MANOVA also indicate a significant Message Type X Framing interaction for behavioral intentions. The loss-framed narrative condition prompted more message consistent behavioral intentions, $F(1, 195) = 6.78, p < .01$, partial $\eta^2 = .03$. ($M = 4.98, SE = .29$) when compared to the other conditions (loss-frame statistical: $M = 3.973$, $SE = .29$; gain-frame narrative: $M = 4.24$, $SE = .29$; gain-frame statistical $M = 4.75$, $SE = .29$). The figural representation of this interaction is found in Figure 3 (see Appendix B).

Further analysis of the message type X framing interaction reveal that the negative narrative ($M = 4.98, SD = 2.05$) condition produced greater message consistent behavioral intentions than the negative statistical condition ($M = 3.97, SD = 1.89$), $t(95) = 2.52, p < .01$. Additionally, the negative narrative condition ($M = 4.98, SD = 2.05$) prompted greater message consistent behavioral intentions than the positive narrative
condition \( (M = 4.24, SD = 1.89), t_{one-tailed}(99) = 1.88, p < .05 \). All this suggests that when risk information is presented as a loss-framed narrative there is a greater ability to influence behavioral intentions than other frames allow.

Hypothesis Testing for H3

The literature on transportation has largely been concerned with narrative texts. Therefore, H3 proposed that narratives would be more transporting than statistical messages.

In order to examine H3, a 2 (Message Type) X 2 (Message Frame) analysis of variance was conducted to examine transportation. The analysis revealed a main effect for message type, with participants rating narratives more transporting \( (M = 7.30, SE = .19) \) than statistical messages \( (M = 5.90, SE = .19), F(1, 195) = 27.83, p < .001, \text{partial } \eta^2 = .13 \). There was no main effect for message frame. However, the analysis revealed a Message Type X Message Frame interaction, \( F(1, 195) = 4.23, p < .05, \text{partial } \eta^2 = .02 \). Table 6 provides the means associated with this interaction, and shows that while transportation did not vary as a function of message frame, negative narratives were the most transporting. Further analysis indicated that this interaction occurred because those exposed to negative narratives expressed greater transportation \( (M = 7.64, SD = 1.64) \) than negative statistical messages \( (M = 5.69, SD = 1.99), t(95) = 5.25, p < .001 \). Negative narratives \( (M = 7.64, SD = 1.64) \) were more transporting than positive narratives \( (M = 6.97, SD = 1.99), t_{one-tailed}(99) = 1.83, p < .05 \). All this suggests that when health risk information was presented as a narrative that included a personal story and particularly when the story had a loss-frame, participants reported greater transportation into the text.
The analysis provides support for H3; narratives are more transporting than statistical messages. The analysis also provides some additional findings; negative narratives are more transporting than positive narratives and negative statistical messages.

*Analysis for RQ2 and RQ3*

Based on the literature from Green and Brock (2000) and Escalas (2004) several mediators were proposed for this experiment. The literature suggests that both cognitions and affect are important dependent variables that have been shown to mediate the effectiveness of transportation. Escalas (2004) proposed a two-step mediation model where mental simulation led to transportation. Affect and cognitions were proposed to mediate the effectiveness of transportation, and transportation was also theorized to directly link to attitudes and evaluations. This model was used in conceptualizing the current experiment. While the Escalas’ (2004) experiment was designed to test attitudes toward advertisements and brand evaluations, one of the goals of the current experiment was to examine if this type of framework could also be applied to news stories that communicate public health risks.

Based on prior research, this study proposed that loss-framed narratives would lead to an increase in transportation, which would influence behavioral intentions. The negativity effect provides some rationale for examining the differences between negative and positive information. Kellerman (1984), in an extensive review of the negativity effect literature, posits that in certain situations – ones that involve risk for example – negative information will be more heavily weighted than other types of information. One explanation for the negativity effect is a motivational one. People want to avoid negative
consequences and obtain positive ones (Kellerman, 1984). Both weighting negative information more heavily and the desire to avoid negative consequences suggest that negative information makes people think more. People tend to pay more attention to negative information and process the information to a greater extent especially when they are motivated to do so (Klein & Ahluwalia, 2005). One instance in which people may be motivated to pay attention to negative information is when they are confronted with a story that they can relate to – one that has characters with whom they can form emotional bonds. The loss-framed narrative presented in the current study will likely influence participants’ affective responses and motivate them to process the information. Therefore, this study proposed that the negative narrative condition would produce more persuasiveness and behavioral intentions than the other conditions. The conceptual model proposed three potential mediators of this relationship: affect, cognitions, and perceived message persuasiveness (see Figure 1). To test RQ2 and RQ3, AMOS was used to examine the model and the paths for each proposed mediator. Results from the conceptual and respecified models and analysis of the mediators follow.

The model’s fit for the data was assessed through three criteria: a nonsignificant goodness-of-fit chi-square statistic; a value of .90 or greater for Goodness of Fit (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Normed Fit Index (NFI); and a value of .10 or less for Root Mean Squared Error of Approximation (RMSEA) (Kelloway, 1998; Kline, 1998; Chen, Griffith, & Shen, 2005). Results indicated that the final model produced a good fit to the data, $\chi^2 = 6.83$, $df = 4$, $p = .15$ and GFI = .98, AGFI = .94, CFI = .98, and NFI = .97. The model also met the threshold for RMSEA (.06). While these tests for the model’s fit for the data indicate that this
model is a good fit to the data, analysis revealed that one of the paths was not statistically significant. In order to find the best model fit for the data, the nonsignificant path was eliminated. When the path to behavioral intentions was nonsignificant, which showed the variable did not mediate the relationship, it was eliminated from the model (Shen & Dillard, 2007). The analysis revealed that the relationship between supportive cognitions and behavioral intentions was nonsignificant ($\beta = .10, p = .14$). Therefore this path was eliminated from the model and the model was respecified to include all significant paths from the conceptual model. Despite the nonsignificant link between supportive cognitions and behavioral intentions, transportation lead to more supportive cognitions and fewer negative responses ($\beta = .35, p < .001$), which implies that participants who were transported through the negative narrative condition reduced their counterarguments as would be expected from the literature.

To examine the message type and framing interaction more fully and to better understand the potential mediating variables and the full model, a path analysis using AMOS was performed for the respecified model. The negative narrative condition versus all other conditions was specified as the exogenous variable; transportation, fear, perceived message persuasiveness, and behavioral intentions were specified as the endogenous variables. The model was evaluated on two criteria: significance of path coefficients and overall fit (Shen & Dillard, 2007). Transportation, fear, perceived message persuasiveness, and behavioral intentions were retained in the final model. Standard parameter estimates for the final model are presented in Table 7.

The respecified model’s fit for the data was assessed through the same criteria as the conceptual model. After testing the overall fit of the data for this model, results
indicated that the final model produced a good fit to the data. The chi-square statistic was nonsignificant ($\chi^2 = 3.378, df = 3, p = .34$) and GFI = .99, AGFI = .97, CFI = .99, and NFI = .98. The model also met the threshold for RMSEA (.03).

