NARRATIVE IMPACT OF HEALTH AND OCCUPATIONAL SAFETY MESSAGES: A COMPARISON ACROSS VOICE, MEDIUM, AND TOPIC

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Under the Direction of Karen King

ABSTRACT

Within the field of health communication, narrative approaches are emerging as a promising set of tools for motivating and supporting health-behavior change. The transportation theory of narrative persuasion posits that absorption into a story may be a key mechanism of narrative impact. Transportation is thought to be a tripartite formulation (attention, imagery, feelings) of persuasive communication specifically focused on the experience of becoming immersed in a story and how this immersion can lead to real-world belief, attitude and behavior change. The way in which a narrative is delivered has not typically been the focus of study in regards to the transportation theory; nevertheless, having a notion of whether or not a particular combination of features is more transporting than another is of practical importance.

The objective of this study was two-fold. The first objective was to compare first-person and third-person narratives manipulated by medium and topic to gain a better understanding about which message features influence emotional response, narrative processing, message perceptions and intentions to behave. The second objective was to test narrative impact in a real-world setting. A 2 (narrative voice: first-person voice or third-person voice) X 2 (medium: audio or print) X 2 (topic: health or occupational safety) factorial design was employed. In total, 232 male professional firefighters in Georgia from DeKalb County Fire and Rescue Department

served as the study population. The experiment consisted of data collection prior to and after the participants read or listened to a narrative message.

Overall, the narrative messages transported participants generating some support for hypothesis grounded in previous research. However, counter to expectations, differences between narratives in first-person voice compared to narrative messages in third-person voice were not found. Additionally, differences between audio and print narratives were not discovered. However, one anomalous finding appeared. That is, significant differences were found on several of the variables between the two topics. Knowing now that a topic can potentially interfere with narrative impact lends for a great deal of discussion for researchers and practitioners alike. Future research should continue to attend to these possibilities in considering narrative processing and message design.

INDEX WORDS: Health Communication, Medium, Narration, Narrative Impact, Narrative Processing, Persuasion, Transportation Theory, Voice

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DEDICATION

To Jane Austen, Mark Twain, Dorothy Parker, John Steinbeck, John Kennedy Toole, Flannery O'Connor, J.K. Rowling, and Tom Robbins whose black squiggles on white paper give readers as much pleasure as the touch of a loved one, and are as rousing, colorful and transfiguring as anything out there in the real world.

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CHAPTER 1: INTRODUCTION

> "Stories set the inner life into motion, and this is particularly important where the inner life is frightened, wedged, or cornered. Story greases the hoists and pulleys, it causes adrenaline to surge, shows us the way out, down, or up, and for our trouble, cuts for us fine wide doors in previously blank walls, openings that lead to the dreamland, that lead to love and learning, that lead us back to our own real lives as knowing wildish women."
> —Clarissa Pinkola Estes

> "If stories come to you, care for them. And learn to give them away where they are needed. Sometimes a person needs a story more than food to stay alive."
> —Barry Lopez, in *Crow and Weasel*

Throughout time storytelling has been a comfortable way of giving and receiving information. Ever since human beings sat around the fire in caves, we've told stories to reflect on the actions of others, help us deal with the dread of life, and even share a laugh or two. Today, stories are our constant companions in conversations with others and in encounters with written and visual media. In our day-to-day lives the centrality of narratives can be made apparent by the news stories we hear in the car on the way to work, the entertaining books we read on a lazy Sunday afternoon, the advertisements we see on television, or the piece of advice we share with our colleagues. Simply put, humans in our actions and practices are storytelling beings (Fisher, 1984).

From a psychological perspective, narrative approaches have a variety of advantages. In the words of cultural psychologist Jerome Bruner, stories have the remarkable capacity to allow us to "perfink" – perceive, think, and feel all at once. Narrative is unique and powerful. Certainly, there is no other communication genre that can engage people emotionally with a situation and characters (Slater, 2002a) and "communicate beliefs, model behavior, teach skills

provide behavioral cues, and simulate consequences of behavior over time in as compelling and involving a fashion" (Slater, 2002a, p. 170). Cognitive psychologists describe how the human mind, in its attempt to understand and remember, even assembles the bits and pieces of personal experience into a story to better understand them. It is this melding of personal experience, and affective and cognitive reactions that allows individuals to go beyond simple learning. Essentially through stories, narrative becomes an instrument to construct and communicate meaning, impart knowledge, and remember.

It is not surprising then that storytelling is considered to be the "oldest tool of influence in human history" (Simmons, 2001, p. xvii). Research has shown narratives can be persuasive both in leading people to form appropriate behavioral intentions and in motivating them to act on those intentions (Green, 2006). Increasingly, health communication campaigns have incorporated narrative interventions into health promotion/ health education efforts as a means for encouraging behavior change (Hinyard & Kreuter, 2007). Nevertheless, research has been slow to systematically examine the mechanisms by which these interventions achieve results (Petraglia, 2007).

No theory suggests that there is a single reason why people love stories so much or why narratives influence people; however, the transportation theory of narrative persuasion developed by Green and Brock (2000) suggests that transportation may be a key mechanism of narrative impact. Transportation is the degree to which a message recipient is cognitively and affectively invested in a narrative. Or rather, transportation occurs when a person's attention is fully engaged and emotional responses are occurring consistent with the vicarious experience of the fictional events (Slater & Rouner, 2002). Essentially, a transported individual will treat a narrative as a frame of reference suspending their normal assumptions (Strange, 2002). Thus,

transportation enhances narrative impact by making the experience seem more like a real experience (Green, 2004). Moreover, transportation is an enjoyable state to be in. Although transportation theoretically could occur with any message, it is limited to narratives, especially well-crafted, high-quality narratives that evoke vivid imagery (Green & Brock, 2000). Transportation has been proposed to be influenced by a number of factors including narrative format, use of suspense, use of emotion, and use of imagery in the narrative, and propensity for absorption, among other things (Dillard & Nabi, 2006; Dunlop, Wakefield, Kashima; Goetz, Sadoski, Stowe, Fetsco, & Kemps, 1993; Green & Brock, 2002; Green & Brock, 2005; Heath & Heath, 2007; Hinyard & Kreuter, 2007; Oatley, 2002). Ultimately, the transportation experience can lead to attitude change through connections with characters, reduction of counterarguing, increasing perceptions of realism, as well as providing role models to audience members (Green, 2006). The effect of narratives per se has not typically been the focus of study in regards to transportation theory. Nevertheless, having a notion of whether or not a particular combination of features is more effective than another is of practical importance.

Significance

Motivating people to alter their behavior in a way that reduces the risk of disease or injury or increases the chance of health and well-being are important public health objectives (Petraglia, 2007). However, "the challenge for those involved in the design, implementation, evaluation, and research concerning health communication is to influence behaviors with the greatest potential to significantly improve health outcomes across demographically and culturally diverse population groups" (IOM, 2002, p. 13). Research has suggested that narrative is a powerful form of communication (Adaval & Wyer, 1998; Deighton, Romer, & McQueen, 1989; Wyer, Adaval, & Colcombe, 2002). Narratives play a key role in shaping our memories, knowledge, and beliefs

(Johnson, 2002). Further, given people's propensity towards narrative and the pervasiveness of narrative messages in everyday life, narratives offer a unique potential to appeal to a large percentage of a population. Thus, narrative impact merits further research.

With few exceptions, communication scholars have studied narrative from an effects approach, focusing either on persuasive messages, or the impact of popular culture, especially television and film, on cognition, beliefs, values, affect and behavior (Slater, 2002a). Specifically, there are two approaches that are important when thinking about narrative and its impact upon mass audiences. The first approach is concerned primarily with message effects and explores how the features, formats, and structures of messages attract and influence audience attention (Viswanath & Emmons, 2006). Because narrative can be conceptualized in an infinite number of ways, the number of different narrative components and the combinations that can possibly affect a message's overall effectiveness is virtually unfathomable. Thus, the second approach, media effects, can include message effects, but focuses on the individual as the unit of analysis and more broadly involves the examination of each specific medium for its impact on individual cognition, affect and behavior (Viswanath & Emmons, 2006). Like those studying message effects, media effects researchers are interested in the characteristics, motivation, selectivity, and involvement of audiences (Rubin, 2002). Although media effects have been remarkably difficult to pin down, there is a growing body of evidence to support the notion that the media have at least a moderate effect on individual judgments (Comstock, 2004). Nevertheless, further examination of the processes that underlie media effects is needed.

Purpose of the Study

The research outlined here attempts to provide a better understanding of the cognitive and affective reactions and behavioral intentions that narrative manipulated by voice, medium, and

topic engender. Clearly, there is much left to be learned about narrative message formats used to promote adoption or maintenance of behaviors. For that reason, the proposed study hopes to build on what is already known regarding why, how and when narratives are persuasive. It may be possible that the perspective through which a narrative is told can influence its persuasiveness; however, whether a narrative is more transporting or generally effective when told in first-person voice versus third-person voice is unknown. Furthermore, it may be possible that different media affect the way narratives are processed as well as the overall effectiveness of a narrative communication. Thus, another interesting question that remains unanswered is whether narratives have varying levels of impact in print or audio formats. Accordingly, the purpose of the proposed study is to compare narrative impact across voice (first versus third), medium (print versus audio), and topic (health versus occupational safety) in a real-world setting. To achieve this, data were collected using career firefighters as the participants. Storytelling is a common knowledge sharing platform in the fire service and stories are often used to specifically convey fire service-specific technical information. Thus, it was thought that firefighters would be receptive to receiving health and safety information this way. Moreover, by including professional firefighters in such an investigation, the results could potentially help those involved in health and occupational safety communication and training write narrative messages that are coherent, informative, memorable, and ultimately persusavive.

CHAPTER 2: LITERATURE REVIEW

Narrative: Product of a Universal Human Need to Communicate with Others

Telling stories as a form of communication is a fundamental part of being human (Fisher, 1987) and a basic element of everyday living (Bruner, 1986). From infancy we are taught how to process and make sense of information presented in narrative form (Kopfman, Smith, Yun, & Hodges, 1998; Kreuter, Green, Cappella, Slater, Wise, Storey, et al., 2007; Schank & Abelson, 1995). As we grow, narratives are central to the development of our self concept (McLean, 2005) and allow us to create, attain, and sustain a level of understanding and meaning about our cultural and social environment (Schank & Abelson, 1995). Narratives also play a key role in helping us make evaluations and form judgments (Pennington & Hastie, 1992) and shaping our memories, knowledge, beliefs, attitudes and behavior (Johnson, 2002; Slater, 2002a). Resorting to narratives it seems is the way in which we have learned to cope with our world of complex phenomena (Denning, 2001). In fact, we have very little trouble following stories and often do it with pleasure. Consequently, it is not surprising that the proliferation of stories has been with us throughout our history. From the earliest cave drawings, to the Bible, plays by Shakespeare, and modern day soap operas- narratives are everywhere.

The structure of a narrative has many advantages. First, they help us understand complexity. The three-act (beginning, middle, and end), cause and effect, storytelling structure mirrors the way in which our minds order and frame life experience. Narrative makes coherent otherwise random events in respect to time, process and change (Herman, 2003). Composing a story also reduces the size and intricacies of the original experience into bite-sized smaller units that let our minds work less hard (Schank & Abelson 1995). Besides the distinct advantage of

seemingly natural comprehension and ease of use, narratives also bypass normal defense mechanisms and can enhance or change perceptions. They do this by allowing us to think about message arguments as they pertain to ourselves (Slater, 2002a) and explore the implications of our experiences at a safe distance through the context of another person (Green, 2006). Further, Abbott (2002) suggests that viewers perceive information as more believable when it is presented in the form of a narrative. "You could in fact argue, and people have, that our need for narrative is so strong that we don't really believe something is true unless we can see it as a story" (p. 40). Additionally, narratives are entertaining and energizing (Denning, 2001), perhaps because they have the ability to engage our emotions (Oatley, 2002) and have the power to create vivid mental images in our minds (Graesser, Olde, & Klettke, 2002) all of which makes them enjoyable and easy to remember. Moreover, narrative messages allow audience members to journey virtually along with the narrator into a different world, one populated with people, places and things (Birkerts, 1994) rather than abstract concepts. Denning (2001, p. 70) states, "the narrative way of thinking is internal and immersive and self-forgetting and attached to the full richness of tacit understanding." In contrast, abstract thinking is detached. One cannot imagine the sun shining on their face, or smell fresh baked cinnamon rolls in the world of abstraction. No cold wind blows into the lives of *x, y,* or *a.*

The bottom line: narrative plays an important role in human experience. Without storytelling we would lose our life experience. Life events are not revealed in a list of bullet points or in the objective explanatory phrasing of a dictionary entry. If they were, they would not have the same effect and recalling them might even seem pointless. Narrative is not only a mechanism for ordering and recalling experiences, it is also an important means to the acquisition and interpretation of information. Without narratives, we would have a difficult time

negotiating life and the experience of living. But through narrative "it is possible to interpret events by constructing coherent causal patterns of meaning that blend what is known about a situation (facts) with relevant conjectures (imagination)" (Cole, 1997, p. 333). It is this blending that allows us to "cultivate most of what we think, what we do, and how we conduct our affairs" (Gerbner, 1999, p. ix).

Describing and Defining Narrative

Developing operational definitions for narrative has proven to be a difficult task (Klien, 2003; Mar & Oatley, 2008; Winterbottom, Bekker, Conner, & Mooney, 2008). Currently, there is no clear definition and/or operationalization of narrative information within the literature, although many have been proposed (Baesler & Burgoon, 1994; Green & Brock, 2000; Kreuter et al., 2007; Reinard, 1988; Slater, 2002a.). The variety of definitions has likely contributed to inconsistent findings among empirical research regarding how narrative acts upon us, and in return, how we act upon it. Nevertheless, Ryan (2004) proposes inquiry into the nature of narrative can take one of two forms- described by what it does for human beings, or defined by its distinctive features. Mar and Oatley suggest placing emphasis on the latter stating, "Perhaps it is not how a text is structured that really defines narrative, but its content and our responses to this content" (2008, p.174). Cognitively speaking, narrative provides a fundamental way of organizing a host of random emotional, perceptual, physical and social experiences into a meaningful account (Barbow, Kline, & Rawlins, 2005; Cortazzi, 2001; Gabriel, 1998) and can be used as a tool for constructing models of reality (Herman, 2003). Duchan, Bruder, and Hewitt (1995) maintain that in addition to creating the mental model, readers must locate themselves in the story by shifting the center of their experience from the actual world into the story world. By doing this they are performing a *deictic shift* (Segal, 1995). In principle a shift must occur so that

people can understand what the statements of the characters mean and which person or location they refer. It is understanding that allows for prediction and explanation while revealing the underlying processes of what is being modeled (Mar & Oatley, 2008). From a structuralist point of view, narrative also performs significant functions. For instance, at the individual level, people have a narrative of their own lives that enables them to interpret who they are (Czarniawska, 1997; Jacobs, 2002), and at the cultural level, narratives serve to give cohesion to shared beliefs and disseminate values. Lastly from a communication perspective, narrative is an ongoing process of creating, using, and organizing human experiences in sequential and consequential ways, as units of discourse, and ways of seeing, behaving, and being (Fisher, 1987; Sunwolf & Frey, 2001).

Traditional narrative theorists on the other hand have commonly defined narratives as the symbolic representation of events (Abbott, 2002), or a series of causally linked events that unfold over time (Dijk 1975, 1976; Graesser, Hauft-Smith, Cohen & Pyles, 1980; Ryan, 2004). Thus, narrative is represented by a sequence, character(s), and structure, all bounded in space, time, and production. Simply stated, within narratives, "characters are introduced (exposition), some problem or obstacle develops (complication), and that problem or obstacle is somehow overcome (resolution)" (Harris, 1994, p. 28).

A broad review of the literature reveals, however, that the most crucial distinction of the definition of narrative is the technical difference between ‘narrative’ and ‘story.’ Although storytelling and narrative are often thought of being synonymous, they are not. Essentially, a story is basically what happened, while narrative on the other hand, is basically how the narrator of the story told us what happened. A story consists of all “the events which are to be depicted in a narrative” (Cobley, 2001, p. 243) while a narrative is the showing or the telling of these events,

the causal connections between them, and the mode selected for that to take place (Abbott, 2002; Chatman, 1990; Cobley, 2001; Paley & Eva, 2005; Prince, 1991; Ryan, 2006). In other words, a story is primarily an ordering – a cohesive and logical sequence of events that demonstrates the change in the state of a subject. It does this through the three-act structure of a beginning, middle, and an end (Lacey, 2000; Nell, 1988). The narrative on the other hand, adds a point of view to a story. Perhaps the easiest way to understand the difference between the two is to focus on the root word, *narrate* (Cobley, 2001). Narration refers to the way that a story is told, and so belongs to the level of discourse. "The different kinds of narration are categorized by each one's primary grammatical stance: either 1) the narrator speaks from within the story and, so, uses "I" to refer to him- or herself or rather, the narrator is a character of some sort in the story itself, even if he is only a passive observer; or 2) the narrator speaks from outside the story and never employs the "I" (Felluga, 2011). Thus, a narrative is a story as told by a narrator (Cobley, 2001). So one story could have multiple narratives, each depending on the voice recounting it, and the point of view they select to frame the sequence of events.

Further, narrative theorists distinguish between story, theme and plot. The theme is a layer added to the story to instruct, provide an emotional connection, or to impart deeper meaning. Plot on the other hand can be thought of as the chain of causation as written by the author (Oatley, 2002), or the actual presentation, flow and pace of the narrative (Bordwell, 1985). Lastly, narrative does not necessarily mean fiction (Green, Brock, & Kaufman, 2004). Non-fictional narrative can include chronology, causality, and character development just as fictional narrative does. Nor does narrative mean text-only. Narrative can occur in nearly any medium (Busselle, Ryabovolova, & Wilson, 2004) and be presented in any voice (i.e., first, second, or third-person (Lee & Leets, 2002).

The meaning of narrative for the purpose of this dissertation is adopted from a recent publication outlining the role of narrative communication in cancer prevention and control and is defined as, "a representation of connected events and characters that has an identifiable structure, is bounded in space and time, and contains implicit or explicit messages about the topic being addressed" (Kreuter et al., 2007, p 222). This definition is suitable for the needs of this study because it integrates key elements of narrative as described in the literature (Abbott, 2002; Polkinghorne, 1998; Bruner, 1986). However, two elements are missing from this definition. The first is that the narrative is told by a narrator and second the assumption that narrative can be delivered in different media. On that note, because the narratives used in this study are presented in print or audio form, for the terms *reading,* and *listening,* it is intended for the reader to understand that the definition of narrative applies regardless of the medium in which the narrative is presented and consumed.

Capabilities of Narrative

Narrative is a powerful form of communication (e.g., Adaval & Wyer, 1998; Deighton, Romer, & McQueen, 1989; Green, Garst, & Brock, 2004; Wyer, Adaval, & Colcombe, 2002) and its unique characteristics clearly distinguish it from other forms of communication. Nevertheless, it remains somewhat a mystery why narrative text is so easy to comprehend and remember (Graesser, Olde, & Klettke, 2002). Perhaps it is because the content of narrative text has such a close correspondence with everyday experiences. Or maybe it is because the language of oral conversation has a closer similarity to narrative text than other discourse genres. Possibly, it is that narrative evokes more concrete, vivid mental images. Or perchance it is because narrative's ability to engage people emotionally with a situation and characters. Without a doubt the capabilities of narrative seem plentiful.

In order to promote a more focused and systematic program of research on narrative impact, Kreuter and colleagues (2007) developed a typology of narrative communication capabilities. Although their typology is specific to cancer communication, one could speculate that it can be applied to narratives about health more broadly. Kreuter et al. (2007) assert that narratives have four distinctive capabilities: facilitating information processing, overcoming resistance, providing surrogate social connections, and representing emotional and existential issues. Following is empirical evidence and theoretical rational from a board spectrum of research supporting propositions in the proposed typology and variables that likely moderate and mediate narrative effects in general.

Narrative as Facilitator of Information Processing

On any given day, we humans spend much of our time engaged with carefully crafted narrative products such as films, novels, plays, and TV dramas. While interfacing with such genres, we undergo a form of experience like no other. Narratives are unique in their ability to create a world to which we are initially removed and potentially submerged. Many researchers contend that narrative captivates us because it is the basic function and structure of the mind (Bruner, 1986; Fisher, 1984; Schank & Abelson, 1995). When we listen to a story, the chemicals in our body change, an our mind becomes transfixed (Strum, 2000). Cognitive scientists argue that narrative thought came before language in the evolution of humanity, and even today forms the fundamental instrument of thought (Schank & Abelson, 1995) and sense-making (Herman, 2003; Miller, 1995). One could even go so far as to argue that our rational capacities and our efficiency to perceive and act in the world depend on narrative processing (Schank, 1990).

Overall, storytelling can help in transferring complex tacit knowledge and serves as a source of implicit communication (Ambrosini & Bowman, 2001; Linde, 2001). Narrative processing is able to create meaning because of the structure of narratives (Escalas, 2004a). This

structure allows for causal inferencing by providing temporal and relational organization (Escalas, 2004a). By arranging characters and events into stories, people are able to organize a host of random emotional, perceptual, physical, and social experiences into a meaningful account (Babrow, Kline, & Rawlins, 2005). This makes narratives especially useful when the target audience may have low numeracy, low self-efficacy, or other barriers to understanding a technical or complicated message. It is the ability to weave doing and thinking, navigating and knowing that gives narrative its power. Interestingly, research has shown that comprehension mechanisms are quite stable across individuals within and between cultures and the process of comprehending the plots and points of narratives are quite similar in narratives that range in complexity (Graesser, 1981). Stories told within their cultural contexts help to promote values and beliefs and can contribute to the construction of individual identity or concept of community (Graesser, 1981).

Defining narrative processing

Much like the definition of narrative itself, there is much debate about what constitutes narrative processing. Essentially one can focus on processing the elements of the narrative itself, or how an individual makes meaning of a narrative based upon their own personal experiences. For instance, Escalas (2004a) defines narrative processing as reflecting a viewer's attention to the message's character(s), situations involving these characters, and storyline. This definition is derived partially from Cole (1997), who maintains that narratives include "characters, goals, predicaments, and consequences that result from the interactions of the characters" (Cole, 1997, p. 326). Escalas states, “people think about incoming information as if they were trying to create a story—for example, imposing a beginning, middle, and an end, attributing causality, and so forth” (2004a, p. 169). On the other hand, Schank’s (1990) and Schank and Abelson’s (1995)

view of narrative processing is born from discourse psychology and specifies (a) how the meaning of a story is represented in the mind of the reader, (b) how these meaning representations are constructed during the process of comprehension, and (c) how the meaning representations are subsequently used in different tasks (such as retrieving the story from long-term memory, judging whether a statement is true or false, and answering questions about the story). In this perspective, it is thought that our minds are mainly repositories of cases (stories) and learning consists largely in assimilating new stories and revising and expanding indices for our repertories of previously received stories (Schank & Berman, 2002). Typically, these stories involve the self and one's personal experiences (Kerby, 1991; Polkinghorne, 1991). In this sense, narratives are similar to the general concepts of *schemas* or *scripts* in that they are organizing mental structures or frameworks (Polkinghorne, 1991). Nevertheless, narratives are different from schemas and scripts. A schema refers to the general knowledge a person possesses about a particular thing (Schank & Ableson, 1995), whereas a script represents commonly experienced events that can be applied to an abstract situation (Abelson, 1981). Perhaps it is a combination of both processing the story itself and how individuals relate an incoming story to stories they have in memory. If so, then narrative processing becomes an instrument that not only constructs and communicates meaning and imparts knowledge but also an instrument that allows people to mix in cultural and individual expectations as they construct their personal narratives. Or rather, narrative processing becomes part degree to which audiences' thoughts are based on narrative elements, and part the degree to which audience members develop a self-generated story. In the context of narrative processing, both aspects are likely important.

Relevant concepts for narrative processing

Another concept put forth by Schank and Abelson related to narrative processing is *story-banks.* It seems plausible that, at some point in our lives, most of the ‘‘new’’ stories we hear are thematically similar to ones that we have heard in the past. Schank and Abelson (1995) referred to this mental stockpile of thematically related stories as a story-bank. Work in the attitude change literature on prior knowledge and familiarity suggests that story-banks might actually increase the recall for a related narrative (Schank & Abelson, 1995) and facilitate processing by giving individuals increased ability to evaluate new messages (Evans, 1996). Additionally, Green (2004) found that familiarity led to increased transportation, or immersion, into a story, and increased transportation was associated with increased attitude change (Green & Brock, 2000). An explanation for this change that has been proposed is that having a relevant story-bank allows individuals to avoid expending cognitive resources on comprehending and orienting themselves to the narrative; instead, the correspondingly freed resources allow them to dedicate more attention to the belief-relevant portions of the narrative (Dal Cin, Zanna, & Fong, 2004). An alternative theoretical point of view suggests that communications that remind recipients of previous stories or experiences will create a sense of resonance (i.e., a deep sense of connectedness corresponding with poignant emotions; (e.g., Black & Siefert, 1985; McKoon, Ratcliff, & Seifert, 1989, Experiment 1). This leads one to speculate that to the extent that narrative-relevant story-banks increase both relevant knowledge and familiarity, they might be expected to lead to superior narrative recall because story-banks allow people to quickly identify the main points. Consequently, the formation of story-banks can be a functional and adaptive strategy for navigating through an environment characterized by information overload.