Because all the paths were significant and the model’s overall fit met the criteria discussed above, this model was considered a fit for the data. Figure 4 shows the model for this analysis and standardized coefficients between the variables.

The respecified model revealed that the negative narrative condition lead to transportation ($\beta = .29, p < .001$) and transportation had a direct effect on behavioral intentions ($\beta = .24, p < .001$). This suggests that negative narratives lead to increased transportation, which in turn lead to increased behavioral intentions. When transportation is included in the model, the direct link between negative narratives and behavioral intentions becomes non-significant ($\beta = -.04, p = .52$). Therefore, transportation fully mediates this relationship, as was investigated in RQ2.

Stated differently, the results show that negative narratives were more transporting than the other conditions, which enabled negative narratives to produce increased message-consistent behavioral intentions. Because transportation directly links to behavioral intentions, the results indicate that transportation mediates the effectiveness of negative narratives on behavioral intentions. In sum, then, transportation is an important variable not only in the model, but also in the effects that negative news narratives can have on behavioral intentions. The more that people are transported by a negative news story, the greater are their behavioral intentions to comply with the message.
In addition, the model shows that fear responses and perceived message persuasiveness mediated the effects of transportation on behavioral intentions. Transportation lead to an increase in fear responses ($\beta = .42$, $p < .001$), perceived message persuasiveness ($\beta = .51$, $p < .001$), and behavioral intentions ($\beta = .24$, $p < .001$). In addition to these relationships, fear responses ($\beta = .28$, $p < .001$) and perceived message persuasiveness ($\beta = .16$, $p < .05$) lead to increased behavioral intentions. (See Figure 4 for the representation of the respecified model). In short, increased fear responses help to explain why transportation causes more message consistent behavioral intentions. The model also shows that as readers are exposed to loss-framed narratives and they are transported into the text, their perceptions of message persuasiveness help to explain how transportation leads to increased message consistent behavioral intentions.

In other words, the model shows that transportation mediates the relationship between negative narratives and behavioral intentions. In addition to this mediation, the model shows that transportation also has a direct link to behavioral intentions. Furthermore, transportation has indirect effects on behavioral intentions through fear response and perceived message persuasiveness. In sum, then, the respecified model produces a good fit to the data and enables examination of the mediating variables.
Chapter 5

Discussion

One goal of this study was to examine the persuasiveness of different types of evidence (e.g. narrative, statistical) and framing (e.g. gain, loss). While many researchers have studied the persuasiveness of different evidence types or differently framed messages, few have investigated these in the context of a single study. With regard to risk communication, there has been little empirical examination of narrative persuasion. The prevalent use of narratives to convey risk information, and the lack of empirical explanations on the subject prompted the investigation for the current study.

The study additionally sought to investigate the model that could best explain the data and a potential mediator of the relationship between message types and framing and behavioral intentions, transportation. Along the same lines, the investigation sought to discover if fear responses, supportive cognitions, or perceived message persuasiveness mediate the relationship between transportation and behavioral intentions.

To do this investigation, the researcher designed a 2 (message type) x 2 (message frame) between-subjects experiment. Participants from two northeastern universities were asked to complete measures for the behavioral inhibition and behavioral activation systems and then were instructed to read one of the four stimulus messages. Upon reading the messages, participants completed measures for the manipulation checks and
for the dependent variables, cognitive response, affective response, perceived message persuasiveness, transportation, and behavioral intentions. The manipulation checks revealed that the participants correctly identified the type and frame of the stimulus messages. The dependent variables were measured through a series of 10-point Likert-scale type measures. Cronbach’s alpha reliability analyses indicated that the measures were able to accurately capture the desired constructs. As a result, the researcher conducted analyses for the hypotheses and research questions.

Overall, the results indicate that for risk messages, narratives as compared to statistical messages produced increased persuasion among participants. These results are consistent with other studies that involved risk and persuasion and studies that incorporated different types of evidence (e.g. Chang, 2008; de Wit, Das, and Vet, 2008; Polyorat, Alden, and Kim, 2007). Along the same lines, de Wit et al. (2008) found that narrative evidence prompted greater message consistent behavioral intentions than statistical evidence.

Narrative transportation theory is consistent with the results presented. Results indicate that participants exhibited fewer counterarguments when they reported greater transportation. Furthermore, the results show that transportation has both direct and indirect effects on behavioral intentions. First, transportation has a positive relationship with behavioral intentions; increased transportation leads to message consistent behavioral intentions. Moreover, transportation mediates the relationship between message type and framing and behavioral intentions. Second, in addition to the direct link between transportation and behavioral intentions and its role as a mediating variable, its
effects were also mediated. The effects of transportation were mediated by affective response, particularly fear, and perceived message persuasiveness.

In addition to examining the role of different message types on persuasion and how transportation may be able to explain some of these phenomena, the effects of message framing were investigated. While a main effect was discovered for message type, the same was not the case for message frame. The lack of evidence supporting stronger persuasive evidence for loss- versus gain-framed messages in this study has some support in the literature (e.g. Schneider et al., 2001). One explanation for the lack of a main effect for message framing on perceived persuasiveness and behavioral intentions comes from Klein and Ahluwalia (2005). Their research suggests the persuasive advantage for the loss-framed message may only be applicable to certain segments of the population. This study, which examined the negativity effect with regard to political advertising, found that the negativity effect may be more pronounced for those who already are motivated to have negative impressions of candidates.

Others have discovered that differences in message processing (Maheswaran & Levy, 1990) contribute to the effectiveness of gain- and loss-framed messages. Maheswaran and Levy (1990) reported that those who engaged in more message processing were influenced more by negatively framed messages whereas those who were less involved in the message were influenced by the positively framed message. These explanations could help to describe what happened in the current study as well. It is possible that differences in message processing affected the effects of loss- and gain-framed messages. Smith and Petty (1996) suggest that negatively framed messages prompt more processing especially when the frame that is used is unexpected. Although
expectations of loss or gain-framed information was not gathered for this study, this explanation is interesting given the results from the study.

There are two instances in which this phenomenon may have been at work. First, the perceived persuasiveness of gain-framed statistical evidence could be an example of employing a message frame that was unexpected. Although many public health campaigns focus on the positive effects of getting screened for a health issue or the positive effects of adopting the attitudes and behaviors in the messages, for issues like driving while distracted and driving while under the influence of drugs and alcohol, media messages tend to focus on the losses that can happen because of actions or inactions. So, presenting gain-framed statistical messages about driving while distracted was not likely to be what was expected among participants in this condition. Although the message may have been perceived to be unexpected, the argument for the benefits of not driving while distracted may also have been perceived to be strong. Smith and Petty (1996) suggest that the combination of an unexpected frame with strong arguments should be effective in motivating message elaboration.

Additionally, for some participants this presentation of an unexpected frame was a welcomed change from the typical “lecture” about driving while distracted. Several participants responded in their open-ended responses that they expected to read all the numbers of death and destruction that are associated with driving while using cell phones, but were surprised when instead they read about the lives that could be saved and driving skills that are enhanced when drivers do not multitask. Others responded by writing that their parents are always lecturing them about cell phone issues and all the negative things that can happen, but they rarely focus on the benefits of putting the phone down while
driving. This departure from the norm may have encouraged these participants to engage in more message processing than those in the loss-framed statistical condition.

Secondly, participants exposed to the loss-framed narrative reported the most surprise upon reading the stimulus materials. This surprise may not have come from exposure to an unexpected frame per se, but rather from the shock of the extent of the negative consequences of driving while distracted. It is possible that the same message elaboration occurs when a surprising message is coupled with strong arguments.

Similar to other studies that have found little difference in message persuasiveness based on framing (for a review see O’Keefe & Jensen, 2007), this study also found that frame alone could not influence perceived message persuasiveness or behavioral intentions. However, message framing did produce a significant interaction effect with message type wherein the negative narrative condition produced the most perceived persuasiveness. This interaction may help to explain one condition wherein loss-frames may be effective in communicating health risks, when narratives are used as the evidence type. Scholars have suggested that individual difference variables such as sensitivity to positive or negative outcomes (Rothman et al., 2006) or inhibition and activation systems (Mann et al., 2004) may also affect the effectiveness of gain and loss frames. However, for this study, behavioral inhibition and activation systems were measured, but did not produce the expected results. Curiously there were no differences between people based on BIS/BAS and framing in this study.

The message type and framing interaction can be explained in terms of increased affective responses, particularly fear responses, as suggested by the negativity bias and narrative bodies of literature. Although this study did not measure or manipulate
identification with the character, it appears that the character’s story elicited affective responses from the participants, especially those in the loss-framed condition. Message framing affected participants’ affective responses. This is demonstrated through participants exposed to the loss-framed messages reporting more surprise, disgust, fear, sadness, and anger than those in the gain-frame conditions.

One explanation for these results is provided by Baumeister et al. (2001) who write that negative events, in this case a loss-framed message about driving while distracted by a cell phone, produce stronger reactions than positive ones. In other words the negative narrative condition appears to be the most salient message to the participants. Participants in the negative narrative condition reported the most fear, and prior research and theorizing suggest that people “react more strongly to bad than good events” (Baumeister et al., 2001, p. 328). Therefore, if bad events present themselves in the form of narratives it appears that people pay attention to the information and this information evokes strong affective responses. When people are presented with a negative narrative, particularly one that relates to them, it seems they process the information to a greater extent.

This study also supports the results from the Cox and Cox (2001) study that found that negatively framed anecdotal advertisements produced greater positive attitudes toward the message and greater behavioral intentions than gain-framed anecdotal ads. The results indicate that this phenomenon works across different platforms. The loss-framed narrative news story and the loss-framed anecdotal advertisement produced similar effects on participants’ attitudes and intentions. It appears that when it comes to presenting information about health risks to an audience, loss-framed narratives and
anecdotes produce the most positive attitudes toward the message and the most message
consistent behavioral intentions.

Similarly to the Cox and Cox (2001) study, the current study also found that the
least two persuasive conditions were the gain-framed narrative and the loss-framed
statistical messages. A couple of factors could explain the lack of persuasiveness in the
loss-framed statistical condition. First, it is likely that this condition met the most
resistance among participants. Although negative information can serve as a call to action
and has the ability to be highly salient among participants, it is also possible that the
statistical information raised questions about the accuracy of the numbers. In other words,
participants engaged in more counterarguing in this condition than in the others.

A second explanation is a decrease in transportation. Participants in the loss-
framed statistical condition did not have the same transporting experience as participants
in the narrative condition, nor were they empowered by the gain-framed statistical
information, as were some of the participants. The combination of a message that
produced more counterarguments and did not give the participants the opportunity to
picture him or herself in the events, nor the opportunity to become emotionally attached
to the characters was the least effective in producing positive attitudes toward the
message and message consistent behavioral intentions.

In this study, transportation into the text was greatest for participants in the
negative narrative condition, which indicates they were lost in the text and they were not
expending cognitive resources to counterargue the message. Perhaps because more than
90 percent of the participants acknowledged their own risky behaviors with regard to
driving while using cell phones, the participants could readily identify with the events
that were represented in the story. In other words, it wouldn’t take much for the participants to see the possibility for their own involvement in a crash because of their behavior. In fact, many participants reported such thoughts in the open-ended thought listing exercise. In addition to participants recalling near accidents they experienced, participants reported how they would feel if their family members were suddenly taken away from them in such a way.

Although participants were not asked to mentally simulate the events presented in the story, it appears that many of them did so. This presents another possible explanation for the effectiveness of the negative narrative condition on transportation. As Escalas’ (2004) model shows, mental simulation has a positive effect on attitudes through the affective responses generated when people are transported into the text. The model presented in this study is different from Escalas’ (2004) model in one key way, the type of affective response that mediated the relationship between transportation and intentions. Escalas (2004) predicted that positive affect would mediate transportation’s effect on attitudes and evaluations whereas this study found that negative affective responses, namely fear, mediated transportation’s effect on behavioral intentions. This difference is likely the result of the type of stimulus materials (i.e. advertisements versus news stories) that participants were exposed to. However, the results indicate that transportation not only has the ability to generate positive emotions as Escalas (2004) reports, but the ability to generate negative emotions as well. The results indicate that the negative emotions elicited from transportation into the text do not contribute to increased counterarguments or a reduction of message consistent behavioral intentions. In fact, the results indicate the opposite. This may be the result of the negativity effect, whereby participants assigned
greater weight to the negative information or simply viewed the information as a threat that could not be ignored.

In addition to the consistency of the results with literature on the negativity bias and the persuasiveness of narratives, the results of this study are consistent with narrative transportation theory. Participants exposed to narratives about risk information reported increased transportation into the text, which lead to increased perceived message persuasiveness. This finding supports Green and Brock’s (2000) results, which showed that highly transported individuals reported more story consistent beliefs and more positivity toward the message. In other words, the components that comprise narratives, items such as having characters and situations that audience members can relate to, as well as the structure of narratives themselves, lend themselves well to the persuasive process.

Affective response is key to the role transportation plays in this process. As Green and Brock (2000) have written, the effectiveness of narratives is partly because of their ability to elicit affective responses from readers. The results from this study support this assertion as participants who reported higher levels of transportation also reported more surprise, disgust, fear, sadness, and anger than those with lower levels of transportation. The only statistically nonsignificant affective response was happiness. In the context of this study this response is appropriate as it is highly unlikely that messages about a risky behavior, whether framed as a gain or a loss, would produce much happiness.

Moreover, the results indicate that transportation mediates the relationship between the message type and frame interaction and behavioral intentions. In other words, the message type and frame directly affected transportation which itself lead to
behavioral intentions. Statistical messages and gain frames were less transporting and therefore less effective than the other condition. The finding that transportation is a mediating variable supports other reports that have found that transportation mediates the relationship between mental simulation and attitudes toward advertisements (Escalas, 2004) and between instructions and beliefs (Green, 2000). This result indicates that even in the context of framed news stories transportation acts as a mediator.