Additionally, one other related concept is that of *self-referencing.* In cognitive psychology, self-referencing occurs when one processes information by relating it to one's self or personal experiences (Burnkrant & Unnava, 1995; Debevec & Romeo, 1992). While researchers do not believe that self-referencing is necessary for absorption into a story (Escalas, 2004), self-referencing in the context of a narrative certainly does not harm persuasion (Escalas, 2004). Further, self-referencing has been demonstrated to have many positive effects including enhanced learning and recall of information, increased positive attitudes, more favorable message evaluations, and higher levels of empathy and affect (Escalas, 2004).

Narrative processing is active processing

Although understanding long, detailed, and formally sophisticated literary narratives is for many people a natural, seemingly automatic process, actually complex linguistic and cognitive operations are required to generate or comprehend even the most minimal stories (Herman, 2003). Even listening or viewing a narrative requires that audience members construct the story upon receiving clues (Levy & Windahl, 1984). For example, as we process a given story, we place its clues together and determine our hypothesis as to the end result. In return, this processing occupies cognitive resources because the audience member must give up consciousness of his or her actual self and surroundings. Denning (2001) suggests that readers often find themselves in the grip of an effective story – so much so that they tend to forget, at least for the duration of the story, the physical existence in which their bodies are living. So rather than conceptualizing the reader as a passive recipient, the reader should be thought of as an active agent in the process of constructing a story from an available plot (Bordwell, 1985) and actively thinking about the implications. It is as if the narrator gives the reader an implicit invitation to fill in the missing links. If the invitation is accepted, the readers will find themselves

inside the story, projecting themselves into the situation, living through the predicaments the protagonist goes through and feeling what they feel. Similarly, Birkerts (1994) suggests engaged readers are in a constant state of conniving and conspiring with the narrator. As an active audience, individuals bring their own interpretations to stories. Birkerts (1994) proposes that readers often find two voices- their own and that of the narrator- in dissonant conversation. Perhaps more than other messages, narratives allow readers to find different meanings. In return, lessons from stories may resonate with people in ways that depend on their own background and current situation (Phillips, 1994).

Narrative processing via transportation vs. cognitive elaboration

It is also important to draw a distinction between transportation and cognitive elaboration so as to understand how people respond while processing persuasive information in a message. For cognitive psychologist, Jerome Bruner (1986), narrative is one of the two fundamental styles of thinking enabling human beings to make their way in the world--the other style being "paradigmatic" or logical/classificatory thinking. Whereas cognitive elaboration emphasizes thinking while giving critical attention to such things as quality of arguments; transportation implies immersion into the world of the story with attention focused on the unfolding relationship of characters, situations and events. Green and Brock (2005) posit the mechanisms of logical consideration and evaluation/elaboration of arguments do not appear to be the mechanisms that underlie transportation. Rather it is thought that transportation is a convergent process whereas elaboration is a divergent process (Green & Brock, 2005). For instance, narrative thinking involves assessments of the logic of action sequences. Most notably, narrative thinking probes motives for, and consequences of action (e.g., whether the narrative makes sense in light of what one knows about motives for and consequences of action; see Fisher, 1987).

Thus, critical evaluation is likely to interfere with our ability to construct narrative, either because it interrupts the construction process completely, or because it reduces the amount of incoming plot-related information available for constructing the story (Busselle, Ryabovolova, & Wilson, 2004). Specifically, many factors have been found to reduce critical thinking while reading, listening, or viewing a narrative including:

1) Transported individuals are concentrated on the story to the extent that information is processed as if it were factual and discount information known to be false (Gilbert, 1991) leaving nothing to contradict the story.
2) A reader's or viewer's lack of motivation to be critical can be found to reduce critical thinking. Simply, a viewer or reader may not want to question the narrative because critical thinking may interfere with following the narrative, emotional involvement, and the pleasure of the experience (Green, Brock, & Kaufman, 2004).
3) Further, if we assume viewers have limited resources available to process information (e. g., Lang, 2002; Nell, 1988), readers', listeners', or viewers' mental capacity may be exhausted due to processing the narrative leaving them unable or unwilling to counterargue story conclusions. (Green, Garst, & Brock, 2004).

The distinction between transportation and cognitive elaboration is more broadly discussed in the coming section on the Transportation Theory of Narrative Persuasion.

Summary of narrative processing: Thinking, understanding and explaining

Although narrative thinking involves assessments of the logic of action sequences, there appears to be a great deal of automaticity associated with the processing of narrative information (Bower & Black, & Turner, 1979; Graesser, 1981). Denning speaks of the processing of stories as instinctive, or as "unconscious as highway driving" (2001, p. 60). Memory and retrieval

processes for information contained in narrative are particularly efficient (Mandler & Johnson, 1980). People are able to make evaluations and form judgments by constructing stories (Gergen & Gergen, 1988; Pennington & Hastie, 1992). Most notably, even though narrative thinking is seemingly done quite unconsciously, audience members habitually probe for motives and consequences of action (e.g., whether the narrative makes sense in light of what one knows about motives for and consequences of action; see Fisher, 1987). As a consequence, the fundamental audience activity is to discover causal connections within the narrative (Gerrig, 1993). Denning states "the process of having listeners fill in the missing links helps explain why stories can capture and regenerate dynamically evolving concepts" (2001, p. 69).

Understanding a story can be viewed as finding the right knowledge of the world to give the events coherence and explanation. Bordwell (1985) points out that we create the story in our mind from the available clues presented throughout the narrative and piece them together to determine a hypothesis as to the story's conclusion. Once we reach that conclusion, each proceeding clue we receive is tested against the previously constructed hypothesis (Bordwell, 1985). Heath and Heath write, "Abstraction makes it harder to understand an idea and to remember it. It also makes it harder to coordinate our activities with others who interpret the abstraction in very different ways" (2007, P. 100). Storytelling can thus increase understanding by making abstract concepts more concrete. Indeed, when information comes to us without a narrative, we often supply one in order to better make sense of it, and to remember it later.

Lastly, we intuitively use narrative messages to communicate the complexity that is all around us although sometimes our minds force us into an abstract way of thinking. Nevertheless, narratives are a better fit not only with the way our brains are made, and typically also with the underlying reality of the subject matter being discussed. The difficulties of communication seem

to disappear when the concept is being communicated by a story. Cole (1997) suggests that even adults who are highly skilled in formal methods of analytical thinking tend to speak mainly in terms of narratives when asked to state abstract principles about themselves, their plans, and their accomplishments.

Narrative as Persuasion: Overcoming Resistance

Resistance can be broadly defined as a "reaction against change, or a motivation to oppose persuasive appeals (Knowles & Linn, 2004, p. 4). Narrative has proven to be a useful tool in overcoming both resistance to behavior change and resistance to messages (Dal Cin, Zanna, & Fong, 2004) and in many cases proves to be a more effective way to influence attitudes and behaviors than conventional persuasive efforts (Slater, 2002b). Petty and Krosnick (1995, p. 175) state that "use of narratives, in fact, may be one of the only strategies available for influencing the beliefs of those who are predisposed to disagree with the position espoused in the persuasive message" and even extends the argument to suggest that narratives can be a useful strategy in challenging strong attitudes, that is, attitudes that people hold quite fiercely and confidently, and that are most resistant to change.

In relation to behavior change, narratives can convey information about behavioral risk and model risk avoidance via characters that may serve as role models for appropriate behavior. Modeling is grounded in social learning theory (Bandura, 1977) and posits that people learn not only from their own experiences, but also by observing the actions of others and the consequences of those actions. Characters within stories can serve as positive or negative role models (Bandura, 1986), however more generally the experiences of sympathetic characters may be a source of information and influence for readers. In particular, modeling has been shown to increase perceived self-efficacy, or individuals' beliefs that they are able to perform a specific

behavior (Slater, 2002a). Furthermore, it is thought modeling may also contribute to response efficacy, or a belief that the action will have the intended effect (Bandura, 1986). Research has shown that efficacy is one of the more powerful influencers of behavior change (Brock & Keller, 1997) and people may have increased feelings of efficacy after witnessing a character like them model the appropriate behavior (e.g., engaging in cardiovascular exercise, eating healthy, following safety guidelines).

Needless to say, trying to change another person's behavior without obtaining their buy-in is an impossible task. Narratives may aid in overcoming message resistance in a number of ways, but primarily because they reduce the barriers of closed-mindedness, and cognitive responses such counterarguing or logical consideration of the message (Dal Cin, Zanna, & Fong, 2004). One way counterarguing is lessened by narrative messages is by implying beliefs as opposed to stating beliefs explicitly (Dal Cin, Zanna, & Fong, 2004). Essentially, this leaves the reader without specific arguments. Additionally, changing beliefs also requires convincing us there is actually something wrong with our existing beliefs (Schank & Berman, 2002). Variables related to the sources of a message, such as perceived similarity (e.g., Bandura, 1977, 1986; Gerbner, Gross, Morgan, & Signorelli, 1994) and credibility (Pornpitkpan, 2004) can have subtle but significant impacts on whether the audience takes the message seriously and is motivated to act. Similarly, the manner in which a message is organized, and the imagery or language used, can all influence the persuasive process. Each of these variables will be more closely examined in the sections ahead.

Transportation Theory of Narrative Persuasion

A good theory generates distinctive predictions that differ from everyday intuitions and from other theories. Additionally, a good theory has straightforward practical applications. One

limitation of behavioral theories with respect to narrative persuasion is that they often do not tell us how to best design messages so that they will be attended to, accepted, and yielded to. Nevertheless, theories of communication do. A good communication theory for example, informs us how to write stories that are coherent, informative, persuasive, memorable, emotionally salient, and/or interesting (Graesser, Olde, & Klettke, 2002). One such communication theory, the *transportation theory* of narrative persuasion, has added much to our understanding of why people are so drawn to narratives and offers insight regarding the processing strategies they bring to messages.

Gerrig (1993) coined the term "transportation" that refers to the experience of being engulfed in a fictional world, losing awareness of the real one, and living vicariously through other's and their experiences (Gerrig, 1993). Later, Green and Brock (2000) proposed the transportation theory of narrative persuasion that posits the impact of narrative messages on readers' attitudes is dependent on the extent to which a reader becomes absorbed into the narrative. Transportation as defined by Green and Brock (2000) refers to the degree to which a message recipient is cognitively and affectively invested in a narrative. Or rather, it is the extent to which audience members become involved in the activity of constructing mental models (Bussell & Bilandzic, 2008) and occurs when a person's attention is fully engaged and emotional responses are occurring consistent with the vicarious experience of the events taking place in the narrative (Slater & Rouner, 2002). Transportation, therefore, can be viewed as an active process, the by-product or the result of reader's performance of the narrative (Green & Brock, 2000). Denning states, "from inside an absorbing story, the readers can feel an agility and limberness, a sense of being for once in accord with time, real time, deep time, an environment where events resonate and have meaning" (2001, p. 61). The experience of transportation has also been

described as the feeling of “entrancement” (Nell, 1988; Strum, 2000). Such a state is embodied by a strong feeling of enjoyment while engaging with the narrative, resistance to interruption and a feeling of returning from another place (Nell, 1988). In summary, as we are transported we construct mental models of a story that are accompanied by the positioning of oneself in the story world - our thoughts are centered on the story, we respond emotionally to the characters and events, and we picture the events as they unfold.

Although transportation theoretically could occur with any message, it is limited to narratives. However Green (2006) has proposed that transportation is not limited to the reading of written material. Narrative worlds are broadly defined with respect to modality so the term "reader" may be construed to include listeners, viewers, audience members, or any recipient of narrative information (Green, 2006). Additionally, whether the narrative is fictional or nonfictional does not seem to matter; the same processes involved in transportation are theorized to occur for both fictional and nonfictional narrative (Green, Garst, Brock, & Chung, 2006). As for the length of time it takes someone to become transported, researchers have found transportation effects even for very brief narratives (Escalas, 2004a). Nonetheless, there are still unanswered questions about the minimal length of time required to become transported, and whether being transported into a narrative world for an extended period of time creates even stronger effects than brief immersions (Escalas, 2004a).

To measure transportation, Green and Brock (2000) developed a scale based off of Gerrig’s (1993) exposition of transportation and taps cognitive, emotional, and imagery processes. These processes work together to create the transportation experience; therefore, using the entire scale often provides the strongest predictive power. However, it is possible that particular dimensions of transportation may be more predictive of some outcomes than others.

The major dimensions include: existence of mental imagery (e.g., "While reading the narrative I could easily picture the events in it taking place"), a lack of awareness of the surroundings (e.g., "While I was reading the narrative, activity going on in the room around me was on my mind"; reverse scored item), cognitive attention to the story (e.g., "I was mentally involved in the narrative while reading it"), emotional involvement (e.g., "The narrative affected me emotionally"), and feelings of suspense (e.g., "I wanted to learn how the narrative ended"). Additionally, four narrative specific items can be added. All items are measured on a seven-point scale anchored by 1 (not at all) to 7 (very much). The scale has shown good internal consistency, as well as discriminant and convergent validity.

Transportation appears to be the primary mechanism that underlies the effect of narrative messages (or stories). Researchers have found that the more individuals are transported by a narrative, the more persuaded they tend to be (i.e., the more they endorse story-consistent beliefs) (Deighton, Romer, & McQueen, 1989; Escalas, 2004b, 2007; Green, 2004; Green & Brock, 2000, 2002; Green, Garst, & Brock, 2004; Mazzocco, Green, & Brock, 2007; Wang & Calder, 2006). Similarly, Strange and Leung (1999) found that the more engaged readers were as they read a story, the more likely they were to suggest causes and solutions to problems they encountered in the narrative. Overall, a transported state allows people to suspend disbelief, which is subsequently associated with less counterarguing, stronger affective responses, and more story consistent beliefs (Green, 2006).

Transportation focuses an individual completely on the narrative encouraging them to become immersed in the plot, such that one fixates all senses on the unfolding story. Undoubtedly, it is enjoyable to be taken away from self-awareness and everyday reality, even if the content of the story is sad rather than upbeat (Green, Brock, & Kaufman, 2004). Green

(2006) states that, “transportation into a narrative world also helps individuals to engage in mental simulations of events or behaviors” (p. S165). Simulations may in fact help individuals understand things which are complex both cognitively and emotionally (Mar & Oatley, 2008). It is assumed that it is the melding of affective and cognitive reactions that allows individuals to go beyond simple learning (Green, 2006).

While making clear what transportation is, there are a few related concepts that are worth mentioning in the interest of clarity. The first is “flow.” The concept of flow was first introduced by Csikszentmihalyi (1990) and is described as a feeling of euphoria that people have while they are engaged in physical activity such as singing, acting, dancing, and sports. Unlike transportation, flow has not been proposed to happen while reading. Like narrative processing when an individual experiences flow they perform required movements automatically, unaware of the technical process behind conducting the operation (Csikszentmihalyi, 1990). However, flow concentrates more on involvement with an activity or performance (Csikszentmihalyi, 1990) whereas transportation concentrates on involvement within a narrative. Flow is also similar to “presence” except presence refers to the sensation of being lost specifically in a medium. Presence researchers, for example, are more concerned with studying absorption by way of the five senses: sight, sound, touch, taste and smell (Lombard & Ditton, 1997) and developing technology used to engulf the viewer and subsequently enhance the viewing experience (Lee, 2004). To summarize, flow deals with being involved in an activity, while presence is concerned with being engulfed by a medium, and transportation deals with becoming absorbed or lost into a narrative (Lombard & Ditton, 1997).

Because transportation may be related to belief or attitude change, it is important to distinguish between it and cognitive elaboration. Green and Brock (2000) conceptualize

transportation as a processing that is "qualitatively different" from the traditional systematic/central versus heuristic/peripheral cognitive processing described in the dual-process models (Chaiken, 1980; Petty, Ostrom, & Brock, 1981). Additionally, transportation is thought to be distinct from involvement as it has been used in the persuasion literature (Green & Brock, 2002).

Involvement is a motivational state in which a person's self-concept is activated in terms of her or his ability to obtain desired outcomes (see also Petty & Cacioppo, 1979; Sherif & Cantril, 1947; Zaichkowsky, 1985). It is frequently used to refer to outcome-relevant or issue involvement, also called personal relevance, or the extent to which the communication is likely to personally affect the recipient. In contrast, transportation is a state or experience "where all mental systems and capacities become focused on events occurring in the narrative" (Green & Brock, 2000, p. 701). Accordingly, transportation is different from involvement in that the person feels caught up in the story itself and not in anything extrinsic to the narrative. But that is not to say that relevance is not important to absorption into a story. Factors such as personal relevance that make it easier for readers to identify with characters and become interested with a story may facilitate the experience of transportation and ultimately lead to belief and behavior change (Green, 2006).

Further, although transportation and elaboration both can lead to belief change, existing theory and research suggest that they are independent processes (Green & Brock, 2000, 2002; also see Escalas, 2007). Not only have researchers (e.g., Green & Brock, 2000) tried unsuccessfully to use measures of elaboration to assess responses to narratives, but research indicates differences in the need for cognition and levels of cognitive elaboration do not affect transportation. While elaboration leads to persuasion through critical attention to major points of

an argument in which individuals use their own schemas and experiences to assess the strengths/weaknesses of the arguments, transportation leads to persuasion through reduced negative cognitive responding, the realism of the experience, and strong affective responses (Green & Brock, 2000). Table 2.1 summarizes some of the other differences between narrative and cognitive processing in regards to transportation and elaboration.

It has been suggested that accepting narrative information as true is the default cognitive mode, while disbelieving or counterarguing requires effortful critical thinking (Gerrig, 1993; Green & Brock, 2002). Researchers suggest transportation makes readers less likely to counter-argue story assertions (Green & Brock, 2002) because counterarguing reduces or interrupts the construction process, thus interfering with the plot-related information available for constructing and elaborating on the story (Busselle, Ryabovolova, & Wilson, 2004). Furthermore, research has shown transportation distracts people from thinking analytically about the message strength (Escalas, 2007). It is plausible that most of the time individuals are not motivated to think critically because analytical thought can interfere with constructing the narrative, emotional involvement, and the pleasure of the experience (Green, Brock, & Kaufman, 2004). Simply, a viewer or reader may not want to question the narrative because it would likely ruin the pleasure of the experience (Green & Brock, 2000). Additionally, if it is assumed that we have limited resources available to process information (e. g., Lang, 2000; Nell, 1988), a persons' mental capacity may be exhausted due to processing the narrative, and they may not have the mental capacity at that point to counterargue story conclusions (Green, Garst, & Brock, 2002). Escalas (2007) suggests if individuals are not refuting claims made in a narrative, the story events are likely to become integrated into real-world belief structures.

Table 2.1

Narrative Processing via Transportation versus Cognitive Processing via Elaboration (Green & Brock, 2000)

Narrative processing via transportation	Cognitive processing via elaboration
Considered a convergent process.	Considered a divergent process.
People motivated to at least temporarily accept narrative -Implies immersion into a text.	Implies critical attention to major points of an argument.
May make narrative experience seem more like real experience.	Deals with robust and overtly persuasive topics that directly affect the recipient in terms of their own self interest.
Persuasion through other mechanisms such as mimicry of experience.	Emphasizes the importance of motivation-to process on the nature of message elaboration.
Likely to create strong feelings towards strong characters.	Persons engaged in elaboration might be accessing their own opinions, previous knowledge or thought and experiences.
The individual may be distracted temporarily form current and previous schemas and experiences.	Attitude change via logical consideration and evaluation of arguments.
Audience members likely to be reluctant to stop and critically analyze story -May reduce cognitive responding.	Greater cognitive elaboration of message arguments potentially leads to lasting attitude change.
Transported audience members may be less likely to disbelieve or counterargue strong claims and thus their beliefs may be influenced.	
Audience members may become highly involved with characters.	

It is important to note that transportation is influenced through different mechanisms. The most obvious is a poorly constructed narrative. Simply stated, bad stories do not transport readers into their fictional worlds. “Just as a leaky boat does a poor job of transporting people across water, poorly constructed narratives do not help readers enter the story world” (Green, 2004, p.

320). Gerrig (1993), however, discounts the quality of a text as a means to transportation stating "a pickup truck isn't as elegant as a Cadillac, but it will still get us to Texas" (p. 12). Other researchers do not dismiss the quality of narrative and its impact on transportation quite as boldly and suggest a few attributes that appear to help facilitate transportation such as imagery and perceived realism.

It is widely assumed that rich detail and concrete information in narrative messages help individuals remember the story and also makes story events more influential. Images can linger in our memory long after we have encountered them and imagery-evoking stories are easily recalled even when we cannot remember who told them or why. This ease of imagining can help change beliefs and behavior (Gregory, Cialdini, & Carpenter, 1982; Sherman, Cialdini, Schwartzman, & Reynolds, 1985) and particularly vivid images are likely to be enduring and difficult to change with other types of arguments (Green, 2006). It has been suggested that the best stories are those that have rich detail, because they broaden the context to allow more listeners to find themselves in the stories (Schank & Berman, 2002). Consequently, transportation may in fact derive its influence from the general ability of most people to create vivid images (Green & Brock, 2002). However, Green and Brock (2002) do not suggest that imagery alone suffices to bring about change in beliefs and behaviors or has more influence than memories, cognitive associations, or other mental representations, but rather that imagery may function multiplicatively to facilitate transportation (Green & Brock, 2000). Green and Brock (2000) show that when imagery, one of the three components of the transportation scale, is statistically excluded, the ability of transportation to predict narrative persuasion is thereby reduced.

Transportation has also been found to be positively correlated with perceived realism (Green, 2004). Traditionally, researchers have proposed that when viewers interpret content as more realistic, the influence of that content increases (Busselle, Ryabovolova, & Wilson, 2004); nevertheless, the nature of this role is not clear. Given the cognitive demands associated with processing narrative, it seems reasonable to expect that viewers would assume a certain level of realism and would question that assumption only under certain circumstances. Different characters, events, programs, or genre, however, may elicit different types of realism judgments (Greenberg & Busselle, 2000). Perceived realism may also be affected by whether the characters in the text act like real people, or the story seems more like an actual event. Both factors might affect a person's perception of plausibility and ultimately believability (Potter, 1986; Strange, & Leung, 1999). It does appear that inclusion of more typical information in a media presentation leads to increases in perceived realism (Shapio & Chock, 2003).

Narrative: Provider of Surrogate Social Connections and Identification with Characters

Narrative elements, such as an engaging story with characters that people will respect, care about, and connect with have been proposed to be essential to shifting intention and behaviors (Hinyard & Kreuter, 2007). It is narratives ability to persuade through creating connections with characters that role model behavior that achieves desirable outcomes and establishes a perception of normative behavior. Audience members are able to identify with story characters, projecting themselves into the situation, living the predicament of the protagonist, feeling what he or she was feeling and experiencing the same hopes and fears. As Denning states, "the narrative way of thinking is internal and immersive and self-forgetting and attached to the full richness of tacit understanding" (2001, p. 70).

Parasocial relationships

Most of the efforts to find common ground between theories of mass media and interpersonal communication have been directed toward exploring parasocial relationships as social relationships (Rubin & McHugh, 1987). Parasocial relationships are the seemingly face-to-face interpersonal relationship which can develop between an audience member and a mass media personality (Horton & Wohl, 1956). Parasocial relationships evoke cognitive and emotional involvement (Rubin & Perse, 1987; Tan, 1996) including identification with characters (Oatley, 2002) and behaviorally oriented parasocial interactions, such as when an audience member "talks" to characters. In essence, the audience member forms a relationship with a performer that is analogous to real interpersonal relationships that people have (Papa, Singhal, Law, Pant, Sood, Rogers, & Shefner-Rogers, 2000; Perse & Rubin, 1989; Rubin & Perse, 1987; Sood & Rogers, 2000). Therefore, audience members identify with media personalities and form a sense of friendship, attraction, and involvement (Rubin & Perse, 1987) while retaining their self-identity (Horton & Wohl, 1956). Horton and Wohl (1956) argue that when a parasocial relationship is established, the audience member appreciates the values and motives of the media character, often viewing him or her as a counselor, comforter, and model. In order for this to happen, however, the audience member must identify with a particular media character and believe that his/her interests are joined (Burke, 1945). Singhal, Sharma, Papa, and Witte (2004) propose, the stronger the identification, the more likely that character's behavior will affect the audience member.