The path analysis of the full model investigated the potential mediators of the negative narrative condition and behavioral intentions. In addition to indicating transportation is a mediator, the results showed a direct link between transportation and behavioral intentions. This direct link indicates that transportation is an important predictor of behavioral intentions.

As reported in the previous sections, the results indicate that affective response is particularly important. In the test of the full model, affective response, fear in particular, was positively related to transportation and behavioral intentions. Therefore, it seems transportation increases affective responses, especially fear responses, which in turn influenced participants’ behavioral intentions. Stated differently, the loss-framed narrative encouraged higher levels of transportation, which was positively associated with greater fear and behavioral intentions to stop using cell phones while driving.

In addition, the model tested the effects of cognitive responses on transportation and behavioral intentions. Cognitive responses were examined because one of the arguments in support of transportation’s effectiveness is the reduction of counterarguments, which would lead to more persuasion. The results indicate that participants who reported greater transportation had fewer negative thoughts and a
greater number of supportive cognitions toward the message. Therefore, it appears that highly transported individuals exhibited a reduction in counterarguing compared to those less transported. In other words, supportive cognitions were positively related to transportation. However, as the conceptual model shows, supportive cognitions were not significantly related to behavioral intentions. Because supportive cognitions did not mediate the relationship between transportation and behavioral intentions, this path was dropped from the respecified model.

In addition to fear responses and supportive cognitions, the model tested perceived message persuasiveness. Perceived message persuasiveness was affected by transportation. In other words, those who reported more transportation reported the message to be more persuasive. One conclusion may be that narratives and framing can be combined to produce more perceived message persuasiveness. Perceived message persuasiveness was also positively related to behavioral intentions. Therefore, the results indicate perceived message persuasiveness mediates the effect of transportation on behavioral intentions.

*Implications*

The results from this study contribute to what is known about how people are persuaded by the media in the context of a couple of theories and concepts. This study sought to examine the extent to which gain and loss framing and narrative and statistical evidence types could affect message persuasiveness and behavioral intentions. Moreover, the study sought to examine potential mediators of the relationship between message type and message framing and behavioral intentions as well as the potential mediators of the relationship between transportation and behavioral intentions. The results indicate that in
agreement with Latimer, Salovey, and Rothman (2007) additional factors are necessary in order to explain the effectiveness of gain and loss-framed messages.

Moreover, the study contributed to prior research by revealing that while each message type and message frame was perceived to be persuasive, the negative narrative condition was the most persuasive for this health issue. Additionally, transportation mediated the relationship between the message type x message framing interaction and behavioral intentions. Therefore, transportation may be able to explain some of the reasons why loss-frames may be more effective for this type of health issue. In addition to this mediation, the results revealed that affective responses and perceived message persuasiveness mediate the relationship between transportation and behavioral intentions.

The framing results extend the conversation about the effectiveness of gain-versus loss-framed health messages to a major public health issue, driving while distracted. It appears that the same issues arise even when the issue emphasizes the adoption of behaviors that have different levels of riskiness or uncertainty of outcomes. Jensen and O’Keefe (2007) write, “If performing a given action is perceived to have relatively uncertain outcomes, whereas not performing the action is seen to have relatively certain outcomes, then prospect theory expects that there will be a greater preference for performing the action under loss-framed than under gain-framed conditions” (p. 637). Using this argument, one could postulate that talking on a cell phone while driving a car could be perceived to have an uncertain outcome. In other words, the perception may be that the probability of causing an accident while talking on the phone is the same as being distracted by other things in the vehicle: people, food, music, et cetera. Another scenario could be that not performing the action does not
preclude a person from getting into an accident, although the research suggests that person would be at a much lower risk for doing so. So, performing the action of putting down a cell phone while driving may have relatively uncertain outcomes. This uncertainty could help to explain the significant message type x message frame interaction.

This study suggests one factor that influenced the effectiveness of loss-framed messages, message type. The results indicated that two message features, frame and evidence type, influenced perceived message persuasiveness and behavioral intentions. Loss-framed narrative messages were stronger predictors of perceived message persuasiveness and behavioral intentions than were gain-framed narratives or gain- or loss-framed statistical messages.

Furthermore, the narrative message type results supported the literature in that narratives, in this case negative narratives, evoked more supportive cognitions and affective responses (Green, Strange, & Brock, 2002). In addition, narrative messages elicited more transportation than the statistical messages as was expected from the literature. Green (2000) writes that although there’s no reason to believe that narratives are the only type of message that elicit transportation, narratives should exhibit the most transportation because of their structure and development of characters. The results indicate this assertion to be the case; statistical messages can also be transporting, but are less so than narratives. These findings matter because they show that negative narratives are more transporting than other types of messages when it comes to risk communication. Prior research on transportation has not examined risk per se. Therefore, this presents an interesting contribution to the transportation literature.
Furthermore, the findings presented here have implications for the role of affect in transportation. Those who reported the most transportation reported the most negative affective responses. With the exception of surprise, it is clear to see that disgust, fear, sadness, and anger are negative affective responses. Those who reported high levels of transportation also experienced the most surprise, disgust, fear, sadness, and anger. It is likely that the negative narrative was especially adept at producing these responses given the nature of the story. It would be appropriate to experience these affective responses after reading a story about a family that was killed because of careless driving.

While transportation itself does not depend on a positive or negative story or a gain or loss-framed message to present itself, in this case, the loss-framed narrative was the best predictor of perceived message persuasiveness. Future research could examine the effects of different types of issues on transportation, affective responses, and perceived message persuasiveness.

Furthermore, the study confirmed that people are transported in news stories similarly to how they would be transported in other narrative accounts. However, news stories do present some slight differences from fiction or non-fiction texts. In particular, news stories are brief and often descriptions and details of characters are unnecessary or cumbersome to the point of the story. The results indicated that even a relatively short (500 words) news story elicits transportation from the audience.

The research also indicated that news stories may be used to communicate risk information. Furthermore, loss-framed news stories that communicate risk appear to have the ability to influence readers’ perceived persuasiveness of the message and their behavioral intentions to adopt the recommendations of the news story.
This research contributed to what is known about variables that mediate transportation. Tests for two of the three proposed mediators revealed that these variables partially mediate the effects of transportation on behavioral intentions. In sum, fear and perceived message persuasiveness help to explain how transportation has effects on behavioral intentions. These two mediators represent two important components of transportation, affective and cognitive response. Despite the fact that the cognitive response variable, as measured through a thought-listing index, did not mediate the relationship between transportation and behavioral intentions, the thought index did reveal reduced counterarguing and was associated with transportation. Furthermore, perceived message persuasiveness is arguably another measure of cognitive response as it measured such items as message persuasiveness, credibility, and clarity. In other words, these items ask participants to evaluate the message, which certainly requires them to expend cognitive resources.

In conclusion, then, these results provide several theoretical and practical contributions. It appears that this is the first study to examine the use of risk messages and transportation in the context of news stories, which extends what we know about transportation, namely that news stories that use personal stories are transporting. Indeed, loss-framed news stories do not only increase transportation, but they also reduce counterarguing much like what has been reported in previous studies. Moreover, in examining the model, it became clear that the affective and cognitive aspects of transportation lead to message consistent behavioral intentions. In addition, the results have implications and contributions for framing literature. It appears that in risk communication, loss-framed narratives are well-suited to elicit message consistent
behavioral intentions. In addition to the research revealing the message type main effect and the message type and framing interaction, the research produced a useful model for the data that explained how the negative narrative condition produced the most persuasive results and how transportation leads to behavioral intentions.

The results have practical implications as well. Narrative transportation is an important phenomenon to consider when thinking about health communication, especially when considering behaviors that may need to change in order to avoid the consequences of risky behaviors. Strategic communicators should seriously consider using campaigns or messages that have the ability to transport a target public in order to affect attitudinal and behavioral changes. In fact, some campaigns appear to use transporting stories for this purpose. Pfizer’s recent Chantix campaign features Quit Ambassadors whose main purpose is to tell the audience their stories. One of the first commercials in this campaign featured Herb, a middle-aged man from Northport, Alabama, who successfully quit using tobacco with the help of Chantix. Herb’s story could be the same story for many smokers. He was portrayed as a likable, average guy who needed a little help to be successful in kicking his habit. According to the results presented here, this campaign would be most persuasive if the Quit Ambassador’s story included discussion of the negative health conditions the ambassador suffered prior to quitting tobacco use.

Another campaign that has used stories to influence the behaviors of audience members is the “Death by Cell Phone” campaign. The National Safety Council in partnership with auto insurers began the campaign in July 2009 with hopes of raising awareness and educating the public about the dangers of driving while distracted. The
billboards feature pictures of people killed by drivers on cell phones and provided URLs for videos about the victims. These types of messages have the ability to transport the audience through emotional connections with the characters and supportive cognitions about their stories. It appears that efforts such as this campaign are making strides to focus the attention of both the public and lawmakers on this issue.

Those in the news media also have the ability to frame messages to encourage transportation. News stories that present risk messages - whether strategically placed or not - can influence attitudes, intentions, and behaviors.

Limitations

This study presented several limitations. The first limitation was concerned with the use of a single issue and a single story for each condition. While there is strong rationale for choosing a story about driving while distracted, as presented in the literature review, one cannot rule out the possibility that another story or in fact another issue would not have produced the same results. In future studies such as this one, it would be ideal to have at least one additional story or issue in each condition. The two messages for each condition could be examined to ensure similarities among the dependent variables. In this case it would be much easier to argue that a specific story was not the reason for the results, but rather the manipulated items in the story were able to predict the results.

Second, the study used a convenience sample of college-aged students from two universities. Although the results may not be generalizable, using this sample for the issue of driving while distracted is appropriate. The vast majority, more than 90 percent,
of the participants admitted to driving while distracted by their cell phones, therefore, at least the issue was a salient one for them.

An additional limitation for this study concerns the positive narrative condition. Although all four stimulus messages were perceived to be persuasive and credible, it is possible that participants questioned the newsworthiness of the positive narrative. Because the majority of participants in the study were students in communication programs they would perhaps be more likely than a random sample of people from the wider population to question this aspect of the message. It is unclear the extent that perceived newsworthiness could affect transportation, affective response, cognitive response, and perceived message persuasiveness. It would have been ideal to measure perceived newsworthiness as a potential moderator of the effects of message framing and message type.

**Future Research**

This research has investigated two message features that affect persuasion, message frame and message type through the lens of narrative transportation theory. The results have implications for the effectiveness of loss versus gain-framed messages, whereby transportation mediates the effectiveness of loss-framed messages. Future research could investigate whether this holds true for other types of health messages. For instance, future research could examine multiple types of health issues in the same study to investigate the role of perceived certainty of outcomes or the role of surprise in the effectiveness of message framing and transportation. Green (2008) has written that “individuals may be especially open to learning from stories when they have been surprised” (p. 50). This notion is similar to Smith and Petty’s (1996) assertion that when
people are presented with information framed in a way that is unexpected, they engage in more message elaboration. Additionally, Schank and Berman (2002) have posited, “expectation failures are the opportunities that lead to learning in most situations” (p. 299). When individuals are faced with surprising information, information that is contrary to their expectations, they need to investigate why this information is different from their existing schema for the information (Schank & Berman, 2002). Future research could investigate what these expectation failures from exposure to surprising information have on message processing and transportation.
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*Human Communication Research, 15*, 3-59.


Appendix A: Stimulus Messages

Message 1: Narrative – Negative

HARRISBURG – Jessica Richards doesn't remember the car accident that broke her collarbone, arm, leg and feet. The accident that shattered her pelvis and caused her traumatic brain injury. The accident that killed her parents.

The last thing Richards knew for sure was that she was driving home from her college graduation. The next thing she can remember is being transported from the hospital two months later.

She was using a cell phone at the time of the accident, police told her later, but Richards didn't remember the crash.

She doesn't ever want to remember, but she hopes others will. That's why she's visiting Harrisburg this week to announce her support for a law to ban cell phone use while driving.

The morning of May 18, 2008 began with a celebration. Richards, then 21, had just graduated with honors from Alvernia University in Reading and had a job lined up with Habitat for Humanity through the AmeriCorps program. Her parents came to see her walk across the stage and to move her things home to Dauphin County that afternoon.

That's where they were headed that evening when they drove through the intersection of Spur Road and U.S. Route 22 in Berks County. And that's where, according to police reports, they hit a dairy truck driven by Joseph Mains, 44.

Richards hit the dairy truck head-on.
Jessica Richards’ parents, Jay and Jean Richards, died at the scene. Jessica Richards was pried from the car and taken to Reading Hospital, where she lay in a coma for several days.

Cell phone distraction causes thousands of deaths and injuries in the United States every year, according to the Human Factors and Ergonomics Society.

The Harvard Center for Risk Analysis revealed important costs of driving while using cell phones. Compared to drivers not using cell phones, drivers using cell phones have increased risk of death and injury. They are four times more likely to have accidents. These drivers have reaction times similar to that of 70 year olds and are less adept than drivers with .08 blood alcohol levels.

For Richards, the healing process continues, both physically and emotionally. She has moved to West Chester, N.Y., to live with her boyfriend's family as her intensive rehabilitation continues. She hasn't been able to work since the crash, and she has therapy four days a week, mostly for her brain injury.

As her physical injuries mend, she'll be able to spend more time pushing the cell phone legislation. She knows her parents would be proud of her advocacy, she said.

"It's helping me deal with the whole process," Richards said. "If this law can get passed and save a lot of lives, then maybe there will be some meaning behind my parents dying."

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(WORD COUNT: 473)
HARRISBURG – Jessica Richards feels lucky to be alive. She credits her good sense and driving habits with her survival.

The morning of May 18, 2008 began with a celebration. Jessica Richards, then 21, had just graduated with honors from Alvernia University in Reading and had a job lined up with Habitat for Humanity through the AmeriCorps program. Her parents came to see her walk across the stage and to move her things home to Dauphin County that afternoon.