Identification with characters

It is important that parasocial relationships not to be confused with the concept of *identification* (Cohen, 2001). The main differences between the two concepts are that

identification lacks an interactional component, and requires absorption into the text and emotional reaction. This is different from a parasocial relationship which is conceptualized to be more like a friendship. A parasocial relationship is based on a psychological attachment between the viewer and a character (Cohen, 1997; Cole & Leets, 1999). Identification instead is a "mechanism through which audience members experience reception and interpretation of the text from the inside, as if the events were happening to them" (Cohen, 2001, p. 245).

It is thought narratives overcome resistance and hence increase communication effectiveness by increasing identification with characters in the story (Bandura, 1986; Dal Cin, Zanna, & Fong, 2004; Rogers & Bhowmik, 1970). Identification persuades by making the source of a message, rather than the message itself, attractive. Additionally, identification helps overcome the natural tendency to limit one's thoughts and feelings to a single perspective. In return, new possibilities for understanding are opened that may result in attitude change. For instance, identifying with media others allows us to experience social reality from other peoples' perspectives and, thus, shapes the development of self-identity and social attitudes (Erikson, 1968). Additionally, Basil (1996) found identification with celebrities promoting health messages increased the adoption of these messages, and found in advertising, celebrity appeals evoke identification, which may lead potential consumers to imagine themselves eating, drinking, or wearing an advertised product. Further, an example from ethnographic audience studies found that when asked to discuss their reactions to shows, TV viewers often focus on their feelings and reactions to characters, including mentions of strong identification with characters (e.g., Liebes & Katz, 1990). Another explanation for the effects of identification is that it increases the intensity of and involvement with story characters and makes their meaning

more memorable. For instance, Maccoby & Wilson (1957) found that children remembered more of the actions and speech of characters with whom they identified.

From review of the literature on identification, it is evident that it is understood in a variety of ways by different theorists. This confusion has inhibited the development of a comprehensive theory of identification and its consequences. Cohen (2001) proposes the literature includes at least four dimensions that are central in defining identification. The first conceptualization defines identification as absorption, or the degree to which self-awareness is lost during exposure to the text (Cohen, 2001). When immersed, the reader is entirely or in part in a different world, a world in which they "hand over their groundedness in the here-and-now to project their new existence in the mental elsewhere of the story" (Denning, 2001, pp. 59-60). Identification in this sense is fleeting and varies in intensity occurring intermittently during exposure to a media message (Wilson, 1993). The second component defines identification as a response to textual features that are intended to provoke identification (Basil, 1996; Maccoby & Wilson, 1957; Slater & Rouner, 1997). This definition really has to do with the "extent to which a recipient finds the narrative engrossing" (Slater & Rouner, 1997, p. 5). The situation, setting, and storyline are all elements that contribute to how "gripping" one finds a narrative. With the third conceptualization, identification is defined as empathy or sharing the feelings of the character and addresses the degree to which the audience member internalizes and shares the goals of the character (e.g., Bettelheim, 1943; Wollheim, 1974). While strongly identifying, the audience member adopts the perspective of the character with whom he or she identifies (Cohen, 2001). Livingstone (1998) described identification as imagining being in someone else's shoes and seeing the world through his or her eyes. Finally, the fourth component of identification refers to a feeling about the character, rather than feeling with the character (Cohen, 2001).

Identification here is the perceived similarity to and liking of story characters, and wanting to be like (modeling) story characters (e.g., Hoffner, 1996; Liebes & Katz, 1990; Reeves & Miller, 1978; Slater & Rouner, 1999; Zillman & Bryant, 1994). This is in line with social learning theory (Bandura, 1986), that proposes identification can produce modeling and imitation because it provides a glimpse of "what if," and these glimpses are powerful predictors of future behavior. It is clear from past research that the outcomes of the characters behavior or assertions made by the character carry special weight in shifting a reader's beliefs and behaviors.

As mentioned, factors that are likely to engender identification include likeability and similarity (e.g., Bandura, 1977; Basil, 1996; 1986; Gerbner, Gross, Morgan, & Signorelli, 1994; Maccoby & Wilson, 1957). Liking requires only positive sentiment—we like our friends, we like members of our family, we like certain characters in stories. As indicated in the persuasion literature, liking a character is effective in inducing attitude or belief change (Eagly & Chaiken, 1993). Identification, however, requires more than just liking; it requires *likeness* (perceived similarity, also known as homophily) to a character, or some desire to be *like* the character (Oatley, 2002; Slater, 2002a). Judgments of similarity may be based on actual or perceived characteristics of the source, such as socioeconomic status, group membership, place of residence, educational background, life experience, or attitudes, beliefs and values (Simmons, Berkowitz, & Moyer, 1970). Similarity may also be based on a multitude of factors other than demographic similarity. For instance, animated characters often elicit feelings of similarity by suggesting similarity of attributes or similarity of situation (Cohen, 2001).

Research suggests that a preexisting similarity between a narrative character and the recipient of a narrative can increase transportation (Green 2004). Additionally, the perception of similarity may act as a peripheral cue and enhance narrative effectiveness when absorption into a

narrative is low (Chaiken, 1987). Slater and colleagues found that identification with characters moderated effects of message type (conversational versus testimonial versus newsletter) on believability, usefulness, and clarity of dietary change information (Slater, Buller, Waters, Archibeque, & LeBlanc, 2003). Additionally, it has been suggested that perceived similarity may influence narrative effects through increase in perceived susceptibility to a condition or outcome, as well as influencing one's perception of social norms regarding specific behaviors (e.g. Campbell & Babrow, 2004; Slater, Buller, Waters, & LeBlanc, 2003).

Prior familiarity with story themes has also been shown to produce increased transportation (Green, 2004). Green suggests (2004) that individuals who have prior familiarity with story themes may be more motivated to immerse themselves in the story due to intrinsic interest, or because they may have an easier time imagining story events. Prior knowledge may also influence transportation due to the relevancy of the subject matter to a person's life, or by contributing to story enjoyment (Green, 2004).

Slater and Rouner (2002) suggest that personal similarity to characters in a narrative may be less important than how emotionally involved one becomes with those characteristics as a consequence of the degree of narrative absorption or transportation. It is proposed that as a story progresses an increasing loss of self-awareness is temporarily replaced with heightened emotional and cognitive connections with a character and ultimately transportation into another world (Green & Brock, 2002). Subsequently, narratives are processed from the character's perspective and transformed into empathic emotions (Oatley, 1994). Hence, the identification process leads to a psychological merging where the audience member simulates the feelings and thoughts appropriate for the events that occur (Oatley, 1999).

To date, no measure for identification with media characters has been tested. This is likely because identification is an imaginative process that is characterized by an altered state of awareness, thus making it difficult to measure. Nevertheless, Cohen (2001) has suggested that the more someone is "absorbed in the text, empathizes with and understands a character, and adopts his or her goals, the more he or she may be said to identify with that character" (2001, p. 256). Based on these dimensions Cohen (2001) created a scale. This scale is different from the transportation scale by Green & Brock (2000). It is hoped that the development of such a scale as Cohen's identification scale will provide a way to measure some of the most central issues in media studies and help explain the link between media, identification, social identities, and social relations (Cohen, 2001).

In summary, it is thought that identification is a key component in narrative impact (Green, Kass, Carrey, Herzig, Feeney, & Sabini, 2008). Not only does it appear that identification leads to empathy and cognitive rehearsal of the beliefs, but it is thought that it may also, as Slater (2002a) suggests, directly impact behavior and behavioral intentions by changing self-efficacy beliefs and making specific attitudes more accessible. Thus, at least some of the power of narrative lies in identification with narrative characters that leads to positive associations with specific beliefs and behaviors and emotional connections to characters.

Source Credibility

It has also been proposed that individuals may well be persuaded by others' stories because of a characteristic of the narrator rather than the content of the message (Pornpitakpan, 2004). Source credibility is usually an external "given" in persuasive communications (e.g., Eagly & Chaiken, 1993; Hass, 1981); however, for narrative communications, attachment to a protagonist has only recently been considered as a determinant of the persuasiveness of a story

(Green, Garst, & Brock, 2004). Researchers in many fields have conducted studies to determine whether a high- or a low-credibility source will be more effective in changing beliefs, attitudes, or behaviors of the audience. Not surprising, highly credible sources have been found to induce more persuasion than less credible sources (Horai, Naccari, & Fatoullah, 1974; Hovland & Weiss, 1951; Johnson & Izzett, 1969; Johnson, Torvicia, & Poprick, 1968; Kelman & Hovland, 1953; Lirtzman & Shuv-Ami, 1986; Maddux & Rogers, 1980; Miller & Baseheart, 1969; Powell, 1965; Ross, 1973; Schulman & Worrall, 1970; Warren, 1969; Watts & McGuire, 1964; Whittaker & Meade, 1968). For instance, Cook (1969) found that participants generated fewer counterarguments for a message from a high credibility source than the same message from a low-credibility source. Interestingly, Green & Brock's (2000) findings suggest that with narratives, when a person is immersed in a compelling story, the source has diminishing influence.

Like other concepts linked to narrative impact, a uniform conceptualization of source credibility has yet to emerge even though there has been ample research. Nevertheless, prestige, reputation, status, believability, and honesty are often named in the literature as related concepts for source credibility (Pornpitakpan, 2004). Over the years credibility has been operationalized in a variety of different ways, including items measuring perceived message credibility (Lindsay & Ah Yun, 2003), competence and character (Baesler & Burgoon, 1994), trustworthiness, competence, dynamism, and objectivity (Whitehead, 1968), and authoritativeness and character (McCroskey, 1966). However, many of the past factor-analytic studies have been criticized for selecting scales haphazardly, using similar names for factors containing different scales, and using certain credibility factor structures as if they were generalizable far beyond the raters, sources, and factoring procedures that generated them (Cronkhite & Liska, 1976).

Over time, scales representing factors of source credibility have changed and the number of significant factors and their resulting amount of variance also changed. Nevertheless, two commonly identified components of source credibility include expertise and trustworthiness (Ohanian, 1990, 1991). Expertise refers to the extent to which a speaker is perceived to be capable of making correct assertions and derives from characteristics such as the source's general education level, familiarity with the subject matter, and speaking in an authoritative tone (Hovland, Janis, & Kelley, 1953). Trustworthiness, on the other hand, refers to the degree to which an audience perceives the assertions made by a communicator to be ones that the speaker considers valid and derives from the source's general reputation for honesty, being in a trustworthy profession, not standing to profit personally from convincing the audience, emitting nonverbal cues perceived as indicating honesty, and so forth (Hovland, Janis, & Kelley, 1953). Both expertise and trustworthiness may be established by a character's lived experience (e.g., being overweight and out of shape but trying a new exercise routine), not just by his or her professional credentials (e.g., being a physician or nurse). Thus, especially in personal experience narratives, a messenger may be perceived as both an expert and trustworthy (Kreuter et al., 2007). Ohanian (1990) proposed that a source who is perceived to be trustworthy, an expert, and attractive will generate the most opinion change. Nevertheless, other studies have not measured attractiveness at all and revealed that trustworthiness is more impactful than is expertise (McGinnies & Ward, 1980). While other studies have shown that that trustworthiness alone may not be enough or may be less important than expertise (Pornpitakpan, 2004).

Variables have been found to interact with source credibility include, source, message, and channel (Pornpitakpan, 2004). For example, Worchel, Andreoli, and Eason (1975) found a significant interaction between source trustworthiness and media. In their study, the highly

trustworthy source was more persuasive than the low-trustworthy source when television was used as the medium. However, source trustworthiness had less impact on persuasion when the medium was radio or written communication. In fact, the written medium was the least effective for the high-trustworthiness source, whereas for the low-trustworthiness source, television was the least effective. These results seem to suggest that the differences were caused by visual factors (e.g., physical appearance and nonverbal behavior of the source, the settings, and lighting). This being the case it may be inferred that trustworthiness is probably affected more by what people actually see than by what they hear or read (Worchel, Andreoli, and Eason, 1975).

As a reference, in dual-process models source credibility is often used as a peripheral cue. For instance, in a study by Booth- Butterfield and Gutowski (1993), participants who heard or saw a message attributed to a low credible source appeared to stop any systematic processing and shift to heuristic processing. Here, source credibility functioned as a persuasion cue. By contrast, participants receiving a message associated with a higher credible source showed greater sensitivity to argument quality. Here, source credibility functioned as an elaboration moderator, stimulating greater systematic processing in the face of the more difficult to process media.

Interestingly, persuasion researchers have also found that attitudes formed by direct experience were found to be more resistant to a counterattitudinal message than were those formed by indirect experience (Wu & Shaffer, 1987). In addition, Wu & Shaffer (1987) found the final attitudes of direct-experience subjects showed their cognitive elaboration of the message arguments (i.e., the central route to persuasion), while those of indirect experience subjects were affected more by source credibility (i.e., peripheral cues). This suggests that when recipients have direct experience with the object, source credibility tends to have little effect on persuasion.

Nevertheless, source credibility is likely to affect persuasion when recipients do not have prior experience with the object (Wu & Shaffer, 1987).

Narrative: Inducer of Emotion

Over the years persuasion research has examined the influencing roles played by affect, or emotion (for reviews see Eagly & Chaiken, 1993; McGuire, 1969; Petty, DeSteno, & Rucker, 2001). Various studies have found emotion contributes importantly to motivation, social communication, cognition, and action thus influences message effectiveness (Izard, 1977; Oatley, 2002). In particular, emotionally arousing persuasive messages tend to be better recalled, and perceived as more effective, than less emotional messages, both in the field of health communication (Biener, 2000; Biener, Reimer, Wakefield, Szczypka, Rigott, & Connolly, 2006; Dillard & Peck, 2000; Pechmann & Reibling, 2006), and in consumer marketing (Escalas, Moore, & Britton, 2004; Lang, Dhillon, & Dong, 1995). Increasingly it is being recognized that emotion is also a core component of narrative impact (Oatley, 2002, Dillard & Nabi, 2006; Dunlop, Wakefield, Kashima, 2008). The attention given to an emotionally engaging narrative has, as Graesser (1981) pointed out, an intensity that most creators of didactic messages could only dream of inducing. Research has shown that emotional responses to narratives increases cognitive processes and the amount of attention paid to the story elements (Morgan, Movius, & Cody, 2009). Emotional responses to narratives can also motivate behavior change (e.g., by evoking alarm at a character's poor outcome and a desire to avoid a similar outcome oneself, or fear about the consequences of risky behaviors) (Oatley, 2002).

Emotions refer to internal mental states representing evaluative, valenced reactions to events, agents, or objects (Forgas, 1995; Isen, 1984), accompanied by an experience of arousal (Dunlop, Wakefield, & Kashima, 2008). Classical theories of emotion such as the differential

emotions theory (Izard 1977, 1991) emphasize discrete emotions as a unique motivational and phenomenological process (e.g., Frijda, 1986; Lazarus, 1991) or rather a readiness to act and the prompting of plans (Frijda, 1986). Fundamental discrete emotions such as joy, sadness, anger, and shame have different inner experiences that lead to different behavioral consequences (Izard, 1993). Furthermore, emotions interact with each other; thus, one emotion may activate, amplify, or attenuate another (Izard, 1993).

It is important here to distinguish that emotion is different from mood and affect. Because all three terms are related it makes the distinction a bit hard. In addition, the terms tend to be used interchangeably, but they should not be. Whereas emotions are aroused in people by some specific object or situation that can be expressed (Oatley, 1994), for example, "I am angry with Ken for what he said to me," moods on the other hand refer to global, generalized affective states that are not created in someone because of any specific object or particular situation (Schwartz, Bless, & Bohner, 1991). Unlike emotions, moods are not something a person can express and may last for a long period while emotions may only for a short while. In comparison, affect is generally a much milder experience as compared to a full-blown emotional state (Peters, Lipkus, & Diefenbach, 2006).

Research has shown that affective responses are unmediated and fast initial reactions to people, events, and other stimuli (Murphy & Zajonc, 1993) and influence concurrent cognitions, information processes, judgments, and decisions (Peters, Lipkus, & Diefenbach, 2006). From this perspective, first we feel, and then we think. Theorists often use the term affect to refer to messages and responses to messages that often comes in two "flavors," positive (good) and negative (bad) thoughts. Recent research has demonstrated that we tend to automatically classify stimuli around us as good or bad and that this tendency is linked to behavioral tendencies.

Regardless of whether it is direct or indirect, positive affect has shown to encourage people to recall pleasant things, to judge things positively, to make faster decisions, to be more benevolent toward others, and to be more compliant (Isen, 1987). In research conducted by Chen & Bargh (1999) for example it was shown that stimuli classified as positive elicit a tendency to approach, whereas those classified as negative elicit avoidance tendencies. Moreover, research indicates that positive affect is a useful ploy to gain attention and an especially effective tool in overcoming filtering devices (Murphy, Monahan, & Zajonc, 1995). Affect has also been shown to lead to greater receptiveness of messages (e.g., Janis, Kay, & Kirschner, 1965; Reeves, Newhagen, Maibach, Basil, & Kurz, 1991).

Oatley (2002) proposes that it is the affective nature of narrative that helps elicit emotional memories that makes stories an effective form of persuasion. The hypothesis is that "literature can affect the self and potentially transform identity by suggesting emotions in contexts of understanding" (Oatley, 2002, p. 65). Furthermore, Frijda (1988) argues that imagination "serves to transform symbolic knowledge into emotionally effective simulation (p. 352). Emotions occur as the message recipient constructs and enacts a version of the narrative as a simulation that is fueled by his or her own experience. This emotional involvement in a narrative helps people manage their emotions by providing order, distance and perspective (Kreuter, et al., 2007).

It has been proposed that the key mediating variable with respect to narrative impact however, is empathetic response to the characters or how emotionally involved one becomes with characters as a consequence of degree of absorption (Slater & Rouner, 2002). Transportation draws upon, and perhaps helps develop, individuals' natural tendency toward empathy and perspective-taking (Green, Brock, & Kaufman, 2004). Thus, a recipient who is

deeply emotionally absorbed by a message tends to have a greater affinity for story characters and so may be more likely to be swayed by the feelings or beliefs expressed by those characters. This in turn may leave recipients more convinced by the message arguments (Green & Brock, 2000) and ultimately lead to motivation for behavior change (Green, 2006) and possibly even an inclination to pass the narrative onto others (Oatley, 1994). Transportation also enhances a narratives' influence by making the narrative experience seem more like real experience (Green, 2004). In return, perceived realism can affect belief change (e.g., Busselle & Greenber, 2000; Potter, 1988; Shapiro, Shen & Weisbein, 2002).

In closing, narrative forms of communication come equipped with capabilities that make them especially well suited to engage people emotionally with a situation and characters, communicate beliefs, model behavior, teach skills, provide behavioral cues, and simulate consequences of behavior over time. As has been stated, stories have a profound and far-reaching influence on what we remember, know and believe. In exploring narrative impact we gain a better understanding of cognition, emotion, and social processes.

Of course, not every narrative has such far reaching influence. There are simply some stories that are better than others, or rather, some that are "told well." In the following section information will be provided on how engaging narratives are crafted. Unfortunately there is no one size fits all "formula" for creating a transporting and influential narrative (Green, 2007). But good stories do draw from a common set of traits, which make them more likely to succeed (Heath & Heath, 2007). Surely this information will add to a deeper appreciation of what is involved in the narrative experience.

Narrative Quality

Many researchers believe and it seems plausible that narrative impact will only be realized if there is quality of text. This includes the selection or crafting of narrative elements in

a manner that enhances the experience for the audience by making the most of narrative effects (Escalas, 2007; Green, 2008; Green & Brock, 2005; Green, Brock, & Kaufman, 2004; Kreuter, et al., 2007; Livo, 1986; Nell, 2002; Phillips, 1994). Narratives typically include attributes such as themes, goals, plans, characters, etc.; nevertheless, these attributes alone do not guarantee effectiveness in achieving narrative impact (Kreuter, et al., 2007). Rather, it is "how these attributes are represented, sequenced, framed, and matched to audiences and objectives" (Kreuter, et al., 2007, p. 9) that differentiates between a story being told skillfully and a story being told ineptly.

Narrative craftsmanship is definable. For a story and the characters to be engaging, there are minimum standards including: sequencing, character development, a structure bounded in space and time, as well as production techniques (Kreuter, et al., 2007). Other important factors include imagery, plausibility, expectations, expectation failures (or obstacles), and perhaps, explanations of solutions (Schank, 1990). Kreuter et al. (2007, p. 9) point out that "some of these attributes have been tested in message effectiveness research, but few have been tested in the context of narrative communication specifically." Nevertheless, such attributes are derived from theories of drama (Hatcher, 1996). Table 2.2 outlines attributes of quality narratives. The attributes listed aid in transportation.

Skillfully crafted narratives provide enough details and emotions to hold a person's attention and be recalled at a later time. It takes only a few seconds to construct a rich mental image of a setting in the mind's eye (Grasser, Olde, & Klette, 2002). One way to achieve this effect is by providing lucid images that make the narrative content seem physically, psychologically, and temporally close to the person who experiences the information. Schank (1990) adds that good storyteller is cleaver enough with their descriptive capabilities in order to

make listeners come to view the scene the way they want them to. As a result, the richness of details and emotional impact allows narratives to be stored in multiple ways in our memories (Schank, 1990).

Narratives also have impact because they mimic life and are an honest expression of human experiences. Nell (2002) posits that most enduring stories echo mythology plotlines involving descent into danger coupled with eventual survival. The great irony of existence is that what makes life worth living does not come from the rosy side. The energy to live comes from the dark side. It comes from everything that makes us suffer. As we struggle against these negative powers, we are forced to live more deeply, more fully. Thus, engaging stories have the ability to generate exploration (Phillips, 1994) such that problems are positioned in the foreground and then through sequencing show how characters struggle to overcome them. Exploration is less likely to happen with stories that tell a beginning-to-end tale describing how results meet expectations. Stories like this are boring and banal. Instead, superior stories display the struggle between expectation and reality in all its nastiness. For instance a story might start by introducing characters and upsetting the balance of order somehow. Audience members then will be inclined to "stay-tuned" and see that order is restored. A familiar plot line describes what it is like to deal with opposing forces, calling on the protagonist to dig deeper, work with scarce resources, make difficult decisions, take action despite risks, and ultimately discover the truth. In stories like this the theme is reveled through characters, the characters are reveled through action, and action is represented by the decision to do something given a set of circumstances.

This type of story development is in line with excitation transfer theory which suggests that suspense is enjoyable because arousal is created by the excitement or stress of reading about the protagonist's struggles, and this arousal turns into a positive feeling (of relief) when the

character wins out over adversity (Green & Brock, 2005). Armes (1994) proposes when we are confronted with a story and wish to enjoy to the full extent the pleasure it offers, we have no alternative, as audience members, then to search for the meaning. Thus, "enjoyment depends not so much on conflict as on its resolution and on what the resolution means to the parties involved" (Zillmann & Bryant, 1994, p. 447).

Similarly, Schank and Berman (2002) propose that stories may be most effective for learning (which, by extension, may include forming behavioral intentions) when individuals have encountered a surprise or an expectation failure. This may be a natural extension of individuals' need to understand real others in their social world (Green, Brock, & Kaufman, 2004). This perspective suggests that one of the challenges of narrative persuasion then is to convince people that their previous models of the world need to be revised. Green (2006) adds this is precisely what good narratives are capable of doing. As Bruner (1990b, p. 350) says, "Narrative unlike logic is not stopped dead by contradiction. Indeed, it thrives on it." All great storytellers since the dawn of time - from the ancient Greeks through Shakespeare and up to the present day-have dealt with this fundamental conflict between subjective expectation and cruel reality.

Logically, one can imagine that the quality of a text would have an impact on whether or not an individual will be transported (Green & Brock, 2005; Slater and Rouner, 2002). Simply put, bad stories do not transport readers into their fictional worlds (Escalas, 2007). If you have ever watched a bad movie you would probably agree. Green (2008) proposes that factors such as personal relevance that make it easier for readers to identify with characters and become interested with a story may facilitate the experience of transportation and ultimately lead to belief

Table 2.2

Attributes of quality narratives that are likely to transport audience members

Attributes proposed to facilitate transportation (Green	Kreuter et al., 2007	Heath & Heath, 2007	Greene, 1996	Schank, 1990
Sequence				
	Coherence	Simplicity	A single theme, clearly defined	Explanations
	Plot development Theoretical adherence (for human behavior)		A well developed plot	
Character				
	Character development		Characterization	
	Characters' articulateness, eloquence		Pleasing sounds and rhythm	
Emotional	Emotional intensity/ range	Emotional intensity		Emotional intensity
Structure				
Suspenseful	Suspense/dramatic tension Canonical violation (departure from norms)	Unexpectedness	Dramatic appeal	Expectations/expectation failures (obstacles and surprise)
Bounded in space and time				
	Fidelity/ realism	Credibility	Faithful to source	Plausibility
Imagery – rich detail	Imagery	Concreteness	Vivid words	Imagery
Tailored to audience/ relevance	Cultural appropriateness		Appropriateness to listeners	
Message production				
	Production values			

and behavior change. It has been suggested one way of increasing transportation is to match some element of the story with a reader's experience, or to make some aspect of the story familiar to the reader (Green, 2008). For example, "readers of a story set in wintertime are more transported into a story if they read it during the winter rather than in the summer, presumably because concepts such as "snow" and "cold" are already readily activated in their minds" (Green, 2008, p. 50). This is consistent with research that suggests that tailoring messages to specific groups or individuals can be an effective strategy (e.g., Kreuter, Strecher, & Glassman, 1999; Rimer & Kreuter, 2006).