That's where they were headed that evening when they drove through the intersection of Spur Road and U.S. Route 22 in Berks County. And that's where they narrowly missed a dairy truck driven by Joseph Mains, 44.

Richards swerved to avoid the dairy truck that had crossed into her lane, police said. He nearly hit the Richards’ vehicle head-on, but both vehicles came to a stop in a nearby field, according to police reports.

Jessica Richards’ parents, Jay and Jean Richards, credit Jessica’s good reaction time with saving their lives. Richards was glad she did not have any distractions. “Just minutes before the truck crossed the lane my cell phone rang, but I just let it go to voicemail,” Richards said. “I’m grateful that I was focused on the road. I don’t want to think what might have happened.”

Richards represents a growing number of drivers who have decided to stop using their phones while driving. She knows first hand that this decision saves lives. “If people would pull over when they need to take a call, the roads would be a safer place,” Richards said.
Cell phone distraction causes thousands of deaths and injuries in the United States every year, according to the Human Factors and Ergonomics Society. These deaths and injuries are avoidable.

The Harvard Center for Risk Analysis revealed important benefits of avoiding cell phone use while driving. Compared to drivers using cell phones, drivers focused on the road are safer. They are four times more likely to arrive safely compared to drivers using cell phones. Drivers not using cell phones have increased reaction times and heightened awareness of the environment.

In addition to better reaction times, drivers not using cell phones have an increased ability to detect changes in the environment, which is essential to avoid accidents. The report showed that avoiding cell phone usage while driving will reduce thousands of deaths and hundreds of thousands of injuries annually.

For the Richards, they feel extremely lucky. Jessica has moved to Brooklyn, N.Y., to begin her work with Habitat for Humanity and her parents have organized a campaign to support a law to ban cell phone use while driving. She also supports her parents’ efforts, “If this law can get passed and save a lot of lives it will be well worth our efforts.”

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(WORD COUNT: 481)
A new study confirms that the reaction time of cell phone users slows dramatically, increasing the risk of accidents and tying up traffic in general, and when young adults use cell phones while driving, they're as bad as sleepy septuagenarians.

A 20-year-old driver behind the wheel with a cell phone has reaction times that are the same as a 70-year-old driver who is not using a cell phone, one researcher said. It's like instantly aging a large number of drivers.

The study was announced today and is detailed in spring issue of the quarterly journal Human Factors.

Cell phone distraction causes 2,600 deaths and 330,000 injuries in the United States every year, according to the journal's publisher, the Human Factors and Ergonomics Society.

Researchers have been down this road before. In 2001, they found that even hands-free cell phone use distracted drivers. In 2003 they revealed a reason: Drivers look but don't see, because they're distracted by the conversation. The scientists also found previously that chatty motorists are less adept than drunken drivers with blood alcohol levels exceeding 0.08.

Here is some additional information that helps illuminate the death statistic.

The estimates of annual deaths reported in this week's article, 2,600, may well be low. The number, for U.S. deaths related to drivers using cell phones, comes from a 2002 study by the Harvard Center for Risk Analysis. Researchers then estimated that the use of cell phones by drivers caused approximately 2,600 deaths.
Importantly, the researchers noted in 2002 that increasing cell phone use could be expected to cause the annual death estimate to rise.

In 2001 in California, for example, "at least 4,699 reported accidents were blamed on drivers using cell phones, and those crashes killed 31 people and injured 2,786," according to an analysis by The Los Angeles Times. That number can be expected to be low, because of the lack of formal procedures for noting cell phone use as a cause of a traffic accident.

The Times also noted a 1997 study of Canadian drivers "who agreed to have their cell phone records scrutinized found that the risk of an accident was four times greater while a driver was using the phone."

The HCRA concluded that compared to drivers not using cell phones, drivers using cell phones are four times more likely at risk of death and injury. Some important costs include reduced reaction time to that of 70 year olds, less adept than drivers with .08 blood alcohol level, heightened distractions, and decreased ability to detect changes in the environment. According to the HCRA, these factors cause thousands of deaths and hundreds of thousands of injuries annually.

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(WORD COUNT: 495)
A new study confirms the benefits of letting calls go to voicemail while driving. Reaction times of drivers increase dramatically when cell phones are not used, decreasing the risk of death, accidents, and tying up traffic in general.

A 20-year-old driver behind the wheel without a cell phone has reaction times that are three times faster than those using cell phones, one researcher said. It's like instantly increasing drivers' safety on the road.

The study was announced today and is detailed in the spring issue of the quarterly journal Human Factors.

More than 2,600 deaths and 330,000 injuries could be prevented in the United States every year, if people avoided cell phone use while driving, according to the journal's publisher, the Human Factors and Ergonomics Society.

Researchers have been down this road before. In 2001, they found that non-cell phone users were safer drivers. In 2003 they revealed one reason: These drivers look and see the changing environment because they're not distracted by the conversation. The scientists also found that these motorists are more adept than those using cell phones while driving, whose reaction times are worse than drivers with blood alcohol levels exceeding 0.08.

Here is some additional information that helps illuminate driving safety.

The estimates of lives saved and injuries prevented, 2,600, may well be low. The number comes from a 2002 study by the Harvard Center for Risk Analysis. Researchers then estimated that drivers who have fewer distractions averted thousands of accidents.
Importantly, the researchers noted in 2002 that avoiding cell phone use is a good predictor of good driving habits.

In 2001 in California, for example, "at least 4,699 possible accidents were avoided by alert drivers," according to an analysis by The Los Angeles Times. That number can be expected to be low, because of the lack of formal procedures for noting cell phone use as a cause of a traffic accident.

The Times also noted a 1997 study of Canadian drivers "who agreed to have their cell phone records scrutinized, which found that those who ignored their cell phones when driving were less likely to cause accidents than drivers using phones."

The HCRA concluded that compared to drivers using cell phones, drivers not using cell phones are four times more likely to arrive safely. Some important benefits are increased reaction time, heightened awareness, and improved ability to detect changes in the environment. The HCRA predicts thousands of lives would be saved and injuries prevented each year if cell phones were not used while driving.
Appendix B: Figures

Figure 1. Conceptual Model
Figure 2. Message Type X Frame Interaction on Perceived Message Persuasiveness
Figure 3. Message Type X Frame Interaction on Behavioral Intentions
Figure 4. Full Mediation Model

Note. **p < .05, ***p < .001

Negative Narrative = 1; All other conditions = 0
Table 1

*Experimental Conditions*

<table>
<thead>
<tr>
<th>Message Type</th>
<th>Valence</th>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
<td>52</td>
<td>45</td>
</tr>
<tr>
<td>Narrative</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Statistical</td>
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<td>50</td>
<td>46</td>
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Table 2

*Manipulation Check on Perceived Gain and Loss Framing of Messages*

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<th>Message Frame</th>
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<th></th>
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</thead>
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<tr>
<td></td>
<td>Positive</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>Narrative</td>
<td>$M$</td>
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<td>2.44</td>
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<tr>
<td></td>
<td>$SD$</td>
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</tr>
<tr>
<td></td>
<td>$SD$</td>
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</tr>
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</table>