Unfortunately because of lack of artistic quality, many narratives do not engage the audience (Green & Brock, 2005). They simply lack storyline appeal, the characters are unfamiliar or do not inspire emotion, the plot is complicated and the subtext message is hidden behind a layer of obtrusiveness. The best stories are emotionally involving and gripping. Quality narrative message construction has the power to link the audience with an idea and a protagonist with whom the audience empathizes. A story is powerful because it provides the context missing from abstract prose. Good stories are able to put knowledge into a framework that is more lifelike, more true to our day-to-day existence. These are the attributes that makes narratives so powerful.

Summary of Literature Review

Narratives have a profound and far-reaching influence on what we remember, know and believe. They inspire, they entertain, they instruct, they combat skepticism and create buy-in. Narratives can be powerful. They allow for the complexity of the social world, and the range of beliefs and values of audience members, to be plausibly intermingled, reflected and addressed in a single message. The incidental and cumulative effect of narratives on beliefs, values and behaviors is

one of the most important issues facing communication scientists.

The focused and systematic study of the impact of narratives contributes to our understanding of cognition, emotion, and social processes in a number of ways. Using available theoretical constructs (e.g. causal chains, counterarguing, identification, self-referencing, social learning, social norms, story-banks, story schemas and scripts, transportation, etc.) helps us to define narratives not only by their distinctive features, but by what they do for human beings. Inquiry of narratives helps us to think about how effective narratives reduce resistance and counterarguing, facilitate information processing, provide surrogate social connections, and addresses emotional and existential issues. Given narratives impact both in leading people to form appropriate behavioral intentions and in motivating them to act on those intentions, an increased understanding of their characteristics, effects, and the conditions under which they operate is warranted.

Significance of Study

Influencing people to alter their behavior in a way that reduces the risk of disease or injury, or increases the chance of health and well-being are important public health objectives. Based on the above research, it is evident that narratives have exceptional power to persuade and affect peoples' decisions. Narratives, in fact, have been implicated in a number of communication outcomes, such as comprehensibility, interest, and recall (Sadoski, Goetz, & Rodriquez, 2000), social construction of realities (Adelman & Frey, 1997), and coping with health concerns (Sharf &Vandeford, 2002). Furthermore, investigators have recommended using stories in messages related specifically to safety and health (e.g., Cole, 1997; Cullen & Fein, 2004; Green, 2006; Ricketts, 2007). Still, there appear to be only a few published experimental

studies of the effects of stories in safety and health communication, and these studies mainly examined participants' attitudes toward safety and health issues.

There are, however, numerous examples of story-based safety and health materials in use by professionals in the field of occupational health and safety. For instance, the National Institute for Occupational Safety and Health (NIOSH) has developed a number of story-based publications to inform employers and safety professionals about hazards in the workplace. Similarly, the Occupational Safety and Health Administration (OSHA) has made liberal use of case reports in its *Fatal Facts* series. Each publication in this series illustrates a workplace hazard with a story about a fatal injury, followed by recommendations for preventing similar incidents. The publications are directed toward a broad audience including workers, supervisors, employers, and safety and health professionals. While the response to these materials by practitioners and trainees has been positive, these materials have not been subjected to formal evaluation (Ricketts, 2007). Additionally, Ricketts, Marr, Slocombe, and Upham (2003) and Ricketts and Aramouni (2004) developed occupational health and safety training materials that include a narrative component. As is the case with the other materials, these materials have not been formally evaluated even though they have been widely distributed and used for training in workplaces throughout the world (Ricketts, 2007). A similar example comes from Cullen and Fein (2004) who developed story-based mine safety videos. While these videos have not been compared with other training programs, the researchers report data suggesting some pre-to-post test improvement of safety knowledge among the participants (Cullen & Fein, 2004).

Often worker health and safety training is dominated by didactic instruction of safety rules and facts and behavior modification interventions designed to change worker behavior (Cole, Garrity, & Berger, 1998; Irwin, Cataldo, Matheny, & Peterson, 1992; Wallerstein &

Bernstein, 1988; Wallerstein & Weinger, 1992). This instruction has been based primarily on three dominate theories (i.e., behavioral, constuctivist, and sociocultural) utilized in respects to how people learn and how to design instruction (Bereiter, 1994; Mayer, 1996). Behaviorists approach learning via "responses strengthening" and the development of habits (Cole, 2002). This approach was made popular by Skinner (1953) and is also known as the A→ B→ C model. In this model antecedent conditions lead to behaviors that lead to consequences. The behavioral model is still widely used for health and safety training in highly structured and supervised work settings (Cole, 1995). Alternatively, constructivism approaches learning via "acquiring and organizing information by which to construct knowledge to direct behavior and solve problems" (Cole, 2002, p. 2). With this approach, "instruction is concerned with presenting well-organized information to people in ways that they can easily understand its relevance to their lives and goals" (Cole, 2002, p. 5). Socioculturalism on the other hand focuses on "knowledge, attitudes and problem solving strategies acquired through the activities of people working together on the ordinary and meaningful tasks important to them in their daily lives and work " (Cole, 2002, p.3). Here expertise is learned from the members' interaction with each other and their environment.

Cole (2002) suggests a key feature of sociocultural learning theory is the role of narrative in the construction of meaning and the formation of beliefs and attitudes prescribing behavior. It is thought that because stories often reveal meanings and values in the context in which they are told, they might be better guides than rules (Vitz, 1990). Rules often come off as abstract because they do not have any meaning for the individuals in which they are directed. Additionally, it has been suggested that direct instruction is almost always ineffective or counterproductive for learning and changing attitudes (Gagne, 1984). In line with learning

theory, Gagne (1984) proposes that people are less inclined to change their attitude by being told what to do or how to do it, but rather prefer to learn by the observation of human behavior. Thus, health and safety training might be more effective if it includes stories about critical situations that people might confront while working and the appropriate responses to those situations.

A useful conceptual model put forth by Cole (1997) (Figure 2.1) integrates behavioristic, constuctivist, and sociocultural views of learning. The model is intended to provide a robust and comprehensive understanding of the cultural, cognitive, and behavioral context of worker health and safety. According to Cole (1997) the literature on which the model is based is drawn from a variety of disciplines including:

> "life-span human development and personal growth (Hermans, 1992; Vitz, 1990); motivation, goals, and self-efficacy (Bandura, 1989; Baumeister & Newman, 1994; Gerrig, 1994); interpersonal relationships and attributions (Gonzales, Haugen, & Manning, 1994; Murray & Holmes, 1994); mental health and psychotherapy (Crites, 1986; Howard, 1991; Spence, 1986; multiculturalism and professional education (Holland & Kilpatrick, 1993); educational psychology and teacher education (Carter, 1993; Connelly & Clandinin, 1990); and research philosophy and methodology (Josselson & Lieblich, 1993); Mishler, 1986; Phillips, 1994) (Cole, 1997, p. 334).

The model is also particularly adapted from the work of "Bruner (1986, 1990a) on literature, narrative, meaning making, and folk psychology; Sarbin's (1986) conception of the storied nature of human conduct; and Howard's (1991) conception of culture tales as the primary mechanisms that direct human goals, decisions, and actions" (Cole, 1997, p.; 334).

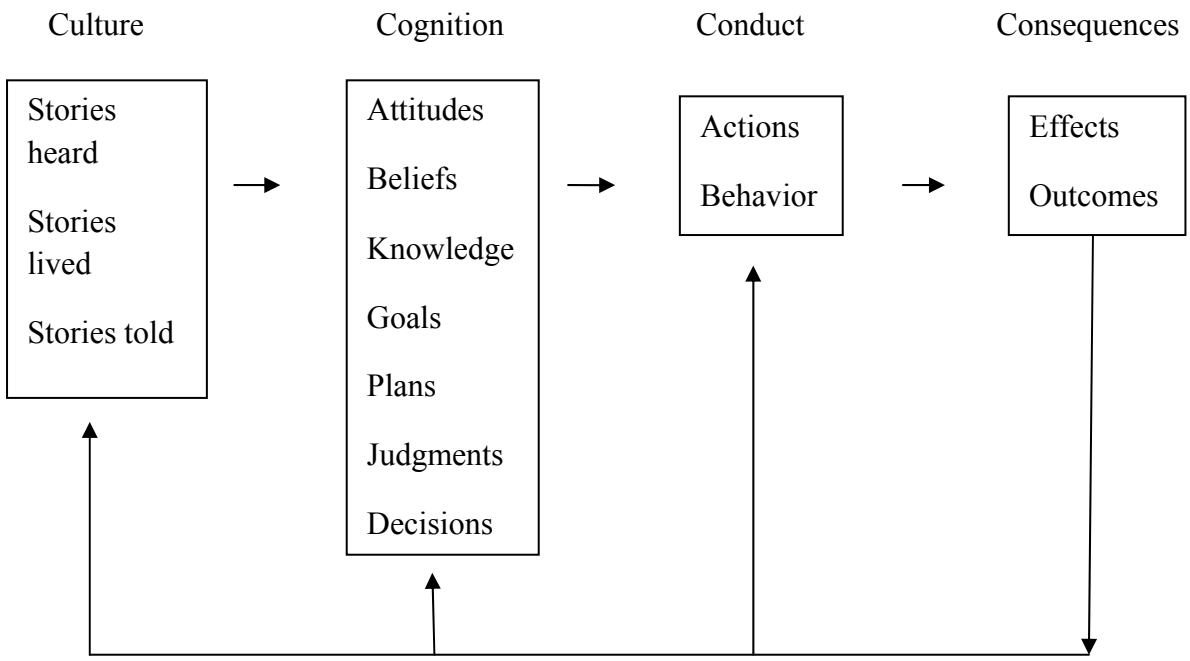

Figure 2.1 A Cultural, Cognitive, and Behavioral Model of Health Beliefs and Safety Behavior (Cole, 1997)

Traditionally, behavioral theories focus on the two right hand boxes while cognitive constructivist theory recognizes that behavior is influenced by cognitions. Cole's (1997) model reflects socioculturalism in that behavior is formed by internalized representations of the world by which people perceive, know, believe, evaluate and act (Bower & Marrow, 1990; Bruner, 1990; Cole, 1997; Gentner & Stevens, 1983; Howard, 1991; Sarbin, 1986). The model represents that knowledge and practice is more about a shared cultural experience than one that is simply an accumulation of information and organized knowledge by any one individual's mental model. Essentially it proposes that influencing health and safety beliefs, and attitudes and behavior may be better served though interactions with human models and narrative.

Voice

Narrative voice is a major element of the construction of a story (Abbott, 2002). Voice in narration is a question of who is speaking (Abbott, 2002) and determines the kind of person we have for a narrator, it lets us know what they bring to the narration such as their own needs, desires and limitations, and whether we should fully trust the information we are getting. A narrator, "draws attention to the fact that events have been selected from a larger set of past events and are being reported to the audience for a reason" (Deighton, Romer, & McQueen, 1989, p. 336). Narrative written in both first and third-person can employ a narrator (e.g., a visible or vocal person who stands between events and an audience and interprets them to the audience) (Stern, 1994) but there is a difference between the two. First-person narration is written from the "I" point of view and conventionally "done by a character who plays a role in the story being narrated" (Abbott, 2002, p. 190). For example, 'I stayed still and tried to get my bearings. How much air do I have left in my tank?' A first-person narrative could be described as being a more oral, subjective, verbal style and possibly tinged with more emotional coloring than a third-person narrative which is thought of as a more literate, descriptive and nominal style (Tabata, 1995). Writers are encouraged to consider writing in first-person if they want the reader to be immersed in the main characters' experiences. Third-person narration on the other hand is "narrative in which the narrator is not a character in the story" (Abbott, 2002, p. 196) but rather written from the omniscient point of view. Third-person narratives are more like an account of an individual's experience conveyed by another. For example, 'He stayed still and tried to get his bearings. He started to wonder how much air he actually had left in his tank.' Third-person voice allows the narrator to use a simple description or hint of expression, or even a side scene to give the reader the information that the main character can't know, but which the reader must know in

order to follow the story. Writers are encouraged to use third-person voice if they want to create more intimacy with all characters.

Research so far has helped to delimit the kinds of narratives that will be persuasive and set the boundary conditions for their persuasiveness. Nevertheless, theory and theory-driven research is still lacking in some critical areas. For instance, although there have been numerous communication studies of narratives written in first-person (de Wit, Das, & Vet, 2008; Slater & Rouner, 1996) and third-person (Baesler & Burgoon, 1994; Greene & Brinn, 2003; Kopfman, Yun, Smith, & Hodges, 1998), studies comparing the two as a possible moderator of narrative persuasion are lacking. However a systematic review conducted by Winterbottom, Bekker, Conner, & Mooney (2008), found that narratives may impact health decision making differently when they are presented in the first or third-person. Overall it was shown that narrative information influenced health decision making more than the provision of no additional information and/or statistically based information in approximately a third of the studies (5 out of 17) (Winterbottom, Bekker, Conner, & Mooney, 2008). Moreover, studies employing first-person narratives were twice as likely to affect an individual's decision making processes and outcomes in health decision contexts (Winterbottom, Bekker, Conner, & Mooney, 2008). Thus, an interesting question to pose is whether the voice through which a narrative is told impacts transportation and other variables such as emotional response, perceptions of message effectiveness, perceptions of source credibility, similarity, and intentions to behave. Certainly, the lived experience of others is intrinsically difficult to counterargue, but does it really matter who it is we "hear" doing the narrating? Will people be equally absorbed into a narrative regardless of who is doing the telling? A better understanding of these processes would allow the appropriate application of narrative voice.

Medium

It has been suggested that different media affect the way narratives are processed (Chaiken & Eagly, 1976; Green & Brock, 2002; Hinyard & Kreuter, 2007). In particular, the pace at which information is provided and the degree to which imagery is provided (as in watching a film) versus imagery that must be created by the recipient (as in reading or listening) may affect narrative processing (Green & Brock, 2002). Even though films and television provide rich visual imagery for viewers and radio provides a concrete, complete, and fast-flowing story, audio and visual media provide audience members little control over the rate at which information is presented and must be comprehended (Green & Brock, 2002). Print narratives on the other hand, require the reader to imagine scenes and scenery (Green & Brock, 2002) but nevertheless enable readers to set the pace at which they process written texts (Chambliss & Garner, 1996). It has been suggested that the effort exerted by recipients who must form their own images could create a more enduring or more individualized image (Green & Brock, 2002). Thus, narrative in print form may be more memorable. Additionally, both self-pacing and imagery may be important in creating narrative-based belief change (Green & Brock, 2002). Nevertheless, whether media provided, or self-generated imagery is superior is still unknown.

Transportation is believed to occur regardless of the medium of the narrative (e.g., written, audio, or visual (Dal Cin, Zanna, & Fong, 2004; Green, 2008; Green & Brock, 2000, 2002; Morgan, Movius, & Cody, 2009). Nonetheless, Green and Brock (2002) argue that print is more likely than mediated media to have enduring impact on beliefs. Logically this makes sense because self-pacing appears to encourage transportation and participatory response. With written text the recipient can contribute to the development of powerful images (Green & Brock, 2002).

Alternatively, audio and video narrative messages can convey emotional information by a speaker's tone of voice, potentially increasing transportation and imagery (Brosius & Bathelt, 1994). However, research has shown that video modality was not found to enhance transportation above and beyond the effects of text (Stitt & Nabi, 2005). Thus, whether one medium or another is better for transportation, or whether transportation functions in the same way in other media is open to debate.

Previous persuasion research indicates that audio and video modes disrupt processing of important arguments, data, evidence, etc. and instead cause audience members to focus on salient source attributes, attributes that are not directly relevant to the quality of the attitude object (Booth-Butterfield, & Gutowski, 1993). By contrast, print enables and encourages systematic thinking and requires less reliance on peripheral factors such as source likability or trustworthiness (Chaiken & Eagly, 1976). Similarly, Chaiken and Eagly (1983) found that a likeable source was more persuasive when the speed of exposure to rhetorical messages was forced (i.e., when presented on audio or video tape) than when the participants were allowed to self-pace the speed of exposure (i.e., when the same message was presented in written form). Consequently, it seems highly plausible that different mediums affect narrative processing.

In summary, research so far suggests the effect of modality is complicated and should be better understood in interaction with other variables (Braverman, 2008). Moreover, whether one medium or another is better for transportation is open to debate. Thus further exploration of differences between media is a potentially fruitful direction for empirical work.

Study Purpose and Objectives

Research in many settings has shown that narrative communications have exceptional power to persuade and affect peoples' decisions. Nevertheless, there appear to be only a few

published experimental studies of the effects of stories in health and safety communication (e.g., Cole, 1997; Cullen, & Fein, 2005; Green, 2006; Ricketts, 2007; Winterbottom, Bekker, Conner, &Mooney, 2008). Furthermore, studies are lacking regarding how different media and the perspective (first-person versus third-person) through which a narrative is told can affect narrative persuasion. Thus, the objective of this study is two-fold. First, it aims to compare first-person and third-person narratives manipulated by medium and topic to gain a better understanding about which message features enhance emotional response, perceptions of message effectiveness, perceptions of source credibility, perceptions of similarity, level of transportation, topic-specific belief measures and intentions to behave. The second objective is to test narrative impact in a real-world setting with individuals involved in a dangerous occupation where conveying health and safety information effectively is critical. Other studies involving occupational health and safety narrative messages have included farmers and miners as participants, (e.g., Cole, 1995, 1997, 2002; Cullen, & Fein, 2005) however, no studies thus far have employed public safety personnel such as firefighters. Hence another unique feature of this study is that it included professional firefighters as participants. A study such as this one not only can lead to a better understanding of the cognitive and emotinal reactions narratives engender, but also possibly help those involved with health and safety communication and training develop narrative messages that are coherent, informative, memorable and ultimately persuasive. Finding an engaging and persuasive way to share knowledge is particularly vaulable for adults involved in occupations that require a high level of knowledge to maintain saftey.

Hypotheses and Research Questions

This study examines a series of hypothesis regarding voice and narrative impact, and research questions about medium and narrative impact. It is hypothesized that the perspective

(first-person versus third-person) through which a narrative is told can influence emotional response, narrative processing, message perceptions and intentions to behave. In particular, it is hypothesized that the effect of narrative impact will be greater in narrative messages incorporating first-person voice compared to narrative messages incorporating third-person voice. Furthermore, it may be possible that different media (e.g., print and audio) affect these same factors. The hypotheses and research questions are as follows:

Hypotheses

It may be that narratives written in the first-person also produce a greater total number of thoughts related to processing the narrative. Hence it is proposed:

H1: First-person narratives will produce a greater number of thoughts related to processing the narrative.

Additionally, it has been proposed that a first-person narrative can come across as a more oral, subjective, verbal style and possibly tinged with more emotional coloring than a third-person narrative which is generally thought of as a more literate, descriptive and nominal style (Tabata, 1995). Many argue that emotion is a core component of narrative impact (Oatley, 2002). Emotional involvement in a narrative increases attention to the story elements, the amount of imagery viewers generate, and increases cognitive processes (Morgan, Movius, & Cody, 2009). Furthermore, narratives that evoke strong emotions are more likely to affect behavior, and are also more likely to be passed on to others (Green, 2008). If indeed first-person narratives offer a richer emotional style as suggested by Tabata (1995), then it is proposed that:

H2: First-person narratives will produce stronger emotional responses (positive or negative) than third-person narratives about health and occupational safety narrative messages.

Narrative voice is a major element of the construction of a story (Abbott, 2002). Voice determines the kind of person we have for a narrator, it lets us know what they bring to the narration such as their own needs, desires and limitations, and whether we should fully trust the information we are getting. It may also be that narratives written in first-person are perceived as being more convincing, believable, realistic, credible, and generally more effective because the narrator is speaking about themselves as opposed to another character. Thus it is proposed that:

H3: First-person narratives will be perceived as more effective at communicating the intended message than third-person narratives.

Along those same lines, in numerous studies high credible sources have been found to induce more persuasion than less credible sources (Pornpitakan, 2004). The dimensions of source credibility have been commonly identified to consist of expertise and trustworthiness (Pornpitakan, 2004). Given that first-person narrative allows for readers to be fully immersed in the main characters' emotions and experiences, it is plausible that audience members may perceive the narrator to be more trustworthy and have more expertise than if a narrator is providing a description of another person. Therefore it is proposed that:

H4: Perceived source credibility (comprised of trustworthiness, and expertise) will be higher for first-person narratives than for third-person narratives.

Furthermore, perceived similarity, has long been an established element of the potential impact of mediated messages (e.g., Bandura, 1977, 1986; Gerbner, Gross, Morgan, & Signorelli, 1994). Audience members often react to people in the media by finding similarities or differences between the characters and themselves. Similarity can also have subtle but significant impacts on whether the audience takes the message seriously and is motivated to act (McGuire, 1984). Thus, because narratives written in first-person allows audience members the opportunity

to be immersed in a single character's fallacies, triumphs, and fears more so than third-person narratives, it is proposed that:

H5: First-person narratives will produce a greater perception of similarity than third-person narratives.

Linking these variables together, if indeed first-person narratives produce more emotional responses, a greater number of thoughts related to narrative processing, are perceived as being more effective at communicating intended messages, induce a greater sense of perceived source credibility, and a greater sense of similarity with the protagonist, than one could assume that all this will lead to greater absorption into the story. Thus it is proposed that:

H6: First-person narratives will produce a greater level of transportation than third-person narratives.

In line with this hypothesis, researchers have found that the more individuals are transported by a narrative, the more persuaded they tend to be (i.e., the more they endorse story-consistent beliefs (Escalas, 2004, 2007; Green, 2004; Green &Brock, 2000, 2002; Green, Garst, & Brock, 2004; Mazzocco, Green, & Brock, 2007; Wang & Calder, 2006). So if first-person narratives do indeed induce a greater degree of transportation then it can also be assumed that:

H7: First-person narratives will produce more message consistent beliefs than third-person narratives.

Further, in a systematic review of narrative impact studies done by Winterbottom, Bekker, Conner, and Mooney (2008), it was found that studies employing first-person narratives were twice as likely to affect an individual's decision making processes and outcomes in health decision contexts. Given the characteristics of first-person voice and the findings of the limited research to date, it is hypothesized that the effect of narrative impact will be greater in narrative

messages incorporating first-person voice compared to narrative messages incorporating third-person voice. Hence it is proposed that:

H8: First-person narratives will produce greater intentions to behave according to the message.

Research Questions

It is uncertain whether narrative processing and narrative impact function in the same way across media. While most studies on transportation to date have used only print, it has been proposed that equivalent levels of transportation can be created across different media (Dal Cin, Zanna, & Fong, 2004; Green, 2008; Green & Brock, 2000, 2002; Morgan, Movius, & Cody, 2009). Nonetheless, studies thus far have been inconclusive showing either no difference as a function of modality or greater transportation and impact for one medium or another (Green & Brock, 2002; Stitt & Nabi, 2005). Possible explanations for modality differences include self-pacing and imagery. While reading allows for self-pacing, it also requires individuals to form images in their minds (Chambliss & Garner, 1996). Thus, given the past inconclusive research findings, the research questions for this study will try to determine whether emotional response, the number of thoughts related to processing the narrative, perceptions of message effectiveness, perceptions of source credibility, perceptions of similarity with the source, and intentions to behave differ in audio narrative messages compared to print narrative messages.

Hinyard and Kreuter (2007) suggest that different media affect the way narratives are processed. For instance, it has been suggested that mediated narrative messages while arriving at set pace, can convey extra emotional information by a speaker's tone of voice, potentially increasing transportation and imagery (Brosius & Bathelt, 1994). Thus it is asked which media type will be most effective at producing:

RQ1: A greater number of thoughts related to processing the narrative.

RQ2: Stronger emotional responses (positive or negative).

Radio can provide a concrete, complete, and fast-flowing story while still enabling the listener to harvest their imagination. While print narratives on the other hand, enable readers to create their own mental images and digest messages at their own pace. Whether these factors have an impact on perceptions of whether a message is convincing, believable, realistic, credible, compelling, etc. is unknown. Therefore it is asked which media type will:

RQ3: Be perceived as more effective at communicating the intended message.