*Note.* $F(1, 192) = 42.17, p < .001$, partial $\eta^2 = .18$
Table 3

Manipulation Check for Message Type

<table>
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<th>Message Type</th>
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</thead>
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<tr>
<td></td>
<td>Positive</td>
<td>Negative</td>
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</tr>
<tr>
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<td>6.65</td>
<td>6.94</td>
</tr>
<tr>
<td></td>
<td>SD</td>
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<td>Statistical</td>
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<tr>
<td></td>
<td>SD</td>
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<td>2.03</td>
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</table>

Note. $F(1, 192) = 201.16, p < .001$, partial $\eta^2 = .51$
Table 4

*Descriptive Statistics for Dependent Variables by Condition*

<table>
<thead>
<tr>
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<th>Narrative</th>
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<th>Statistical</th>
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<tr>
<td></td>
<td>Gain</td>
<td>Loss</td>
<td>Gain</td>
<td>Loss</td>
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<tr>
<td>Supportive Cognitions</td>
<td>$M$ 1.92</td>
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</tr>
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<tr>
<td>Perceived Persuasiveness</td>
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<td></td>
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<td>1.41</td>
<td>$SD$ 1.45</td>
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<td>$M$ 4.75</td>
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<td></td>
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</table>

*Note.* Means and Standard Deviations
Table 5

*Perceived Message Persuasiveness: Message Type X Framing Interaction*

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<th>Message Frame</th>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
<td>Negative</td>
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</tr>
<tr>
<td>Narrative</td>
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<td></td>
<td>8.28</td>
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<tr>
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<td></td>
<td>.23</td>
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<tr>
<td>Statistical</td>
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<td>7.02</td>
</tr>
<tr>
<td></td>
<td>.23</td>
<td></td>
<td>.23</td>
</tr>
</tbody>
</table>

\(F(1, 195) = 7.42, p < .01, \text{ partial } \eta^2 = .04\)

*Note.* Means and Standard Errors are reported.
Table 6

*Transportation: Message Type X Message Frame Interaction*

<table>
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<th>Message Type</th>
<th>Message Frame</th>
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<th>Negative</th>
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</thead>
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<td>6.97</td>
<td>7.64</td>
</tr>
<tr>
<td></td>
<td>(M)</td>
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<td>.27</td>
</tr>
<tr>
<td>Statistical</td>
<td></td>
<td>6.12</td>
<td>5.70</td>
</tr>
<tr>
<td></td>
<td>(M)</td>
<td>.26</td>
<td>.27</td>
</tr>
</tbody>
</table>

*Note. \(F(1, 195) = 4.23, p < .05, \) partial \(\eta^2 = .02\)*
Table 7

*Standard Parameter Estimates for Model*

<table>
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<tr>
<th>Paths</th>
<th>Parameter Estimates</th>
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</thead>
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<tr>
<td>Interaction (\rightarrow) Transportation</td>
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<td>.000</td>
</tr>
<tr>
<td>Transportation (\rightarrow) Fear</td>
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<td>.000</td>
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<tr>
<td>Transportation (\rightarrow) Perceived Persuasiveness</td>
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<tr>
<td>Transportation (\rightarrow) Behavioral Intention</td>
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<td>Fear (\rightarrow) Behavioral Intention</td>
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<td>.000</td>
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<tr>
<td>Perceived Persuasiveness (\rightarrow) Behavioral Intention</td>
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<td>.050</td>
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</table>
APPENDIX D: Study Questionnaire

Welcome to the study. You will be asked to complete a questionnaire and read a news story. Read this story at a normal pace. When you have finished reading the story, take the materials to the researcher. You will be given another questionnaire, which asks for your opinions on the message you just read. Each questionnaire has been assigned a unique code. Make sure to write the code on the questionnaire before completing it.

CODE:_________
For each item, indicate how much you agree or disagree with what the item says. Please respond to all the items; do not leave any blank. Choose only one response to each statement. Please be as accurate and honest as you can be. **Respond to each item as if it were the only item.** That is, don't worry about being "consistent" in your responses. **Choose from the following four response options:**

1 = very true for me  
2 = somewhat true for me  
3 = somewhat false for me  
4 = very false for me

1. A person's family is the most important thing in life.  
2. Even if something bad is about to happen to me, I rarely experience fear or nervousness.  
3. I go out of my way to get things I want.  
4. When I'm doing well at something I love to keep at it.  
5. I'm always willing to try something new if I think it will be fun.  
6. How I dress is important to me.  
7. When I get something I want, I feel excited and energized.  
8. Criticism or scolding hurts me quite a bit.  
9. When I want something I usually go all-out to get it.  
10. I will often do things for no other reason than that they might be fun.  
11. It's hard for me to find the time to do things such as get a haircut.  
12. If I see a chance to get something I want I move on it right away.  
13. I feel pretty worried or upset when I think or know somebody is angry at me.
14. When I see an opportunity for something I like I get excited right away.
15. I often act on the spur of the moment.
16. If I think something unpleasant is going to happen I usually get pretty "worked up."
17. I often wonder why people act the way they do.
18. When good things happen to me, it affects me strongly.
19. I feel worried when I think I have done poorly at something important.
20. I crave excitement and new sensations.
21. When I go after something I use a "no holds barred" approach.
22. I have very few fears compared to my friends.
23. It would excite me to win a contest.
24. I worry about making mistakes.
**Study Questionnaire**

**Q1:** We are interested in what you were thinking while reading the cell phone message. Please list all the thoughts that came to mind regarding this story. You may use single words, phrases, or short sentences. Ignore spelling, grammar, and punctuation. There are no right or wrong answers.

*Please put only one idea or thought in each box.*

You do not have to fill in all of the boxes. When you have finished listing thoughts, you can proceed with the next set of questions.

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<th>Thoughts</th>
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</table>
### Reactions to the Story

**Q2: How did the message make you feel?**

0 = None of this feeling .............. 10 = A great deal of this feeling

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<th>Reaction</th>
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<td>a. Surprised</td>
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<td>b. Startled</td>
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<td>d. Sickened</td>
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</table>
Q3: How much do you like the message you have just read?
I do not like it at all. 1 2 3 4 5 6 7 8 9 10 I like it a lot.

Q4: When I read the message…

a. I paid attention to the contents of the message.
   Strongly disagree 1 2 3 4 5 6 7 8 9 10 Strongly agree

b. I expended efforts thinking of the contents of the article.
   Strongly disagree 1 2 3 4 5 6 7 8 9 10 Strongly agree

c. I could follow the message smoothly.
   Strongly disagree 1 2 3 4 5 6 7 8 9 10 Strongly agree

d. I felt the message was easy to understand.
   Strongly disagree 1 2 3 4 5 6 7 8 9 10 Strongly agree

Q5: Overall, the message I just viewed was…

<table>
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<tr>
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<th>Not at all persuasive</th>
<th>1 2 3 4 5 6 7 8 9 10</th>
<th>Very persuasive</th>
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<td>1 2 3 4 5 6 7 8 9 10</td>
<td>Very Effective</td>
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<td>b.</td>
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<td>1 2 3 4 5 6 7 8 9 10</td>
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<td>c.</td>
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<td>1 2 3 4 5 6 7 8 9 10</td>
<td>Very compelling</td>
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<td>d.</td>
<td>Not at all credible</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td>Very credible</td>
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<td>e.</td>
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<td>f.</td>
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<td>1 2 3 4 5 6 7 8 9 10</td>
<td>Very clear</td>
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<td>g.</td>
<td>Not at all truthful</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
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<td>h.</td>
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Q6: After reading the brochure, I think driving while using a cell phone is ______________.