It seems highly plausible that media could affect other perceptions such as source credibility and similarity. Print enables and encourages imaginative investment and enables readers to elaborate and scrutinize. By contrast, audio and video modes disrupt processing of important arguments, data, evidence, etc. and instead cause the receivers to focus on salient source attributes, attributes that are not directly relevant to the quality of the attitude object (Booth-Butterfield & Gutowski, 1993). Either of these factors could affect perceptions; therefore, it is asked which media type will be the most effective at producing a:

RQ4: A greater perception of source credibility for the story characters.

RQ5: A greater perception of similarity between story characters and audience members.

Green and Brock (2002) argue that print is more likely than mediated media to have enduring impact on beliefs because self-pacing encourages transportation and participatory response. Other research has shown that mediated narratives were not found to enhance transportation above and beyond the effects of text (Stitt & Nabi, 2005). Thus it is asked which media type will be most effective at producing:

RQ6: A greater level of transportation.

RQ7: More message consistent beliefs.

RQ8: Greater intentions to behave according to the message.

CHAPTER 3: METHODS

One study was conducted to address both the hypotheses and the research questions. Formative research was conducted before the main study. Figure 3.1 on the following page diagrams the series of steps that were undertaken for both formative research and the main study. Detailed information of all the steps is outlined in the following sections.

Formative Research

Formative research included narrative development, narrative pretesting, and questionnaire pretesting. All the formative research was completed with full-time firefighters from the Athens-Clarke County Fire and Emergency Services Department at fire stations located in Athens, Georgia. No firefighter was asked to participate more than once in any of the formative research activities. Hence, if a firefighter participated in the narrative development focus group, he was not asked to pretest a narrative, or pretest the questionnaires.

Narrative Development

In order to develop the narratives used in the main study, information and statistical data concerning morbidity and mortality in career firefighters was reviewed. Two common themes, optimal cardiovascular health and following fire service rules and regulations emerged as critical injury prevention areas (e.g., Friel & Stones, 1992; Kales, 2000; Kay, Lund, Taylor, & Herbold, 2001; Malley, Goldstein, Aldrich, Kelly, Weiden, & Coplan, 1999; Melius, 2001; Morse, Owen, & Becker, 1997; Musk, Monson, Peters, & Peters, 1978; NIOSH, n.d.; Stefanos, Elipidoforos, Stavros, & Christiani, 2003; USFA, n.d.; Vena & Fieldler, 1987). After the literature review was complete, a focus group discussion guide was developed with the aim of collecting ideas and

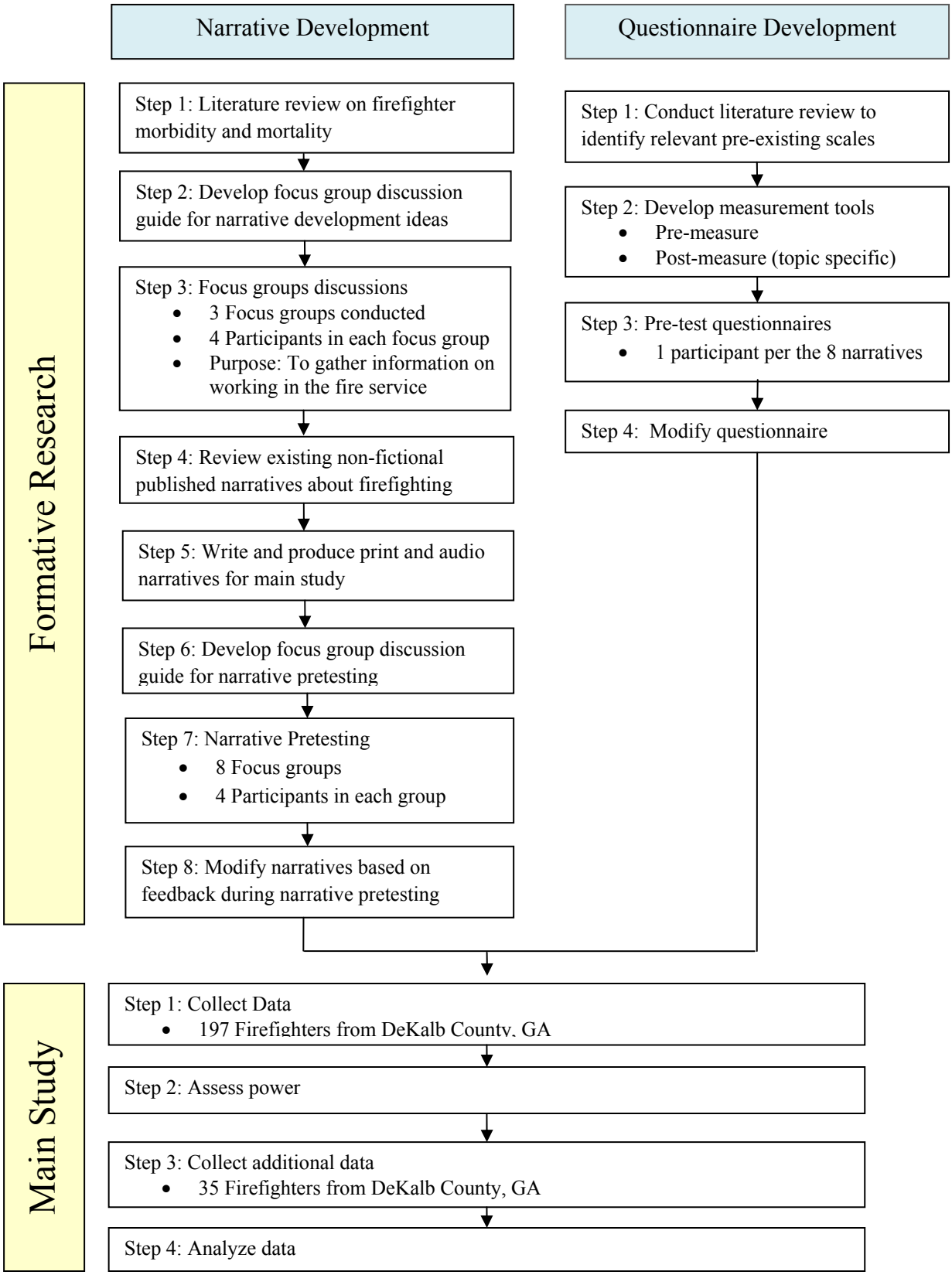

Figure 3.1 Research framework

insight in order to write tailored health and occupational safety narrative messages for firefighters.

In all, three focus group discussions were conducted with a total of 12 participants during this first phase of formative research. A copy of the focus group discussion guide for narrative development can be found in Appendix 1. This guide was developed after speaking with Steve Chikerotis, a firefighter with over 30 years of experience with the Chicago Fire Department and author of, *Firefighters from the heart. True stories and lessons learned*. Mr. Chikerotis has worked as a Safety Officer and Technical Advisor for several motion pictures and television shows. The focus group discussions prompted firefighters to share information about their experiences in the fire service and to provide information related to health and safety norms, training, and informational needs. Data were also gathered regarding the day-to-day happenings at the fire station, and commonly used rhetoric, including fire service specific terminology and acronyms. Each focus group discussion took approximately one hour to complete. The focus group discussions were audio recorded and transcribed. The qualitative method employed to analyze data from the focus groups was thematic analysis, wherein patterns emerged via repeated analytic passes through the content (see Lindlof & Taylor, 2002). After patterns were identified, related patterns were combined and catalogued into categories related to the research questions. The categories helped bring together the components of ideas or experiences relayed by the participants.

After the focus group discussions were complete a review of published narratives pertaining to the fire service were reviewed as a means of obtaining ideas for plot lines for the narratives. The narratives for this study were largely based on stories from a book written by Chikerotis (2006) and focus on cardiovascular health and following occupational safety

standards. Data obtained in the initial focus group discussions were utilized to tailor the stories to make them relevant to firefighters serving in DeKalb County. The narratives vary by topic (health or occupational safety), voice (first or third-person), and medium (audio or print). The same narratives were used for both the audio and print versions; hence, only four narratives were developed in total. See Table 3.1 on the following page for a description of the eight different narrative formats.

Narrative Pretesting

After the narratives for the main study were developed, formative research was conducted to ensure that they were appropriate and acceptable. The narratives were pretested to ensure they contained appropriate language and terminology, that the narratives were perceived to be believable, and come from a credible source, that the narratives produced imagery and emotion, and that they were perceived to be professionally produced. Eight stations out of the nine in Athens-Clarke County were randomly selected to participate in narrative pretesting.

Table 3.1

Narrative Message Formats Used in the Main Study

Health **F**irst-person voice **A**udio format (HFA)	**H**ealth **T**hird-person voice **A**udio format (HTA)	**O**ccupational Safety **F**irst-person voice **A**udio format (OFA)	**O**ccupational Safety **T**hird-person voice **A**udio format (OTA)
Health **F**irst-person voice **P**rint format (HFP)	**H**ealth **T**hird-person voice **P**rint format (HTP)	**O**ccupational Safety **F**irst-person voice **P**rint format (OFP)	**O**ccupational Safety **T**hird-person voice **P**rint format (OTP)

Each fire station was randomly assigned one of the eight narrative formats. Each of the eight narrative formats was pretested with one group of at least four firefighters that did not participate in the narrative development focus group discussion for a total sample size of N=37. Pretesting consisted of participants individually reading or listening to one of the eight draft narratives and then providing brief oral feedback via a focus group discussion. A copy of the focus group discussion guide for narrative message testing can be found in Appendix 2. Each focus group discussion took approximately one hour to complete and were audio recorded so that they could be transcribed and analyzed. This research was qualitative and descriptive in nature. Focus group data were analyzed using the Systematic Analysis Process developed by Richard A. Krueger (1994) that incorporates thematic analysis based on grounded theory. Minor language and terminology modifications were made based to the narratives based on the formative research.

All four narratives are written in a narrative format meaning, they have a storyline with a beginning, middle, and an end and raise unanswered questions, present unresolved conflicts, or depict not yet completed activity in hopes that readers/listeners would be able to construct and enact a version of the narrative as a simulation in their own minds. Characters in the narratives encounter and then resolve a crisis or crises with the events taking place sequenced in such a way as to create understanding of character emotions, motives and behavior. The story on cardiovascular health is about a firefighter's discovery that it takes more than "show muscles" to be an effective firefighter, it also critical to have "go muscles." Alternatively, the story on occupational safety is about the dangers of freelancing, or breaking the rules and working by oneself while on a fireground. All four narratives encouraged firefighters to be more proactive about their health and safety in order to prevent injury and untimely death. Narratives varied slightly depending on what voice in which they are told. A high ranking officer in the fire

service, a battalion chief, acted as the narrator for all four narratives. The battalion chief either told a story about himself when he was a lower ranking firefighter, or a story about another low ranking firefighter he has worked with. A copy of all four narratives can be found in Appendix 3.

All four narrative s had approximately the same number of words. Table 3.2 on the following page provides information on the length of each narrative used in the main study. An effort was made to keep the length as consistent as possible between the four narratives.

The print format was designed in color and includes photographic images while the audio narratives contain background music and sound effects. Attention was paid to the technical aspects of production such as the sound quality, sound effects, and music in the audio message, and layout, colors and photographs in the print versions. These types of technical aspects have been shown to increase message appeal and percieved value while reducing distractions that interfere with processing (Kreuter, et al., 2007). A copy of the first-person, occupational narrative in its print form can be found in Appendix 4.

Table 3.2

Length of the Narrative Messages Used in the Study

Message Type	Number of Words	Length of audio recording
Occupational Safety First-person Voice	2054	12 Minutes 29 Seconds
Occupational Safety Third-person Voice	2158	12 Minutes 41 Seconds
Health First-person Voice	2129	11 Minutes 12 Seconds
Health Third-person Voice	1961	11 Minutes 53 Seconds

Questionnaire Development

Both questionnaires were developed based on scales for the specific dependent variables. Table 3.3 on the following page provides an outline of the variables that were measured on the first and second questionnaire. The variables on the first questionnaire included beliefs, knowledge, intentions to behave, current behavior, emotional traits and demographics. The dependent variables on the second questionnaire include thought and emotional response, perceptions of message effectiveness, perceptions of source credibility, perceptions of similarity, level of transportation, message specific consistent beliefs, and attitudes and intentions to behave. Detailed information on the specific scales utilized for this study will be discussed in an upcoming section.

Questionnaire Pre-testing

Formative research also consisted of pre-testing the three questionnaires (i.e., the first questionnaire, and two topic-specific post-measure questionnaires) that were to be used in the main study. Pretesting was undertaken to ensure that the experiment could be performed in a reasonable amount of time and to determine ease of comprehension and acceptability of the questions and scales. Eight firefighters from two fire stations out of the nine stations located in Athens, GA were selected at random to participate in the questionnaire pretesting exercise. Each of the eight narrative formats and the accompanying questionnaires were pre-tested by one participant. The eight participants who volunteered for questionnaire pretesting did not participate in the narrative development focus group discussions, or narrative pretesting focus group discussions. This part of the formative research mimicked the main study. Participants were asked to sign a consent form, fill-out the first questionnaire and then instructed to listen to or read one of the test messages. Participants were then asked to fill-out the second questionnaire

and then were debriefed. Participants were given an open amount of time to complete the experiment. After the experiment the participants were asked to share their perceptions of the experiment with the researcher. Minor modifications to language on the questionnaires were

Table 3.3

Variables Measured on the First and Second Questionnaires

Variable Measured (Source)	Questionnaire
Beliefs Knowledge Intentions to behave Current behavior Emotion (trait) (adapted from the DES-IV (Izard, 1993) Demographics	1
Narrative Message Exposure	
Thought and emotion listing (Shapiro, 1994; Wilson & Busselle, 2004) Emotional response to message via the *Differential Emotions Scale* (adapted from the DES-IV (Izard, Libero, Putman, & Haynes, 1993) Perceptions of message effectiveness (adapted from scale by Kopfman, Smith, Yun, & Hodges, 1987) Perceptions of source credibility (i.e., trustworthiness and expertise adapted from scale by (Ohanian, 1990) Perceptions of similarity (McCrosky, Richmond, & Daly, 1975) Level of transportation (Green & Brock, 2000) Message specific consistent beliefs and attitudes Message specific intentions to behave	2

made according to feedback received during formative research. Further, it was determined during formative research that the attractiveness items on the source credibility scale would be omitted for the main study. According to Ohanian (1990), attractiveness is based on someone being attractive, classy, beautiful, elegant, and sexy. Given the participants and the topics, attractiveness did not seem relevant. Additionally, formative research indicated that the participants would not be inclined to answer questions regarding attractiveness as it relates to a male protagonist (e.g., a battalion chief). The final two questionnaires used for the main study can be found in Appendices 5 – 7.

Main Study

This study employees a 2 (narrative voice: first-person voice or third-person voice) X 2 (medium: audio or print) X 2 (topic: health or occupational safety in relation to fire service) factorial design. Random assignment to one of the eight narrative message formats constitutes the between-subjects manipulation.

Power Analysis

Statistical power analysis indicated that to have an 80% chance of successfully detecting a medium effect size (d = .50, f= .25) at the .05 level, there should be no fewer than 17 participants for each of the eight cells (Cohen, 1988). Given the nature of firefighting and the fact that participants may be called away to duty at any given time, participants were over-recruited to ensure that the minimum number of participants per cell was reached. At the end of the initial data collection, each cell had at least 23 participants. In order to increase power, additional participants were recruited after the initial data collection period. At the end of the second wave of data collection each cell ended up with a total of 29 participants. Increasing the sample size to 29 participants per cell using the same parameters increased the power to .96

Participants

In total, 232 male professional firefighters from the DeKalb County, Georgia Fire and Rescue Department (DCFR), served as the study population. Professional firefighters were selected as participants for several reasons. First, as a group they diverge from the typical student population that is so often used as research subjects and thus provide an opportunity to test narrative impact in a 'real-world' context. Secondly, given that firefighters have moderate amounts of time while they are on the job, yet are relatively unoccupied with job-related duties, means they were able to make time to participate if they chose to do so. Further, their profession lends itself to storytelling, in particular, stories about "near-misses," stories about other firefighters they have known, and stories about how safety practices have changed over the years. Lastly, inherent in popular publications among fire service personnel (e.g. *Firehouse Magazine*) are short stories about fire duty. Accordingly, this population was thought to be one appropriate and receptive to health and occupational safety narrative messages.

Procedure

DCFR consists of 26 fire stations that operate on three rotating shifts (i.e., the A shift, B shift, and the C shift). Throughout the study, I recruited participants from all 26 stations and the three shifts. On pre-arranged days, stations and shifts were randomly selected for participation by the Public Information Officer (PIO) for DCFR. The station was contacted the day before by a staff member of DCFR so that the firefighters could be informed that the study would take place at their station during the following morning's meeting. Once I arrived at the station, the firefighters on duty were asked if they wished to volunteer for the study. The response rate was high (97.48 percent) with only six firefighters declining to participate in the study.

The experiment is based on collection of data prior to and after reading or listening to a message. Figure 3.2 on the following page outlines the steps of the main study. The participants were asked to sign a consent form, complete a questionnaire, read or listen to a narrative message, and then complete a second questionnaire responding to their perceptions of the narrative message they were exposed to.

All the data were collected from participants on one occasion. The participants were given ample time to complete all the tasks of the experiment. Each experimental session took approximately one hour to complete. Participants randomly assigned to the audio message were provided with a portable CD player with headphones so that they could control the volume themselves, and so that they did not to disturb other participants. Each participant was asked to complete all the activities individually although most the time there are other participants in the same room (e.g., the dining hall at the fire station) completing the experiment.

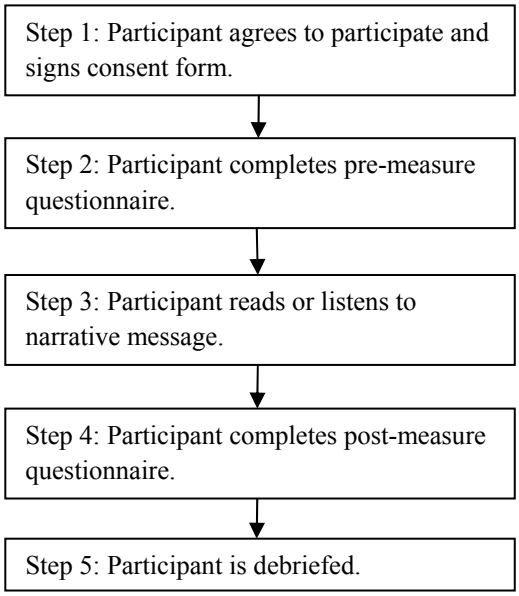

Figure 3.2 Main Study Procedure Outline

Materials

Print materials

Microsoft Publisher was used to design the layout of the print narrative messages. All four narratives contained Microsoft clip art and were arranged using a similar layout and color scheme. The narratives were printed on high quality glossy paper.

Audio recording

The audio narrative messages were recorded by a professional audio technician. An adult male from Georgia was used as the voice talent for all four audio narrative messages. Realistic sound effects and introductory/ exit music was included in all four audio narratives. All the audio narratives were pre-tested.

Measures

First questionnaire overview

The first questionnaire consisted of scales to measure information on prior experience, beliefs, and behavioral intentions regarding cardiovascular health and occupational safety as it relates to the fire service. Emotional experience and basic demographic information (i.e., age, years of service as a firefighter, education level) was also included on the first questionnaire. All the participants were asked to complete the same first questionnaire. The variables on the first questionnaire were highly focused and designed specifically for firefighters in DeKalb County. The purpose of the first questionnaire was to gain a better understanding of what the participants believe, know, and how they feel prior to reading or listening to the narrative message used for the experiment, as well as, to measure how the participants behave related to health and occupational safety.

Second questionnaire overview

The second questionnaire consisted of a thought listing exercise and scales to measure emotions, various message related perceptions, message specific beliefs and intentions to behave. Two manipulation checks were also included on the second questionnaire. Following is a detailed description of the scales used on the second questionnaire.

Manipulation checks. Participants completed two manipulation checks among the questions on the second questionnaire. First, participants were asked to complete an open-ended measure which requested them to indicate who the message was about that they had read or listened to. Responses to this measure were coded separately to determine whether each statement provided by the respondents was about firefighters specifically, other people, characters in the narrative, themselves, or someone or something else. The second manipulation check asked the participants to indicate whether they thought the message was more like a story or a report using a 7-pont Likert-type scale ranging from "Like a story" (1) to "Like a report" (7).

Thought Listing Procedure. Participant's responses to the eight message formats were measured using a thought listing procedure. After reading or listening to one of the narratives, participants were instructed to write down all the thoughts and feelings that went through their mind when they read or listened to the narrative they had been randomly assigned. A small blank area was provided on the questionnaire to allow participants to report their thoughts and feelings. Participants were instructed to list all the thoughts and feelings they had while reading the story, without worrying about spelling or grammar. The following instructions were adapted from directions given in a study by Cacioppo, von Hippel and Ernst (1997):

> *Now please write down all the thoughts and feelings that went through your mind when you read or listened to the message. List these thoughts, whether they were about*

yourself, the character(s) in the message, and/or the message itself; whether they were positive, neutral, and/or negative. Any case is fine. Do not worry about spelling or grammar. More space has been provided than you might need to ensure that you have plenty of room for your answer. Please be completely honest. Your responses will be anonymous.

Following a scheme recommended by Shapiro (1994), participants were then asked to place a plus (+), minus (-), or neutral (0) sign by each of the thoughts and feelings they had listed to indicate whether each thought or feeling was a positive (+), negative (-), or neutral (0) reaction to the message. Then, using open-ended questions, participants were asked to express what the main idea of the message was and any images that popped into their head while reading or listening to the narrative message. Each written thought produced by this exercise acted as a unit of analysis for a content analysis.

A content analysis was performed on responses from the three open-ended questions on the second questionnaire in order to objectively identify specified characteristics of the information. Open-ended interview questions permitted each participant to express his own constructs and frames of reference. A similar coding procedure was used as established by Wilson & Busselle (2004). The thoughts (units of analysis) from the three open-ended questions from all 232 participants were placed into one of eight categories (as outlined in the following section) by the researcher and a paid coder (coder 1). An additional coder (coder 2) was used to break ties when consensus was not reached between the researcher and coder 1.English was the native language for all three coders.

The coders were carefully trained in order to become familiar with the purpose of the study, the narratives themselves, the three open-ended questions on the second questionnaire,

and the category system. The coders familiarized themselves with the differences between the categories, clarified definitional ambiguities, discussed borderline cases and coded sample units of analysis not part of the actual data set. This training session was also used to revise definitions, clarify category boundaries until the informal assessment suggested an acceptable level of agreement and the coders were comfortable with the materials and coding procedure. The training lasted approximately one hour. A detailed instruction sheet with the category system was provided to the coders.

To be serviceable, the category system was developed to be highly specific to ensure accurate categorization. Categories were made mutually exclusive (i.e., a unit of analysis could only be placed in one and only one category), exhaustive (i.e., the category system accounted for every unit of analysis), and reliable (i.e., intercoder reliability was achieved between different coders who agreed in the majority of instances about the proper category for each unit of analysis). The coders coding the units of analysis followed the guideline as outlined:

> *Narrative thoughts* (NT)- These thoughts deal specifically with the narrative. The progression of the narrative; plot development, specific things the characters did, character personalities or relationships between the characters. This category also includes general statements about how the participant went about processing the narrative (e.g., "I remember thinking about how the building was set-up. He should have used a rope." "Why did the character go back into the building?" "First I thought about the character having to climb 8 floors of stairs." "Listening to the story I thought it would end badly but I was relieved the character made it out okay.")
>
> *Non-narrative thoughts* (NNT)- This category includes thoughts about aspects of the narrative that are not a part of the narrative. While these thoughts deal directly with the

narrative they are focused with production elements such as acting, editing, sound quality, or actor diversity (e.g., “The sound effects were good.”)

Negative evaluative thoughts or positive/neutral evaluative thoughts (NET) (PET)-These thoughts deal specifically with the narrative. Only narrative and non-narrative thoughts can be evaluative in nature. Evaluative thoughts clearly express an opinion, value, or judgment. Evaluative thoughts can be coded as being either a negative evaluation thought (e.g., “The Captain had terrible judgment, he should have known better than to go back in that building alone.” Even though Mike told the truth, it was a stupid thing to do.” “The character did not keep in contact with his Captain, that was a big mistake on his part.”) or a positive/neutral evaluation (e.g., “I think the Captain absolutely did the right thing by letting the firefighter rest.” “It took a lot of guts for that Captain to share his story.” “Mike is a good fireman.” “What happened to the Captain in the story could happen to any firefighter.”).

Narrative linked thoughts (NLT)-These thoughts deal specifically with the participants own knowledge, memories and experiences in relation to the narrative. These thoughts are not specifically about the narrative itself, but the narrative was an obvious starting point for the thought (e.g. “This happened to somebody in my department only he ended up having a heartache and dying.” “We used to have a wellness program instructor who was always telling us to eat right.” “What would happen to my family if I died?” “This story reminded me of a particular fire I worked on.” “This story makes me appreciate and respect how dangerous my job is.” “All my colleagues are overweight for the most part.” If the participant reports their emotional state linking to the narrative, it should also be considered a narrative linked thought (e.g., “I can imagine what it felt like to be in that

situation." "The storyline pretty much described my personal thoughts." "This story made me feel very anxious.")

Other thoughts (OT)-This category contains thoughts that were not acquired from listening/reading the narrative and have no connection at all with the narrative; otherwise it would be considered a non-narrative thought (e.g., "I want pizza." "My truck needs a tune-up.").

Supportive thoughts (ST)- These are thoughts specific to the narrative, but not about the characters or quality of the narrative. They are board/ general statements favoring or mimicking the message position in the narrative (pro cardio exercise/ healthy eating and working in pairs/ accountability/ good communication/ sharing mistakes (e.g., "Firefighters should never freelance." "Cardiovascular workouts are important for firefighters to do." "Follow the established safety rules and don't freelance." "Never work alone in a fire." "Go muscles are very important for firefighters to have." "Firefighters should talk about their mistakes with one another.") They are the key narratives and the ones I would hope the firefighters would take away and behave on.

Counterarguments (CA)-These are statements against the message position (e.g., I don't need to exercise more." "I can eat whatever I want. If I want to eat bacon everyday it won't hurt me.")

Summary thoughts (ST)- Summary thoughts concern thoughts that occurred after the narrative is over about the narrative as a whole (e.g., "Overall, this was a good message." "The main idea of this message is about accountability and always working as a team." "This is a good story and very relevant to the fires service." "This message can be used to teach firefighters valuable information.")

Emotional Response. Participants were then asked to rate their level of emotional response to the narrative message by indicating how strongly they felt each of twelve emotions (e.g., interest, enjoyment, surprise, sadness, anger, disgust, contempt, fear, guilt, shame, shyness, and hostility inward) while reading or listening to the message, using scales ranging from one (*not at all*) to five (*extremely*). These twelve discrete categories of emotions are part of the *Differential Emotions Scale* (*DES-IV*) that was formulated to gauge the primary emotional state of individuals at a specific point in time when they are responding to the instrument (Izard, Libero, Putman, & Haynes, 1993).

Perception of Message Effectiveness. Participants were then asked to complete nineteen 7-point Likert-type items assessing their perception of message effectiveness (e.g., convincing, persuasive, effective, believable, realistic, compelling, credible, appropriate, reliable, and thorough, etc.). This scale was adapted from a rating scale[1] by Kopfman et al. (1998) that assessed the credibility and effectiveness of statistical evidence and narrative persuasive messages about organ donation. Kopfman et al.'s scale included six items, five of which were included in the message effectiveness scale used for this study. One item was excluded because it was deemed as not fit with the other items by the researcher. Specifically, participants were asked to rate effectiveness on a scale from one (strongly agree) to seven (strongly disagree). Higher scores indicate higher message effectiveness ratings.

Source Credibility. Source credibility was assessed using a ten-item measure adapted from Ohanian's (1990) 15-item semantic differential scale that measures perceived expertise, trustworthiness and attractiveness of celebrity endorsers by means of a reliable and valid scale.

[1] Items on Kopfman et al. scale: "I felt the message was appropriate;" I felt the message was effective;" I felt the message was reliable;" *"I felt the message was knowledgeable;" "I felt the message was credible;" "I felt the message was thorough." * Indicates the item not included as one of the items on the message effectiveness measure.

As mentioned, perceptions of attractiveness were omitted for this study based on formative research. Examples of the expertise items on the source credibility scale include whether or not someone is considered an expert, experienced, knowledgeable, qualified, and skilled. Examples of the trustworthiness items on the source credibility scale include whether or not someone is considered dependable, honest, reliable, sincere and trustworthy.

Similarity. Next, participants were asked to complete nine 7-point Likert-type items assessing their similarity to that of the main character in the story. This scale was adapted from McCrosky, Richmond and Daly's (1975) *Perceived Homophily* (similarity) *Scale*. The original scale includes four dimensions attitude, background, value and appearance with four measures in each dimension. The fourth dimension, appearance, is comprised of four items including, "Looks similar to me/ Looks different from me", "Different size than I am/ Same size I am", "Appearance like mine/ Appearance unlike mine" and "Doesn't resemble me/ Resembles me." Given that only print and audio messages were used for this study, the appearance scale was not included on the second questionnaire. Additionally, two measures from the background dimension (i.e., "From social class similar to mine/ From social class different from mine," and "Economic situation different from mine/ Economic situation like mine") and one measure from the value dimension (i.e., "Sexual attitudes unlike mine/ Sexual attitudes like mine") were excluded because they were not relevant to this study.

Level of transportation. Participants were then asked to rate their level of transportation using Green and Brock's (2000) scale that assessed an individual's level of immersion into a narrative. In an attempt to capture the major dimensions of transportation, including emotional involvement in the story, cognitive attention to the story, feelings of suspense, and lack of awareness of surroundings. The level of transportation was assessed using the general eleven 7-

point scale ranging from one (not at all) to seven (very much). Example scale items include "While I was reading the narrative, I could easily picture the events in it taking place," "I was emotionally involved in the narrative," and the reverse scored item, "I found my mind wandering while reading the narrative." It was expected that people who report higher transportation will have beliefs more consistent with the story.

Story-specific beliefs. Measures of beliefs that might be affected by the story were created for this study. These beliefs were logical implications of the story events. Participants were asked to complete nine 7-point Likert-type items ranging from one (strongly disagree) to seven (strongly agree). It was thought that beliefs toward the narratives will reflect the participant's feelings and may affect their predispositions to respond favorably or unfavorably. Higher values indicate stronger agreement with the belief statement.

Intentions to behave. Participants were also asked to rate their level of intention to behave on a scale specifically based on the topic participants were asked to read or listen to. Intent was measured using nine 7-point Likert-type items ranging from one (strongly disagree) to seven (strongly agree). An example taken from the second questionnaire reads, "I plan to act in ways that are compatible with the position promoted by the message." Higher values indicate stronger intention to behave.

CHAPTER 4: RESULTS

This chapter reports the results of the study. The first section summarizes the demographic characteristics of the participants followed by a detailed description of the data analysis and results for each hypothesis and research question. In general, before testing the hypotheses and research questions, a series of exploratory factor analyses were performed on the various measures to identify the dimensional structures and relationships among the measures. Following, statistical tests were used to check for group differences in message evaluations and in the impact of the message manipulations.

Description of the Sample

As can be seen in Table 4.1, participants (N = 232) ranged in age from 21 to 59 (M = 37.32, SD = 8.25) and had an average of approximately eleven years of fire service experience (M = 11.15; SD = 7.51). All the participants had earned the equivalent of a high school diploma with over half having education past high school. Approximately 25 percent of the sample reported they attended a health or occupational safety training course in the past year. Figures A.1 – A.6 and table A.1 in the appendix provide additional information on the participant's prior experience, beliefs, knowledge, attitudes, and intentions to practice that were measured on the questionnaire before the experiment took place.

One hundred and ninety-seven firefighters participated in the first wave of data collection. In order to increase statistical power, an additional 35 firefighters were solicited to participate in the study. Two analysis of variance (ANOVA) statistical tests were conducted to determine whether the two samples were similar (i.e, treatment by age and treatment by years of experience). The ANOVA for treatment by age $F(7,\ 218) = .388$, $p = .91$ and the ANOVA for

treatment by years of experience $F(1, 231) = .576$, $p = .78$ were not significant indicating that the mean scores on these measures were not significantly different among the eight treatments for the two samples following the second wave of data collection.

Table 4.1

Demographic Characteristics of Participants

Characteristic	n	%
Age	218	
21 – 30	51	23
31 – 40	88	40
41 – 50	69	32
51 – 60	10	5
Years of fire service at time of survey	231	
1 – 10	129	56
11 – 20	65	28
21 – 30	37	16
Highest academic degree earned	224	
High school diploma	92	41
Associates degree	101	45
Bachelors degree	29	13
Masters degree	2	1
Last time health or occupational safety training course attended at time of survey	210	
In the past year	53	25
Last year	43	20
Two years or longer	39	19
Not sure/ Don't remember	55	26
Never	20	10

Note. N = 232.

Manipulation checks

Participants completed two manipulation checks on the second questionnaire following exposure to the experimental treatment. In the first manipulation check, participants completed an open-ended measure that requested them to indicate who the message was about. While the answers were coded and placed into one of five categories (i.e., about firefighters specifically, other people, characters in the narrative, themselves, or someone or something else), the results were confusing and proved to not be useful. For the second manipulation check, participants indicated whether they thought the message was more like a story or more like a report using a 7-pont Likert-type scale ranging from "Like a story" (1) to "Like a report" (7). Since this is a study about narrative impact, it was hoped the participants would perceive the messages to be more like a story rather than a report. Almost two-thirds of the participants responded that the narrative they read or listened to was more like a story. Table 4.2 provides frequency information for each response.

After frequency information was calculated, an ANOVA was used to determine the differences between the eight treatments and determine if one narrative message type was considered more like a story or a report than another. Table 4.3 provides the mean scores and standard deviations for the story or report measure by treatment. The ANOVA by treatment was not significant ($F(7, 228) = .125$, $p = .125$), suggesting there was no difference in whether a message was perceived as a story or a report. Additionally, the main effect of voice was not significant $F(1, 228) = .029$, $p = .86$, nor was the main effect for medium $F(1, 228) = 1.31$, $p = .25$. None of the interactions were significant. Nevertheless, the ANOVA by topic, voice, and medium yielded a significant main effect for topic $F(1, 228) = 6.96$, $p < .01$ indicating that the mean score was significantly different between occupational and health narrative messages.

Table 4.4 provides *F* ratios of the ANOVA for the story or report measure as a function of topic, voice, and medium

Table 4.2

Responses to Survey Question "This Message was: (Like a Story 1 2 3 4 5 6 7 Like a Report)"

Response Category	n	%
1	58	25
2	62	26.7
3	27	11.6
4	23	9.9
5	25	10.8
6	22	9.5
7	12	5.2

Note. N = 232. *M* = 3.04; *SD* = 1.88.

Next, a *t*-test for independent groups was performed to examine which topic was more like a story and which was more like a report. The health narrative messages were considered more like a story (*M* = 2.71, *SD* 1.75) than the occupational safety narratives (*M* = 3.37, *SD* 1.96), *t*(227) = 2.67, $p < .05$.. . Both the health and the occupational safety messages were considered more like a story than a report as intended. In operational terms, stories are typically thought of as more dramatic, entertaining, and emotional than reports that emphasize logic and accuracy with exhaustive details, facts, and figures.

Table 4.3

Story or Report Measure as a Function of Treatment Mean Scores and Standard Deviations

Treatment	Story or report measure	
	M	SD
Occupational		
First-person audio	3.18	1.89
First-person print	3.41	2.01
Third-person audio	3.41	1.06
Third-person print	3.45	1.96
Health		
First-person audio	2.86	2.00
First-person print	2.79	1.64
Third-person audio	2.14	1.27
Third-person print	3.07	1.94

Note. N = 232. Measure = Like a Story 1 2 3 4 5 6 7 Like a Report

Table 4.4

Story or Report Measure x Treatment ANOVA F Ratios

	ANOVA
Variable	Story or Report Measure
Topic (T)	6.96*
Voice (V)	.029
Medium (M)	1.31
T by V	.517
T by M	.356
V by M	.675
T by V by M	1.51

Note. N = 232. ANOVA df = 1, 228. *p < .01.

Thought Listing Analysis

H 1: First-person narratives will produce a greater number of thoughts related to processing the narrative. Supported.

R Q 1: Will audio narratives produce a greater number of thoughts related to processing the narrative? Difference found.

Summary

In order to analyze the qualitative data, coders performed a content analysis placing the units of analysis into pre-determined categories. Intercoder reliability was high. The frequency, average number, and percentage of responses for the thought listing categories for occupational safety and health narrative messages were then calculated. The voice of the narrator and the medium affected the number of thoughts about the narrative message. First-person narrative messages and audio narrative messages produced a greater number of thoughts. Specific details of the thought listing analysis and results are provided in the following pages.

Findings

Intercoder reliability was calculated on the thought listing measure to determine "the extent to which the different judges tend to assign exactly the same rating to each object" (Tinsley & Weiss, 2000, p. 98). Three coders were used for the thought listing analysis, the researcher and two additional paid coders. Two coders coded all the data, the researcher and coder 1. A third coder was used to break ties when consensus was not reached between the researcher and coder 1. Before the researcher and coder 1 coded all the data, all three coders coded a random selection of responses (approximately 11 percent) of the data as part of the practice training exercise. All coding for the practice training exercise was done independently and without consultation or guidance between the coders.

An intercoder reliability analysis using the Cohen's kappa statistic was performed to determine consistency among the three coders on the practice training exercise. Cohen's kappa was selected as the index of intercoder reliability for the practice test because it accounts for chance agreement using the same conceptual formula for another conservative measure, Scott's pi (which was subsequently used to calculate intercoder reliability between the researcher and coder 1 for the full sample of qualitative data). Additionally, Cohen's kappa is adapted for use by multiple coders and there were three coders for the practice test. According to Wimmer & Dominick (2006), a minimum reliability coefficient of about .75 is acceptable for kappa. PASW 18 (SPSS) was used to calculate Cohen's kappa for the practice training exercise. Intercoder reliability was calculated separately for health and occupational narratives to ensure that there were not major differences between the two topical areas. Table 4.5 summarizes the intercoder reliabilities for the three coders on the practice training exercise for both the health and the occupational safety narratives. High levels of agreement between the three coders suggest good operational definitions, categories, and coder training; thus, coding of the full sample was conducted.

Table 4.5 Intercoder Reliability between Three Coders on the Practice Test using Cohen's Kappa

Coder Pairs	Health Narrative	Occupational Safety Narrative	Overall Kappa
Researcher and Coder 1	.93	.86	.88
Researcher and Coder 2	.89	.97	.94
Coder 1 and Coder 2	.89	.83	.86

The full sample of qualitative data from all 232 participants was coded by the researcher and coder 1. The units of analysis from the practice test of reliability for the researcher and coder 1 were included in this reliability sample because the reliability levels obtained in the practice test were acceptable. As with the practice test, coding was done independently, without consultation or guidance between the researcher and the coder. After the coding was complete, disagreements were resolved by discussing the reasons for the incongruity. When consensus could not be reached between the researcher and coder 1, coder 2 made a decision regarding what category to place the unit of analysis in therefore breaking the tie. Scott's pi was used as the measure of reliability for the full sample. Scott's pi was selected because it is the accepted standard for intercoder reliability for nominal data in communication studies (Schiff & Reiter, 2004), and it accounts for chance agreement. Additionally, Cohen' kappa (used for practice reliability testing) and Scott's pi are similarly conservative measures. As with the practice test, intercoder reliability was calculated separately for health and occupational narratives to ensure that there were no major differences between the two topical areas. According to Wimmer & Dominick (2006) a minimum reliability coefficient of .75 is acceptable for pi. Including the units of analysis for all 232 participants, Scott's pi = .89 for the health narrative messages and Scott's pi = .92 for the occupational narrative messages. Table A.2 and A.3 in the appendices show the marginal totals between coders for Scott's pi for the health and occupational safety narratives respectively.

Ultimately, two coding categories did not apply (i.e., other thoughts and counterarguments) because the coders did not find any mentions that fit the categories. It is thought that the narratives may have been engaging enough that participants focused specifically on the messages. Table 4.6 provides data regarding the final total units of analysis broken down

by topic, voice, and medium and Table 4.6 provides percentages of the total units of analysis broken down by topic, voice, and medium. Table 4.6 also includes the totals for the participants' own responses indicating whether their thoughts were positive (+), negative (-), or neutral (0). It is important to note that not all the participants went back and placed a positive, negative or neutral symbol on their written responses as requested. As a result, these categories have low frequency data. Looking at the frequency of responses, average response per treatment, and percentage of the responses, there are differences among the eight treatments. Out of the eight different treatments occupational safety, first-person, audio narrative messages had the highest number of qualitative responses among seven of the ten categories, while health, first-person, audio narratives had the lowest number of qualitative responses among the ten categories. Further, if you break it down by voice and medium there are differences. First-person narratives had 847 units of analysis while third-person narratives had 794 units of analysis. Additionally, audio messages had 861 units of analysis while print narratives had 780 units of analysis.

Table 4.6

Frequency and Average Number of Responses for the Thought Listing Categories for Occupational Safety and Health Narrative Messages

Treatment	NT	NNT	NLT	NET	PET	ST	SUM	Total by Treatment	+	-	0
OFA	55 (1.90)	0	114 (3.93)	21 (.72)	17 (.59)	46 (1.59)	5 (.17)	258	48 (1.66)	35 (1.21)	8 (.28)
OFP	59 (2.03)	0	80 (2.76)	16 (.55)	14 (.48)	37 (1.28)	6 (.21)	212	40 (1.38)	28 (.97)	12 (.41)
OTA	37 (1.28)	1 (.03)	100 (3.45)	11 .38	9 (.31)	51 (1.59)	6 (.21)	215	29 (1)	25 (.86)	2 (.07)
OTP	40 (1.38)	0	83 (2.86)	7 (.24)	10 (.34)	46 (1.59)	4 (.14)	190	41 (1.41)	19 (.66)	5 (.17)
Total for Occupational	191	1	377	55	50	180	21		158	107	27
HFA	32 (1.10)	1 (.03)	84 (2.96)	3 (.10)	9 (.31)	42 (1.45)	5 (.17)	176	43 (1.48)	19 (.66)	3 (.10)
HFP	27 (.93)	2 (.07)	132 (4.55)	1 (.03)	3 (.10)	31 (1.07)	5 (.17)	201	36 (1.24)	27 (.93)	8 (.28)
HTA	39 (1.34)	4 (.14)	125 (4.31)	2 (.07)	5 (.17)	32 (1.10)	5 (.17)	212	59 (1.03)	20 (.69)	13 (.45)
HTP	43 (1.48)	1 (.03)	91 (3.14)	3 (.10)	5 (.17)	28 (.96)	6 (.21)	177	27 (.93)	34 (1.17)	8 (.28)
Total for health	141	8	432	9	22	133	21		165	100	32
Overall total	332	9	809	64	72	313	42		323	207	59

Note. N = 232. Treatments include: OFA (occupational safety narrative, first-person voice, audio format); OFP (occupational safety narrative, first-person voice, print format); OTA (occupational safety narrative, third-person voice, audio format); OTP (occupational safety narrative, third-person voice, print format); HFA (health narrative, first-person voice, audio format) HFP (health narrative, first-person voice, print format); HTA (health narrative, third-person voice, audio format); HTP (health narrative, third-person voice, print format). Thought and emotion listing categories include: NT (narrative thought); NNT (non-narrative thought); NLT (narrative-linked thought); NET (Negative Evaluative Thoughts); PET (Positive/neutral Evaluative Thoughts); ST (Supportive Thought); SUM (Summary Thoughts); + (Positive Thought/Feeling); - (Negative Thought/ Feeling); 0 (Neutral Thought/ Feeling).

Table 4.7

Percentage of Responses for the Thought Listing Categories for Occupational Safety and Health Narrative Messages

Treatment	NT	NNT	NLT	NET	PET	ST	SUM	+	-	0
OFA	29%	0	30%	38%	34%	25%	23%	31%	33%	30%
OFP	31%	0	21%	29%	28%	21%	29%	25%	26%	44%
OTA	19%	100%	27%	20%	18%	29%	29%	18%	23%	7%
OTP	21%	0	22%	13%	20%	25%	19%	26%	18%	19%
Total for Occupational	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HFA	23%	12.5%	19%	33%	41%	32%	24%	26%	19%	9%
HFP	19%	25%	31%	11%	13%	23%	24%	22%	27%	25%
HTA	28%	50%	29%	22%	23%	24%	24%	36%	20%	41%
HTP	30%	12.5%	21%	33%	23%	21%	28%	16%	34%	25%
Total for health	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note. N = 232. Treatments include: OFA (occupational safety narrative, first-person voice, audio format); OFP (occupational safety narrative, first-person voice, print format); OTA (occupational safety narrative, third-person voice, audio format); OTP (occupational safety narrative, third-person voice, print format); HFA (health narrative, first-person voice, audio format) HFP (health narrative, first-person voice, print format); HTA (health narrative, third-person voice, audio format); HTP (health narrative, third-person voice, print format). Thought and emotion listing categories include: NT (narrative thought); NNT (non-narrative thought); NLT (narrative-linked thought); NET (Negative Evaluative Thoughts); PET (Positive/neutral Evaluative Thoughts); ST (Supportive Thought); SUM (Summary Thoughts); + (Positive Thought/ Emotion); - (Negative Thought/ Emotion); 0 (Neutral Thought/ Emotion).

H 2: First-person narratives will produce stronger emotional responses (positive or negative) than third-person narratives about health and occupational safety narrative messages. Not supported.

RQ 2: Will audio narratives produce a stronger emotional response (positive or negative) than print narratives about health and occupational safety narrative messages?

No difference found.

Summary

A multivariate analysis of variance (MANOVA) was used to test the significance of group differences on the emotional response measure proceeded by an independent samples *t* tests to examine difference in the strength of emotional response between to two topics. Overall, participants had a fairly low to moderate emotional response to the narrative messages. The voice of the narrator did not affect the reported emotional response nor were any differences found between audio and print narrative messages. However, small but significant differences were found among the narrative messages by topic. Specific details of the data analysis and results for this measure follow.

Findings

Participants rated their level of emotional response to the narrative message by indicating how strongly they felt twelve emotions while reading or listening to the narrative message. A MANOVA was performed to assess the difference between treatment and the 12 emotional response items. Table 4.8 displays the means and standard deviations for this measure. The main effect for voice was not significant, $F(12, 194) = .54$, $p = .89$, nor was the main effect for

medium, $F(12, 194) = .84$, $p = .61$. None of the interaction effects were significant. However, the main effect for topic was significant, $F(12, 194) = 3.31$, $p < .05$ (see Table 4.9).

Table 4.8

Emotional Response Measure Means and Standard Deviations

	Occupational Safety Narrative		Health Narrative	
Item	M	SD	M	SD
Interest	4.24	.85	4.03	.80
Enjoyment	3.33	1.12	3.32	.94
Surprise	2.73	1.10	2.23	1.02
Sadness	2.41	1.07	1.95	1.07
Anger	1.97	1.20	1.69	.98
Disgust	1.70	1.01	1.77	1.01
Contempt	1.67	.85	1.69	.88
Fear	2.36	1.23	1.86	1.09
Guilt	1.52	.85	1.81	1.08
Shame	1.51	.82	1.64	1.05
Shyness	1.29	.61	1.30	.70
Hostility Inward	1.38	.65	1.47	.83

Note. N = 232. Item mean scores reflect the following response choices:
1 = not at all, 3 = moderately, 5 = extremely.

Subsequently, a *t* test for independent samples was calculated to determine what topic produced stronger emotional response. Table 4.10 shows the mean scores, standard deviations

and *t*-test scores for significant emotional responses. Participants reported feeling significantly higher levels of surprise ($M = 2.73$, $SD = 1.10$), $t(223) = 3.49$, $p < .05$, a higher level of sadness ($M = 2.41$, $SD = 1.07$), $t(226) = 3.28$, $p < .05$, and fear ($M = 2.36$, $SD = 1.23$), $t(226) = 3.27$ $p < .05$, while reading or listening to an occupational narrative. Additionally, participants reported feeling a significantly higher level of guilt ($M = 1.81$, $SD = 1.08$), $t(226) = -2.23$, $p < .05$ while reading or listening to a health narrative message. The highest mean was on interest with occupational narrative messages producing a slightly higher mean ($M = 4.24$, SD = .85) than health narrative messages ($M = 4.03$, SD = .80). Nevertheless, it should be noted that although significance was found, the majority of the items mean scores (besides interest) were between 1 = not at all, and 3 = moderately for both health and occupational safety narrative messages indicating that participants had a fairly low to moderate emotional response to the narrative messages overall.

Table 4.9

Emotional Response Measure MANOVA and ANOVA F Ratios for Topic by Voice by Medium

		ANOVA											
	MANOVA	Interest	Enjoyment	Surprise	Sadness	Anger	Disgust	Contempt	Fear	Guilt	Shame	Shyness	Hostility Inward
Variable	F[a]	F□	F□	F□	F□	F□	F□	F□	F□	F□	F□	F□	F□
Topic (T)	3.31**	2.99	.05	7.92**	6.97**	3.58	.25	.33	9.30**	3.76*	.99	.00	1.90
Voice (V)	.54	.05	.22	.08	.30	2.49	2.75	.09	.03	1.49	1.70	.01	.30
Medium (M)	.84	.76	1.40	.40	.20	.52	.48	1.90	.79	1.24	.61	.48	.003
T by V	1.14	.25	.01	.08	1.78	.000	1.70	.10	.15	.04	.002	.12	1.02
T by M	.71	.25	.90	.20	.01	.29	.52	5.18*	2.04	2.10	1.14	1.11	.91
V by M	.48	.01	.22	.59	.01	.49	.03	.12	.11	.12	.59	.41	.19

Note. N = 232. MANOVA F ratios were generated from Pillai's statistic. [a]MANOVA df = 12, 194. □ ANOVA df = 1, 213 *p < .05. **p < .01.