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Q7: While reading the story,

a. I could easily picture the events in it taking place.  
   Strongly Disagree 1 2 3 4 5 6 7 8 9 10 Strongly Agree

b. Activity going on in the room around me was on my mind.  
   Strongly Disagree 1 2 3 4 5 6 7 8 9 10 Strongly Agree

c. I could picture myself in the scene of the events described in the story.  
   Strongly Disagree 1 2 3 4 5 6 7 8 9 10 Strongly Agree

d. I was mentally involved in the story.  
   Strongly Disagree 1 2 3 4 5 6 7 8 9 10 Strongly Agree

e. I wanted to learn how the story ended.  
   Strongly Disagree 1 2 3 4 5 6 7 8 9 10 Strongly Agree

f. It affected me emotionally.  
   Strongly Disagree 1 2 3 4 5 6 7 8 9 10 Strongly Agree

g. I found myself thinking of ways the story could have turned out differently.  
   Strongly Disagree 1 2 3 4 5 6 7 8 9 10 Strongly Agree

h. While reading the message, I found my mind wandering.  
   Strongly Disagree 1 2 3 4 5 6 7 8 9 10 Strongly Agree

Q8: After finishing the story,

a. I found it easy to put it out of my mind.  
   Strongly Disagree 1 2 3 4 5 6 7 8 9 10 Strongly Agree

Q9: Please indicate your assessment of the message about driving and cell phone use.

I think this message emphasizes...

a.) Costs of driving 1 2 3 4 5 6 7 8 9 10 Benefits of not using a cell phone while driving
Losses associated with driving while using cell phone

Gains associated with driving while not using cell phone

I think this message emphasizes…

b.) Facts or Statistics

Research about driving safety

Q10: How often do you drive while using your cell phone?

Never

Always

Q11: After reading the message,

a. I intend to behave in ways that are consistent with the message.

Strongly Disagree

Strongly Agree

b. I will likely act in ways that are compatible with the position promoted in the message.

Strongly Disagree

Strongly Agree

c. I am going to make an effort to do what the message urged me to do.

Strongly Disagree

Strongly Agree

d. The next time I drive I will likely think about dangers of using my phone while driving.

Strongly Disagree

Strongly Agree

e. I will only answer my cell phone when driving if there is an emergency.

Strongly Disagree

Strongly Agree

f. I will likely turn my cell phone off while driving.

Strongly Disagree

Strongly Agree

g. I will not use my cell phone while driving.

Strongly Disagree

Strongly Agree

Q12: After reading the message,

a. I support what the message was trying to accomplish.

Strongly Disagree

Strongly Agree

b. I agree with the position promoted in this message.

Strongly Disagree

Strongly Agree

c. I am favorable toward the behavior promoted in the message.

Strongly Disagree

Strongly Agree
Q13: After reading the message,

a. I am confident in my ability to stop using my cell phone while driving.
   Very Unsure 1 2 3 4 5 6 7 8 9 10 Very Sure

b. For me to stop using my cell phone while driving, it would be...
   Very Difficult 1 2 3 4 5 6 7 8 9 10 Very Easy

c. For me to stop using my cell phone while driving, would be...
   Totally outside 1 2 3 4 5 6 7 8 9 10 Totally within my control

Q14: After reading the message,

a.) How likely do you think it is to get into an accident from using your cell phone?
   Extremely Unlikely 1 2 3 4 5 6 7 8 9 10 Extremely Likely

b.) How worried are you about causing an accident because of using your cell phone?
   Not at all 1 2 3 4 5 6 7 8 9 10 Extremely

c.) How worried are you that other drivers will cause accidents because of their cell phone use?
   Not at all 1 2 3 4 5 6 7 8 9 10 Extremely

d.) How serious a problem is driving while using a cell phone?
   Not at all 1 2 3 4 5 6 7 8 9 10 Extremely

Q15: Please rate your perception of the message on the following measures.

a.) The reading material was personally relevant.
   Strongly Disagree 1 2 3 4 5 6 7 8 9 10 Strongly Agree

b.) The events described in the message will have an impact on my life.
   Strongly Disagree 1 2 3 4 5 6 7 8 9 10 Strongly Agree

Q16: Before I read the message, I was...

Not familiar with 1 2 3 4 5 6 7 8 9 10 Very familiar with issue
Please circle the appropriate response.

Q17: Have you been involved in an accident because of cell phone use?
   1. No       2. Yes       3. Not Sure

Q18: Have any of your friends or family members been involved in an accident because of cell phone use?
   1. No       2. Yes       3. Not Sure

Q19: Please circle your gender.     1. Male 2. Female

Q20: Please indicate your ethnic background.


Q21: What year were you born? ________________
VITA
CARRIE A. VIORAL SIPES

EDUCATION
Doctor of Philosophy in Mass Communication,
The Pennsylvania State University, May 2010
Master of Science in Communication Studies,
Shippensburg University, May 2003
Bachelor of Arts in Speech Communication, Minor: Political Science,
Shippensburg University, May 2000

ACADEMIC/TEACHING EXPERIENCE
Assistant Professor, Shippensburg University, Communication Journalism Department,
Shippensburg, PA, 2006 - Present

Co-Advisor, Shippensburg University, IMPEL, a student-led PR firm, 2008 - Present
Shippensburg University, Cumberland Yearbook, 2004-2005

Instructor, Duquesne University, School of Leadership and Professional Studies
Wormleysburg, PA 2003-2006

Teaching Assistant, Duquesne University, Communication Department,
Wormleysburg, PA 2000-2003

CO-AUTHORED CONFERENCE PAPERS
• Effects of Media Framing of Obesity Among Adolescents – Media and Healthy
  Development in Adolescence Conference, Hong Kong, May 2009

• Nice Guys, Do They Always Finish Last? Exploring Political Advertising in the
  Virginia Governor’s Race - AEJMC Mid-Winter Conference, 2006

• Political Advertising Valence and Candidate Response Strategy,
  AEJMC August 2006

• Political Advertising, Political Cynicism and Affect: A Mediation Model
  Account, AEJMC August 2006

RESEARCH AND TEACHING INTERESTS
• Psychological aspects of Media Effects
• Political Advertising
• Public Health Campaigns
• Mass Communication Theory

COURSES TAUGHT
• Introduction to Mass Communication
• Senior Capstone
• Selected Topics in Media Effects
• Selected Topics: Media & Diversity
• Communication Management
• Media Writing
• Communication Ethics
• Broadcast Advertising & Sales
• Public Relations Principles
• Mass Communication Theory