Table 4.10

Emotional Response Differences for Occupational Safety and Health Narratives

Item	Occupational Safety Narrative M	Occupational Safety Narrative SD	Health Narrative M	Health Narrative SD	df	t
Surprise	2.73	1.10	2.23	1.02	223	3.49
Sadness	2.41	1.07	1.95	1.07	226	3.28
Fear	2.36	1.23	1.86	1.09	226	3.27*
Guilt	1.52	.85	1.81	1.08	226	-2.23*

Note. N = 232. *p < .05. Item mean scores reflect the following response choices: 1 = not at all, 3 = moderately, 5 = extremely.

Perceptions of Message Effectiveness

H 3: First-person narratives will be perceived as more effective at communicating the intended message than third-person narratives. Not supported.

R Q 3: Will audio narratives be perceived as more effective at communicating the intended message than print narratives? No difference found.

Summary

A factor analysis using varimax rotation procedure was performed on the nineteen items to determine whether an underlying pattern of relationships existed among the variables. This was followed by a series of ANOVAs between treatments and the three factors which indicated a difference between the effectiveness variables and factor 2. Following, post hoc tests indicated significant differences between some of the treatments. A MANOVA was performed to compare average effectiveness scores and determine whether any of the eight narrative message types were

perceived as more effective at communicating the intended message. This test indicated that while the eight treatments were effective overall, the occupational safety narrative messages were perceived as more effective than the health narrative messages on several of the factors. Specific details of the data analysis and outcomes are outlined in the following pages.

Findings

Participants were asked to complete nineteen 7-point Likert-type items assessing their perception of the effectiveness of the message they were exposed to. An exploratory factor analysis using the principal component method with orthogonal (VARIMAX) rotation was performed on the multi-item measures. Table 4.11 shows that the factor solution extracted three factors with eigenvalues greater than 1.0 explaining about 57 percent of the total variance. Numerical factor labels were used because no meaningful names could offer a useful description. Internal consistency for each of the scales was examined using Cronboch's alpha. According to definitions proposed by George & Mallery (2003) the alphas for the three factors were classified as excellent to questionable--.90 for Factor 1 (11 items), .75 for Factor 2 (4 items), and .65 for Factor 3 (4 items). Table 4.12 provides a summary of the descriptive statistics for the three factors. Mean scores indicate that the participants assessed the messages favorably overall.[2]

[2] The effectiveness scale used for this study was adapted from a ratings scale by Kopfman et al. (1998). The dimensionality of the five adapted items from Kopfman et al.'s (1998) six-item rating scale was analyzed using principal-components factor analysis. The rotated solution, as shown in Table A.4 yielded one factor. Cronbach's alpha test was conducted to examine internal consistency of the items in the composite measure. The alpha for the factor was .79. As displayed on table A. 4, when the five variables taken from Kopfman et al.'s scale were included in the factor analysis of all 19 variables, they did not fall out into one factor, but rather, four of the five fell into the first factor and the fifth fell into the second factor.

Table 4.11

Perceptions of Message Effectiveness Measure Means, Standard Deviations and Exploratory Factor Analysis

Item	M	SD	Factor loading 1	2	3	h^2	% of Variance	Eignevalue
Factor 1							43.76	8.32
I liked this message.	6.05	.96	**.81**	.14	.22	.72		
This message is credible. (K)	5.96	1.02	**.77**	.07	.18	.63		
This message is realistic.	6.19	1.20	**.74**	.14	.09	.57		
This message is thorough. (K)	5.43	1.22	**.73**	.12	.01	.56		
This message is appropriate. (K)	6.15	.92	**.68**	.21	.37	.64		
My colleagues need to read this message.	6.03	.91	**.67**	.35	.27	.65		
The message is convincing	6.08	.86	**.64**	.31	.29	.59		
The narrator of this message is a reliable source. (K)	5.52	1.16	**.61**	.18	.10	.41		
This message contains valuable information.	5.43	1.22	**.57**	.38	.24	.52		
This message makes me think about my own behaviors.	5.97	1.18	**.56**	.20	.17	.38		
More people like me should receive this message.	5.88	1.00	**.54**	.35	.39	.57		
Factor 2							6.98	1.33
This message makes me feel confident that I can practice behaviors that comply with my department's fitness regulations and standards.	5.58	1.08	.27	**.79**	.10	.65		
This message didn't tell me anything new.*	3.65	1.88	.01	**.74**	.04	.54		

Table 4.11 continued.

Item	M	SD	1	2	3	h²	% of variance	Eigenvalue
This message would be helpful in influencing firefighters to comply with their department's regulations and standards.	5.70	1.23	.41	**.67**	.17	.65		
This message is effective. (K)	5.77	1.10	.54	**.59**	.18	.67		
Factor 3							6.57	1.25
This message is not believable.*	2.09	1.52	.01	-.04	**.74***	.55		
This message is not very persuasive.*	2.58	1.65	.14	.21	**.70**	.55		
This message is not compelling.*	2.32	1.45	.33	.07	**.56**	.43		
This message is boring.*	1.97	1.81	.43	.24	**.56**	.56		

Note. N = 232. (K) = variable from Kopfman et al.'s (1998) rating scale. h² = communalities. * = Reverse scored. Reverse scored items were flipped for the purpose of factor analysis. Boldface indicates highest factor loadings. α = .90 for Factor 1; .75 for Factor 2 and; .65 for Factor 3. Item mean scores reflect the following response choices: 1 = strongly disagree, 2 = disagree, 3 = moderately disagree, 4 = neither agree nor disagree, 5 = agree, 7 = strongly agree. h²= communalities.

Table 4.12

Perception of Message Effectiveness Scale Factors Descriptive Statistics

Factor	No. of items	M (SD)	Skewness	Kurtosis	Alpha
Factor 1	11	5.94 (.73)	-.59	.18	.90
Factor 2	4	5.38 (1.01)	-.38	.19	.75
Factor 3	4	5.79 (1.00)	-.64	-.23	.65

Note. N = 232.

A series of ANOVAS between treatments and Factor 1, Factor 2, and Factor 3 indicated there was not a significant difference by treatment in effectiveness for Factor 1 ($F(7, 222) = .861$, $p = .538$) and Factor 3 ($F(7, 221) = 1.28$, $p = .262$). However, Factor 2 was significant ($F(7, 232) = 2.852$, $p < .01$). Post hoc tests indicated significant differences between some pairs of

treatments (see Table 4.13). Comparing treatment OFA (occupational safety narrative, first-person voice, audio format) with treatment HFP (health narrative, first-person voice, print format) indicated a significant difference. Comparing treatment OTA (occupational safety narrative, third-person voice, audio format) with treatment HFP indicated a significant difference for Tukey but not for Bonferroni. No other significant differences were found. These results indicate that the HFP was the least effective compared to OFA and OTA.

A MANOVA was performed between topic, medium, and voice and the 19 variables that make up the effectiveness scale. All the narrative messages received high effectiveness ratings indicating that the participants thought they were effective overall (see Table 4.14 for the means and standard deviations for the items on the effectiveness scale by treatment). Table 4.15 displays the MANOVA and ANOVA *F* ratios. The MANOVA yielded a main effect for topic, $F(19, 182) = 1.79$, $p < .05$. However, the main effects for voice $F(19, 182) = .79$, $p = .72$, and medium $F(19, 182) = 1.22$, $p = .25$ were not significant. None of the interactions were significant. The tests of between-subjects effects indicated both the audio and print versions of the occupational safety narrative were significantly more convincing, more effective, more realistic, more thorough, and more helpful in influencing firefighters to comply with their department's regulations and standards in comparison with health narrative messages. In addition, the occupational safety narrative messages induced more feelings of confidence that the participants can practice behaviors that comply with their department's fitness regulations and standards, compared to the health narrative messages. The occupational safety narratives were also found to be significantly less boring, more compelling, and perceived to provide more new information than the health narrative messages.

Table 4.13

Three Factors of the Effectiveness Measure as a Function of Treatment Mean Scores and Post Hoc Tests

Dimension Reduction	OFA M SD	OFP M SD	OTA M SD	OTP M SD	HFA M SD	HFP M SD	HTA M SD	HTP M SD	Post hoc Tukey	Post hoc Bonferroni
Factor 1 Effectiveness	6.03 .71	6.15 .53	6.00 .71	5.97 .68	5.79 .68	5.76 .73	5.90 .75	5.90 .81	Not significant	Not significant
Factor 2 Effectiveness	5.81 .84	5.53 .71	5.78 .81	5.48 1.18	5.32 1.10	4.98 1.16	5.16 .90	5.09 1.03	*HFP < OFA, OTA	*HFP < OFA
Factor 3 Effectiveness	6.16 .67	5.87 1.00	5.73 1.01	6.00 1.07	5.57 1.10	5.72 .91	5.65 1.08	5.56 1.03	Not significant	Not significant

Note. N = 232. * p < .05. Treatments include: OFA (occupational safety narrative, first-person voice, audio format); OFP (occupational safety narrative, first-person voice, print format); OTA (occupational safety narrative, third-person voice, audio format); OTP (occupational safety narrative, third-person voice, print format); HFA (health narrative, first-person voice, audio format) HFP (health narrative, first-person voice, print format); HTA (health narrative, third-person voice, audio format); HTP (health narrative, third-person voice, print format). Factor 1 included the following variables regarding the narrative message: convincing, realistic, made me think, credible, liked, reliable, colleagues need to read, contains valuable information, thorough, people should receive, appropriate. Factor 2 included the following variables regarding the narrative message: helpful in influencing firefighters to comply to regulations, makes me feel confident that I can practice behaviors that comply with regulations, effective, didn't tell me anything new. Factor 3 included the following variables regarding the narrative message: not believable, not persuasive; is boring, not compelling.

Table 4.14

Effectiveness Scale Items Means and Standard Deviations by Narrative Message Type

Item	OFA M SD	OFP M SD	OTA M SD	OTP M SD	HFA M SD	HFP M SD	HTA M SD	HTP M SD
I liked this message.	6.18 .91	6.23 .59	6.23 .91	6.03 .91	5.85 1.32	6.00 1.04	5.96 .78	6.19 .80
This message is credible.	6.07 1.02	6.12 .77	5.96 .77	6.03 .91	5.77 1.66	5.89 1.01	5.92 .85	6.08 .98
This message is realistic.	6.25 .80	6.38 .70	6.35 .75	6.45 .57	6.00 1.44	6.07 .92	6.04 .92	6.12 1.53
This message is thorough.	5.59 1.32	5.78 .80	5.57 1.26	5.66 .90	5.28 1.22	5.03 1.27	5.44 1.05	5.44 1.42
This message is appropriate.	6.21 .86	6.33 .62	6.21 .92	6.17 .76	5.90 1.52	6.14 .83	6.11 .85	6.22 .75
My colleagues need to read/ listen to this message.	5.89 .96	6.35 .63	6.23 .82	5.97 .91	6.08 .94	5.96 1.02	5.96 .82	5.92 1.06
The message is convincing	6.21 .88	6.19 .80	6.27 .87	6.14 .92	5.96 .92	5.70 .87	6.08 .80	6.08 .85
The narrator of this message is a reliable source.	5.86 1.18	5.69 1.12	5.46 1.07	5.45 1.06	5.58 1.21	5.11 1.22	5.50 1.14	5.42 1.33
This message contains valuable information.	6.28 1.07	6.21 .69	6.21 .88	6.07 1.07	6.03 1.27	5.69 1.34	5.76 1.06	6.00 1.22
This message makes me think about my own behaviors.	6.07 .98	6.27 .60	5.96 .92	5.90 1.26	5.35 1.88	6.11 1.22	5.96 1.25	6.19 .80

Table 4.14 continued.

Item	OFA M SD	OFP M SD	OTA M SD	OTP M SD	HFA M SD	HFP M SD	HTA M SD	HTP M SD
More people like me should receive this message.	6.00 .98	6.21 .69	5.93 1.02	5.79 .94	5.97 1.02	5.62 1.24	5.83 1.00	5.64 1.13
This message makes me feel confident that I can practice behaviors that comply with my department's fitness regulations and standards.	5.96 .92	5.69 .74	5.88 .82	5.69 1.17	5.38 1.20	5.15 1.41	5.35 1.06	5.50 .95
This message didn't tell me anything new.*	3.10 1.50	3.46 1.82	3.43 1.73	3.17 1.95	3.57 2.17	4.17 1.97	4.45 1.85	3.93 1.82
This message would be helpful in influencing firefighters to comply with their department's regulations and standards.	6.14 .93	6.08 .74	6.31 .93	5.72 1.39	5.27 1.51	5.15 1.29	5.54 1.03	5.27 1.37
This message is effective.	6.32 .82	6.08 .63	6.04 .87	5.66 1.32	5.54 1.53	5.52 1.01	5.62 .94	5.54 1.21
This message is not believable.*	1.79 1.32	1.85 1.29	2.54 1.82	2.03 1.80	2.15 1.49	2.07 1.30	2.08 1.38	2.42 1.98
This message is not very persuasive.*	2.24 1.46	2.70 2.13	2.68 1.72	2.10 1.42	2.79 1.59	2.62 1.57	2.52 1.48	2.89 1.83
This message is not compelling.*	1.93 1.39	2.26 1.56	2.00 .86	2.17 1.54	2.48 1.55	2.52 1.48	2.52 1.37	2.70 1.71
This message is boring.*	1.45 .57	1.74 1.06	2.11 1.52	1.69 .93	2.28 1.33	2.00 1.07	2.33 1.27	2.11 1.12

Note. N = 232. * Reverse scored items. Item mean scores reflect the following response choices: 1 = strongly disagree, 2 = disagree, 3 = moderately disagree, 4 = neither agree nor disagree, 5 = agree, 7 = strongly agree.

Table 4.15

Effectiveness Scale Items MANOVA and ANOVA F Ratios for Topic X Voice X Medium

Item	Topic (T)	Voice (V)	Medium (M)	T byV	T by M	V by M	T by V by M
MANOVA F[a]	1.78*	.79	1.22	.88	.76	.98	.99
ANOVA							
Liked message F□	1.38	.001	.01	.49	.16	.16	1.26
Credible F□	.73	.00	.02	.52	.09	.09	.21
Realistic F□	4.30*	.01	.04	.17	.66	.66	.22
Thorough F□	5.05*	.52	.00	1.51	.99	.99	.50
Appropriate F□	1.58	.003	.50	.77	.01	.01	.24
Colleagues need to read / listen to message F□	1.29	.02	.01	.00	.36	.36	4.10*
Convincing F□	4.19*	1.41	.71	1.71	.11	.11	.84
Narrator is a reliable source F□	2.4	.08	1.25	2.34	.14	.14	.23
Contains valuable information F□	2.94	.84	.16	.01	.01	.01	2.54
Makes me think about my own behaviors F□	.57	.03	1.99	2.92	.97	.97	.001
People should receive this message F□	3.07	.61	.15	1.46	.81	.81	1.46
Makes me feel confident F□	9.55*	.29	1.48	.71	.15	.15	.93
Didn't tell me anything new F□	6.19*	1.35	.06	1.14	.05	4.23*	.94

Table 4.15 continued.

ANOVA

Item	Topic (T)	Voice (V)	Medium (M)	T by V	T by M	V by M	T by V by M
Influence firefighters to comply F□	20.09*	.13	3.8*	1.08	.001	.001	1.20
Effective F□	8.92*	1.21	2.35	1.91	.10	.10	.66
Believable F□	1.18	1.36	.004	.37	.46	.00	.84
Not very persuasive F□	.57	.03	.06	.39	.40	.36	3.77*
Not compelling F□	5.19*	.10	.47	.14	.34	.13	.07
Boring F□	10.78*	1.15	.76	.30	.95	1.79	.66

Note. N = 232. MANOVA F ratios were generated from Hotelling's traces statistic. [a]MANOVA df = 19, 182. □ ANOVA df = 1, 208. * $p < .05$.

Source credibility

H 4: Perceived source credibility (comprised of trustworthiness, and expertise) will be higher for first-person narratives than for third-person narratives. Not supported.

R Q 4: Will perceived source credibility (comprised of trustworthiness, and expertise) be higher for audio narratives than for print narratives? No difference found.

Summary

A factor analysis using a varimax rotation procedure was performed on the adapted source credibility scale. It was determined that the variables followed Ohanian's pattern of relationships. A MANOVA was used to compare average credibility scores between topic, medium and voice and the two factors that make up the source credibility scale. Results from this test indicated that the participants scored the main character as being both trustworthy and an expert for all eight treatment types; however, the MANOVA yielded a main effect for topic. Results from an independent samples *t* test indicated that that the main character in the occupational safety narrative messages was seen as more of an expert. A detailed description and results of the various statistical tests is provided in the following pages.

Findings

Participants were asked to complete ten items from the source-credibility scale adapted from Ohanian's (1990) 15-item semantic differential scale. An exploratory factor analysis using the principal component method with orthogonal (VARIMAX) rotation was conducted on the sources credibility items. Table 4.16 shows that the factor solution extracted two factors with eigenvalues greater than 1.0 explaining about 81 percent of the total variance. Since the variables fell on the same factors that Ohanian (1990) found, the same factor labels were used as were used in her research. Internal consistency for each of the scales was examined using Cronbach's

alpha. According to definitions proposed by George & Mallery (2003) the alphas for the two factors were classified as excellent --.93 for Factor 1 (5 items) and .95 for Factor 2 (5 items).

Table 4.16

Source Credibility Measure Summary of Items, Factor Loadings, Communalities, Percent of Variance, and Eigenvalues for Varimax Orthogonal Two-factor Solution

Item	M	SD	Factor Loadings 1	2	h^2	% of variance	Eigenvalues
Trustworthiness						66.19	6.62
Dependable	2.42	1.42	**.79**	.35	.75		
Honest	2.00	1.14	**.82**	.25	.74		
Reliable	2.39	1.41	**.83**	.36	.82		
Sincere	2.01	1.17	**.85**	.23	.77		
Trustworthy	2.27	1.34	**.86**	.30	.84		
Expertise						14.66	1.47
Expert	2.85	1.35	.26	**.78**	.68		
Experienced	2.47	1.35	.20	**.91**	.86		
Knowledgeable	2.44	1.26	.33	**.89**	.89		
Qualified	2.36	1.32	.38	**.86**	.88		
Skilled	2.42	1.32	.39	**.83**	.85		

Note. N = 232. Boldface indicates highest factor loadings. α = .93 for Factor 1 and .95 for Factor 2. Item mean scores reflect response choices from a semantic differential scale: Trustworthiness = (1) Dependable – (7) Undependable; (1) Honest – (7) Dishonest; (1) Reliable – (7) Unreliable; (1) Sincere – (7) Insincere; (1) Trustworthy – (7) Untrustworthy. Expertise = (1) Expert – (7) Not an expert; (1) Experienced – (7) Inexperienced; (1) Knowledgeable – (7) Unknowledgeable; (1) Qualified – (7) Unqualified; (1) Skilled – (7) Unskilled.

A MANOVA was performed between topic, medium and voice and the two factors that make up the source credibility scale for this study. Table 4.17 displays the means and standard deviations for the factors on the source credibility scale for both the occupational safety and

health narrative messages. It is important to note that the mean scores for both trustworthiness and expertise were low for all the narrative message types indicating that participants scored the main character as being both trustworthy and an expert. Table 4.18 provides a summary of the MANOVA and ANOVA and *F* ratios for treatment and source credibility. The MANOVA yielded a main effect for topic $F(2, 212) = 5.38$, $p < .01$ indicating a difference between health and occupational safety narrative messages. The main effect of expertise yielded an *F* ratio of $F(1, 220) = .8.82$, $p<.01$, indicating the main character in the occupational safety narrative messages was viewed as more of an expert. No other main effects or interactions were significant.

Table 4.17

Source Credibility Measures Mean Scores and Standard Deviations for Treatment

	Source credibility measure			
Group	Trustworthiness		Expertise	
	M	SD	M	SD
Occupational				
First-person audio	1.98	.94	2.03	.95
First-person print	2.03	1.30	2.26	1.31
Third-person audio	2.29	.97	2.16	.82
Third-person print	2.25	.97	2.59	1.22
Health				
First-person audio	2.22	1.50	2.56	1.45
First-person print	2.26	1.20	2.70	.99
Third-person audio	2.19	.93	2.76	1.03
Third-person print	2.41	1.30	2.85	1.27

Note. Item mean scores reflect the following response choices:
(1) Trustworthy – (7) Untrustworthy; (1) Expert – (7) Not an expert.

Table 4.18

Source Credibility Measure MANOVA and ANOVA F Ratios for Treatment

		ANOVA	
	MANOVA	Trustworthiness	Expertise
Variable	F	F	F
Topic (T)	5.38*	.72	8.82*
Voice (V)	.90	1.11	1.73
Medium (M)	1.24	.20	2.08
T by V	.29	.45	.03
T by M	.86	.17	.47
V by M	.02	.03	.04
T by V by M	.51	.21	.16

Note. MANOVA F ratios were generated from Pillai's statistic.
MANOVA df = 2, 212 ANOVA df = 1, 220. *p < .01.

An independent samples *t* test was conducted on the expertise scores by topic. Topic yielded an *F* ratio of $F(1, 220) = 3.41$, $p < .01$. Levene's test for equality of variance was used to show homogeneity of variance across the two topics. There was a significant difference between health and occupational safety narrative messages indicating that the main character in the occupational safety narrative messages was seen as more of an expert ($M = 2.25$, $SD = 1.10$) than the main character in the health narrative messages ($M = 2.77$, $SD = 1.25$).

Similarity

H 5: First-person narratives will produce a greater perception of similarity than third-person narratives. Not supported.

RQ 5: Will audio narratives produce a greater perception of similarity than print narratives? No difference found.

Summary

A factor analysis using a varimax rotation procedure was performed on the adapted scale to determine whether the variables followed McCrosky, Richmond and Daly's pattern of relationships. Subsequently, the factor solution extracted four factors. Items on factor 4 were not rated similarly and were thus analyzed separately. MANOVA and ANOVA statistical tests were utilized to determine which of the eight narrative types produced greater perceptions of similarity. Overall, participants' mean scores fell in the middle of the scale indicating that they thought the main character in the narrative message they were exposed to was neither like them or not like them. A comprehensive description of the analyses and results follows.

Findings

Participants were asked to complete nine 7-point Likert-type scale items on a similarity scale adapted from McCrosky, Richmond and Daly's (1975) *Perceived Homophily Scale*. This scale was used to assess participant's perceptions on how similar they perceived themselves to be compared to the main character in the narrative message they read or listened to on three dimensions--attitude, background, and value. An exploratory factor analysis using the principal component method with orthogonal (VARIMAX) rotation was conducted on the similarity items Table 4.19 shows that the factor solution extracted four factors with eigenvalues greater than 1.0 explaining about 74 percent of the total variance. Numerical factor labels were used because one

of the items on McCrosky, Richmond and Daly's (1975) *Perceived Homophily Scale* for value fell on the first factor with attitude items and the four attitude items were split forming two factors (Factor 1 and Factor 3). Internal consistency for each of the scales was examined using Cronbach's alpha. According to definitions proposed by George & Mallery (2003), the alphas for the four factors were classified from good to unacceptable--.67 for Factor 1 (3 items), .87 for Factor 2 (2 items), .81 for Factor 3 (2 items) and .34 for Factor 4 (2 items). Subsequently, given that the low alpha for Factor 4 indicated the items were not rated similarly, they were analyzed separately. Factor 4 consisted of two items- status and background. It is unclear why these two groupings of items failed to measure the same concept; in particular, since the narratives were about firefighters. It may be that since only two items made up the grouping there was insufficient intercorrelation to suggest a meaningful factor. Table 4.20 provides a summary of the descriptive statistics for the three factors and Table 4.21 provides a summary of the descriptive statistics for the two items from Factor 4. Subsequently, an additional factor analysis was conducted taking out Factor 4 items resulting the three factors falling out as they did before but with a slightly higher variance explained and slightly higher principal component scores.

Table 4.19

Similarity Scale Summary of Items and Factor Loadings, Communalities, Percent of Variance and Eigenvalues, for Varimax Orthogonal Four-Factor Solution

Factor Item	Factor Loadings 1	2	3	4	h²	% of variance	Eigenvalue
Factor 1						35.21	3.17
Similar in thinking	**.80**	.13	-.07	.05	.66		
Similar in morals	**.78**	.05	.11	.11	.63		
Similar in likeness	**.69**	.23	.33	.01	.64		
Factor 2						14.49	1.30
Similar in treatment of others	.21	**.89**	.13	.09	.86		
Similar in values	.13	**.88**	.22	.07	.84		
Factor 3						12.60	1.13
Similar in behavior	.07	.13	**.89**	.11	.84		
Similar	.13	.18	**.87**	.09	.82		
Factor 4						11.39	1.03
Similar in status	-.02	.36	.03	**.72**	.64		
Similar in background	.16	-.11	.16	**.81**	.71		

Note. N = 232. Boldface indicates highest factor loadings. h² = communalities.

Table 4.20

Similarity Scale Descriptive Statistics for the Three Factors

Factor	No. of items	M (SD)	Skewness	Kurtosis	Alpha
Factor 1	3	3.91(.78)	.53	2.23	.67
Factor 2	2	3.73(1.62)	.08	.78	.87
Factor 3	2	4.26(1.44)	-.29	-.31	.81

Note. N = 232.

Table 4.21

Similarity Scale Descriptive Statistics for the Two Items that made up Factor Four

Item	M (SD)	Skewness	Kurtosis
Background	4.10 (1.71)	-.17	-.86
Status	4.20 (1.84)	-.14	-.97

Note. N = 232.

A MANOVA was conducted between the three factors that make up the similarity scale by treatment. The main effect for treatment was not significant $F(21, 632) = 1.07$, $p = .37$ indicating no difference between the different treatments (see Table 4.22 for the mean scores and standard deviations by treatment). Following, a MANOVA was conducted between topic, voice and medium and the three factors that make up the similarity scale (see Table 4.22 for the mean scores and standard deviations and Table 4.23 for a summary of the MANOVA and ANOVA and *F* ratios). None of the main effects were significant. The only interaction effect to be significant was between topic, voice and medium $F(3, 212) = 3.40$, $p < .05$ indicating a difference between the eight different types of narrative messages. Tests of between-subjects effects indicated that Factor 1 was significant $F(1, 221) = 4.12$, $p < .05$. There were no other significant interactions.

Table 4.22

Similarity Measure Mean Scores and Standard Deviations for Treatment and Factors 1, 2, and 3 by Narrative Type

Group	Similarity measure					
	Factor 1		Factor 2		Factor 3	
	M	SD	M	SD	M	SD
Occupational						
First-person audio	3.76	.46	3.77	1.61	3.86	1.45
First-person print	3.83	.91	3.96	1.73	4.23	1.32
Third-person audio	3.80	.63	3.76	1.20	4.61	1.32
Third-person print	3.99	1.08	3.89	1.66	4.30	1.72
Health						
First-person audio	3.65	.68	3.44	1.63	4.20	1.63
First-person print	3.98	.62	3.63	1.62	3.98	1.20
Third-person audio	4.28	.85	4.13	1.66	4.24	1.53
Third-person print	3.90	.73	3.87	1.71	4.55	1.35

Note. N = 232. Item mean scores reflect the following response choices: Factor 1- (1) Doesn't think like me - (7) Thinks like me; (1) Unlike me – (7) Like me; (1) Morals unlike me - (7) Morals like me; Factor 2- (1) Shares my values – (7) Doesn't share my values; (1) Treats people like I do – (7) Doesn't treat people like I do; Factor 3- (1) Behaves like me – (7) Doesn't behave like me; (1) Similar to me – (7) Different from me; Items that made up Factor 4- (1) Status like mine – (7) Status different from mine; (1) Background different from mine – (7) Background similar to mine.

An ANOVA by Factor 1 by topic, voice, and medium was conducted. None of the main effects or interactions were significant. Table 4.24 provides *F* ratios of this ANOVA.

Table 4.23

Similarity Measure for Three Factors by Treatment MANOVA and ANOVA F Ratios

		ANOVA		
	MANOVA	Factor 1	Factor 2	Factor 3
Variable	F	F	F	F
Topic (T)	.70	1.13	.40	.00
Voice (V)	1.59	3.18	.51	3.23
Medium (M)	.09	.25	.00	.06
T X V	.64	.69	.81	.11
T X M	.38	.57	.55	.01
V X M	.84	2.18	.72	.06
T X V X M	3.40*	4.12*	.50	2.31

Note. N = 232. MANOVA F ratios were generated from Pillai's statistic. MANOVA df = 3, 212 ANOVA df = 1, 221. *p < .05.

Table 4.24

Similarity Measure Factor 1 by Topic, Voice and Medium ANOVA F Ratios

Variable	ANOVA Similarity Measure F
Topic (T)	.92
Voice (V)	3.56
Medium (M)	.15
T by V	.53
T by M	.42
V by M	2.49
T by V by M	3.71

Note. N = 232. ANOVA df = 1, 222.

A MANOVA between treatment and status and background was conducted (see Table 4.25 for the mean scores and standard deviations). The MANOVA was significant $F(14, 438) = 1.72$, $p. < 05$ indicating a difference between treatments. The test of between-subjects effects were not significant between treatment and status $F(7, 228) = 1.50$, $p. = .17$ and background $F(7, 228) = 1.50$, $p. = .16$. Next, a MANOVA was conducted between topic, voice and medium and status and background (see Table 4.25 for mean scores and standard deviations and Table 4.26 for a summary of the MANOVA and ANOVA and *F* ratios). The main effect for topic was significant $F(2, 220) = 6.29$, $p < .05$ indicating a difference between health and occupational safety narrative messages. None of the other main effects were significant. All the interactions

were not significant. Tests of the between-subjects effects indicated that the background item was significant $F(1, 228) = 7.35$, $p < .05$. There were no other significant interactions.

Table 4.25

Similarity Measure Mean Scores and Standard Deviations for Status and Background Items by Narrative Type

Group	Similarity measure			
	Background*		Status	
	M	SD	M	SD
Occupational				
First-person audio	3.83	1.77	4.34	2.08
First-person print	3.69	1.67	5.03	1.78
Third-person audio	3.28	1.56	4.48	1.66
Third-person print	3.59	1.81	3.76	4.11
Health				
First-person audio	4.39	1.66	4.11	1.87
First-person print	3.89	1.80	3.79	1.70
Third-person audio	4.14	1.74	4.21	1.81
Third-person print	4.38	1.71	3.90	1.95

Note. * Indicates reverse scored item. Item mean scores reflect the following response choices: (1) Background different from mine – (7) Background similar to mine; (1) Status like mine – (7) Status different from mine.

Table 4.26

Similarity Measures MANOVA and ANOVA F Ratios for Topic, Voice and Medium for Background and Status Items

		ANOVA	
	MANOVA	Background**	Status
Variable	F	F	F
Topic (T)	6.29*	7.35*	2.56
Voice (V)	.55	.218	1.05
Medium (M)	.20	.01	.39
T X V	1.13	.99	1.77
T X M	.22	.24	.31
V X M	2.66	1.75	2.35
T X V X M	.97	.10	1.94

Note. MANOVA F ratios were generated from Hotelling's Trace statistic. MANOVA df = 2, 220 ANOVA df = 1, 228. *p < .01. ** Reverse scored

Following, an independent samples *t*-test was used to determine mean differences between the two topics on the background item. The *t*-test scores indicate no significant differences between occupational safety ($M = 3.59$, $SD = 1.63$) and health narrative messages ($M = 4.20$, $SD = 1.74$) $t(227) = -2.73$, $F = .881$).

Transportation

H 6: First-person narratives will produce a greater level of transportation than third-person narratives. Not supported.

RQ 6: Will audio narratives produce a greater level of transportation than print narratives? No difference found.

Summary

A factor analysis using a varimax rotation procedure was performed on the adapted scale which indicated the variables followed Green and Brock's pattern of relationships. A MANOVA was performed to determine which of the eight narrative types produced a greater level of transportation. Results indicate that all eight treatments transported the participants. Specific details of the analysis and results are provided in the following pages.

Findings

The transportation scale (Green and Brock, 2000) contains 15 items assessing individuals' immersion into a narrative and is designed to measure cognitive engagement, affective reactions, and the experience of mental imagery. In previous research, the transportation scale showed good internal consistency (Cronbach's $\alpha = .76$) as well as discriminant and convergent validity (Green & Brock, 2000). In order to decrease the length of the questionnaire, for this study the transportation scale included only the 11 general items from Green and Brock's scale and had Cronbach's α of .73. The four items that were dropped consist of a statement asking participants to respond to how much they thought a given character in the story was "vivid." It is worth noting, Green and Brock (2000) state that dropping items on the transportation scale does not significantly affect the alpha or discriminant and convergent validity (Green & Brock, 2000).

All items were measured on a seven-point scale where higher scores represent greater transportation into the story. Table 4.27 provides the mean scores and standard deviations for transportation measures by treatment. All the means scores were above the mid-point indicating that the participants reported that the narrative message transported them. An ANOVA was conducted on the transportation items by topic, voice, and medium. Table 4.28 provides *F* ratios of the ANOVA for the transportation measure. None of the main effects or interactions were significant indicating no difference between treatments.

Table 4.27

Transportation Measures by Treatment Mean Scores and Standard Deviations

Group	Transportation measure	
	M	SD
Occupational		
First-person audio	5.21	.85
First-person print	5.18	.68
Third-person audio	5.16	.75
Third-person print	5.28	.77
Health		
First-person audio	4.99	.84
First-person print	5.11	.84
Third-person audio	5.07	.83
Third-person print	4.99	.78

Note. N = 232.Item mean scores reflect the following response choices:
1 Not at all - 7 Very much.

Table 4.28

Transportation Measure by Treatment ANOVA F Ratios

	ANOVA
	Transportation Measure
Variable	F
Topic (T)	2.37
Voice (V)	.01
Medium (M)	.08
T by V	.05
T by M	.02
V by M	.02
T by V by M	.64

Note. N = 232. ANOVA df = 1, 222.

Belief Measures

H7: First-person narratives will produce more message consistent beliefs than third-person narratives. Not supported.

RQ7: Will audio narratives produce more message consistent beliefs than print narratives? No difference found.

Summary

Statistical tests were performed for each topic to determine whether the two levels of voice or two different media produced more message consistent beliefs. The mean scores

indicate that participants on average moderately agreed to agreed with most of the belief statements regardless of the treatment. No significant differences were found between any of the narrative messages in regards to beliefs. Detailed information on the analyses and results follows.

Findings for the Occupational Safety Narrative Specific Belief Measure

Participants were asked to complete nine 7-point Likert-type items ranging from one (strongly disagree) to seven (strongly agree). It should be noted that the mean scores reflect that participants on average moderately agreed to agreed with most of the belief statements regardless of the treatment. A MANOVA was performed to determine whether there were differences produced in the level of message consistent beliefs between the two levels of voice or two different media. (See Table 4.29 for the means scores and standard deviations and Table 4.30 for the *F* ratios). Neither of the main effects for voice or medium were significant, nor was the interaction between voice by medium indicating no significant differences between any of the occupational safety narrative messages in regards to beliefs. There was a significant difference between first and third-person voice on the between- subjects effect for the belief item measuring how aggressively firefighters should fight a fire while providing for safety *(F* ratio of $F(1, 114) = 4.73$, $p < .05$).

Table 4.29

Occupational Safety Narrative Specific Belief Items Means and Standard Deviations

Item	OFA M (SD)	OFP M (SD)	OTA M (SD)	OTP M (SD)
Firefighters should recognize that an emergency scene does not have to be an unsafe environment.	5.22 (1.80)	4.79 (1.68)	5.28 (1.60)	4.97 (1.97)
I am responsible for the safety of my colleagues.	6.07 (.92)	6.38 (.73)	6.10 (1.01)	6.21 (1.08)
Most accidents are predictable and preventable.	5.52 (1.19)	5.34 (1.29)	4.97 (1.52)	5.10 (1.42)
Firefighters should be more realistic about what they are able to do.	6.07 (.96)	5.90 (1.08)	5.93 (.84)	5.45 (1.27)
Firefighters should not act like they are indestructible.	6.30 (1.07)	6.03 (1.59)	6.24 (.79)	5.90 (1.26)
All firefighters should work within the established accountability system at all times.	6.48 (.85)	6.45 (.57)	6.52 (.74)	6.34 (.81)
* Firefighters should just accept that accidents are an occupational hazard.	4.07 (2.04)	4.17 (1.83)	4.38 (1.92	4.69 (1.91)
All firefighters should follow standard operating procedures not matter what.	5.33 (1.71)	5.10 (1.35)	5.24 (1.46)	5.14 (1.53)
Firefighters should fight fire aggressively but provide for safety first.	6.70 (.54)	6.41 (.68)	6.14 (1.06)	6.34 (.72)

Note. N = 232. *Reverse scored item.

Table 4.30

Topic-specific Belief Measures for Occupational Narrative Messages Voice by Medium MANOVA and ANOVA F Ratios

		ANOVA								
	MANOVA	A	B	C	D	E	F	G*	H	I
Variable	F	F	F	F	F	F	F	F	F	F
Voice (V)	1.55	.12	.16	2.41	2.25	.18	.06	1.30	.01	4.73**
Medium (M)	1.06	1.24	1.33	.01	2.81	1.77	.54	.32	.35	.08
V byM	.756	.03	.33	.37	.6	.03	.25	.09	.05	2.90

Note. MANOVA F ratios were generated from Hotelling's Trace statistic. MANOVA df = 9, 102. ANOVA df = 1, 114.**p < .05. Item F scores reflect the following: A = Firefighters should recognize that an emergency scene does not have to be an unsafe environment; B = I am responsible for the safety of my colleagues; C = Most accidents are predictable and preventable; D = Firefighters should be more realistic about what they are able to do; E = Firefighters should not act like they are indestructible; F = All firefighters should work within the established accountability system at all times; G = Firefighters should just accept that accidents are an occupational hazard; H = All firefighters should follow standard operating procedures no matter what; I = Firefighters should fight fire aggressively but provide for safety first. *Reverse scored.

Next, two independent samples *t*-tests were conducted to determine mean differences on the belief measure for occupational safety messages (see Table 4.31 and 4.32). The first *t*-test, indicated that participants reading or listening to a first-person occupational safety narrative message were likely to agree more strongly that firefighters should fight fire aggressively but provide for safety first ($M = 6.57$, $SD = .62$) more than participants that read or listened to a third-person occupational safety narrative message ($M = 6.24$, $SD = .90$). No other significant differences were found. On the second *t*-test, no significant results were found between participants reading or listening to a third or first-person narrative message.

Table 4.31

Belief Differences between Participants Who Read or Listened to a First-person Occupational Safety Narrative Message and Those Who Read or Listened to a Third-person Occupational Safety Narrative Message

Belief Item	First-person		Third-person		t (114)
	M	SD	M	SD	
Firefighters should recognize that an emergency scene does not have to be an unsafe environment.	5.03	1.73	5.12	1.79	-.26
I am responsible for the safety of my colleagues.	6.25	.83	6.16	1.04	.52
Most accidents are predictable and preventable.	5.36	1.35	5.03	1.46	1.26
Firefighters should be more realistic about what they are able to do.	6.02	1.02	5.69	1.10	1.67
Firefighters should not act like they are indestructible.	6.19	1.34	6.07	1.06	.54
All firefighters should work within the established accountability system at all times.	6.47	.71	6.43	.78	.25
* Firefighters should just accept that accidents are an occupational hazard.	4.16	1.92	4.53	1.90	1.06
All firefighters should follow standard operating procedures not matter what.	5.25	1.53	5.19	1.48	.20
Firefighters should fight fire aggressively but provide for safety first.	6.57	.62	6.24	.90	2.27**

Note. N = 232. *Reverse scored. **p < .05. Item mean scores reflect the following response choices: 1 = strongly disagree, 2 = disagree, 3 = moderately disagree, 4 = neither agree nor disagree, 5 = agree, 7 = strongly agree.

Table 4.32

Belief Differences between Participants Who Listened to an Audio Occupational Safety Narrative Message and Those Who Read a Print Occupational Safety Narrative Message

	Audio narrative		Print narrative		
Belief Measure	M	SD	M	SD	t (114)
Firefighters should recognize that an emergency scene does not have to be an unsafe environment.	5.28	1.67	4.88	1.8	1.22
I am responsible for the safety of my colleagues.	6.11	.96	6.29	.92	-1.07
Most accidents are predictable and preventable.	5.17	1.48	5.22	1.35	-.20
Firefighters should be more realistic about what they are able to do.	6.03	.90	5.67	1.19	1.85
Firefighters should not act like they are indestructible.	6.29	.92	5.97	1.43	-1.47
All firefighters should work within the established accountability system at all times.	6.50	.78	6.40	.70	.75
* Firefighters should just accept that accidents are an occupational hazard.	4.26	1.96	4.43	1.87	-.47
All firefighters should follow standard operating procedures not matter what.	5.32	1.57	5.12	1.43	.70
Firefighters should fight fire aggressively but provide for safety first.	6.43	.88	6.38	.70	.35

Note. N = 232. *Reverse scored. Item mean scores reflect the following response choices: 1 = strongly disagree, 2 = disagree, 3 = moderately disagree, 4 = neither agree nor disagree, 5 = agree, 7 = strongly agree.

Findings for the Health Narrative Message Story-specific Belief Measure

Participants were asked to complete nine 7-point Likert-type items ranging from one (strongly disagree) to seven (strongly agree). A MANOVA was performed to determine whether the two levels of voice or two different media produced more message consistent beliefs (see Table 4.33 for the means scores and standard deviations and Table 4.34 for the *F* ratios). Neither of the main effects for voice or medium were significant, nor was the interaction between voice by medium indicating there was no significant difference between any of the health narrative messages in regards to beliefs. The test of between-subjects effects revealed that only one belief item, how realistic firefighters should be about what they are able to do rather than act like they are indestructible, was significant by medium $F(1, 116) = 4.48$, $p < .05$.

Next, an independent samples t-test was used to determine mean differences on the belief measure for the health narrative messages (see Table 4.35 and Table 4.36). Results indicated participants who listened to health narrative message agreed more strongly that firefighters should recognize the signs and symptoms of personal medical emergencies ($M = 6.64$, $SD = .52$) than participants that read the health narrative message ($M = 6.47$, $SD = .68$). No other significant results were found for health narrative messages.

Table 4.33

Health Narrative Specific Belief Items Means and Standard Deviations

Item	HFA M (SD)	HFP M (SD)	HTA M (SD)	HTP M (SD)
Firefighters should recognize the signs and symptoms of personal medical emergencies.	6.69 (.54)	6.45 (.63)	6.59 (.50)	6.48 (.74)
Firefighters should know the appropriate course of action to take during an emergency.	6.79 (.49)	6.69 (.47)	6.66 (.48)	6.66 (.67)
I am responsible for my own well-being.	6.59 (1.15)	6.83 (.38)	6.72 (.46)	6.66 (.67)
Most cardiovascular health issues are predictable and preventable.	6.07 (1.36)	5.62 (1.37)	5.86 (1.22)	5.90 (.94)
Firefighters should participate in their fire department's fitness and wellness programs.	6.24 (1.06)	6.31 (.85)	6.38 (.78)	6.10 (.94)
Firefighters should be more realistic about what they are able to do rather than act like they are indestructible.	6.55 (.69)	5.93 (1.28)	6.28 (.99)	6.14 (.79)
All firefighters should recognize that physical conditioning is important to fighting fire.	6.79 (.41)	6.59 (.73)	6.72 (.46)	6.59 (.68)
*It is not important to workout on my days off.	5.90 (1.78)	5.79 (1.82)	5.14 (2.26)	5.59 (1.82)
All fire departments should have mandatory physical fitness-wellness programs.	5.93 (1.77)	5.83 (1.23)	6.07 (1.31)	5.90 (1.42)

Note. N = 232. *Reverse scored item. Item mean scores reflect the following response choices: 1 = strongly disagree, 2 = disagree, 3 = moderately disagree, 4 = neither agree nor disagree, 5 = agree, 7 = strongly agree.

Table 4.34

Belief Measures for Health Narrative Messages Voice by Medium MANOVA and ANOVA F Ratios

		ANOVA								
	MANOVA	A	B	C	D	E	F	G	H*	I
Variable	F	F	F	F	F	F	F	F	F	F
Voice (V)	.42	.09	.75	.02	.02	.04	.03	.10	1.81	.15
Medium (M)	1.18	2.32	.27	.41	.81	.37	4.48**	2.50	.23	.26
V byM	1.11	.37	.27	1.31	1.11	1.04	1.82	.10	.59	.02

Note. MANOVA F ratios were generated from Hotelling's Trace statistic. MANOVA df = 9, 104. ANOVA df = 1, 116. **p < .05. Item F scores reflect the following: A = Firefighters should recognize the signs and symptoms of personal medical emergencies; B = Firefighters should know the appropriate course of action to take during an emergency; C = I am responsible for my own well-being; D = Most cardiovascular health issues are predictable and preventable; E = Firefighters should participate in their fire department's fitness and wellness programs; F = Firefighters should be more realistic about what they are able to do rather than act like they are indestructible; G = All firefighters should recognize that physical conditioning is important to fighting fire; H = It is not important to workout on my days off; I = All fire departments should have mandatory physical fitness-wellness programs. *Reverse scored item.

Table 4.35

Belief Differences between Participants Who Read or Listened to First-person Health Narrative Message and Those Who Read or Listened to First-person Health Narrative Message

Belief Measure	First-person		Third-person		
	M	SD	M	SD	t (114)
Firefighters should recognize the signs and symptoms of personal medical emergencies.	6.57	.60	6.53	.63	.31
Firefighters should know the appropriate course of action to take during an emergency.	6.74	.48	6.66	.58	.87
I am responsible for my own well-being.	6.71	.86	6.69	.57	.13
Most cardiovascular health issues are predictable and preventable.	5.84	1.37	5.88	1.08	-.15
Firefighters should participate in their fire department's fitness and wellness programs.	6.28	.95	6.24	.87	.20
Firefighters should be more realistic about what they are able to do rather than act like they are indestructible.	6.24	1.07	6.21	.89	.19
All firefighters should recognize that physical conditioning is important to fighting fire.	6.69	.60	6.66	.58	.32
*It is not important to workout on my days off.	5.84	1.79	5.36	2.05	1.35
All fire departments should have mandatory physical fitness-wellness programs.	5.88	1.51	5.98	1.36	-.39

Note. N = 232.*Reverse scored. Item mean scores reflect the following response choices: 1 = strongly disagree, 2 = disagree, 3 = moderately disagree, 4 = neither agree nor disagree, 5 = agree, 7 = strongly agree.

Table 4.36

Belief Differences between Participants Who Listened to a Audio Health Narrative Message and Those Who Read a Print Health Narrative Message

	Audio narrative		Print narrative		
Belief Measure	M	SD	M	SD	t (114)
Firefighters should recognize the signs and symptoms of personal medical emergencies.	6.64	.52	6.47	.68	1.53**
Firefighters should know the appropriate course of action to take during an emergency.	6.72	.49	6.67	.57	.52
I am responsible for my own well-being.	6.66	.87	6.74	.59	-.64
Most cardiovascular health issues are predictable and preventable.	5.97	1.28	5.76	1.17	.91
Firefighters should participate in their fire department's fitness and wellness programs.	6.31	.92	6.21	.89	.61
Firefighters should be more realistic about what they are able to do rather than act like they are indestructible.	6.41	.86	6.03	1.06	2.12
All firefighters should recognize that physical conditioning is important to fighting fire.	6.76	.43	6.59	.70	1.59
*It is not important to workout on my days off.	5.52	2.05	5.69	1.81	-.480
All fire departments should have mandatory physical fitness-wellness programs.	6.00	1.55	5.86	1.32	.52

Note. *Reverse scored. **$p < .05$. Item mean scores reflect the following response choices: 1 = strongly disagree, 2 = disagree, 3 = moderately disagree, 4 = neither agree nor disagree, 5 = agree, 7 = strongly agree

Intentions to Behave Measures

H8: First-person narratives will produce greater intentions to behave according to the message. Not supported.

RQ8: Will audio narratives produce greater intentions to behave according to the message. No differences found.

Summary

Statistical tests were performed for each topic to determine whether the two levels of voice or two different media produced greater intentions to behave in accordance with the message. The mean scores indicate that participants on average moderately agreed to agreed with most of the behavior intention statements regardless of the treatment. No significant differences were found between any of the narrative messages in regards to intentions to behave. Detailed information on the analyses and results follows.

Findings for the Occupational Safety Narrative Messages Intentions to Behave Measure

Based on the occupational safety narrative message they read or listen to, participants were asked to rate their level of intention to behave on a 7-pont Likert-type scale. The means for the intention to behave fell in the range of moderately agree to agree for most of the measures. A MANOVA between the intention to behave measures by voice and medium yielded no significant main effects and no significant interaction effects. The tests of between-subjects effects on the intention to behave measures yielded no lower order effects. Results indicate no significant differences between group means. Table 4.37 provides means and standard deviations and Table 4.38 provides the *F* ratios for the MANOVA.

Table 4.37

Occupational Safety Narrative Message Intention to Behave Items Means and Standard Deviations

Item	OFA M (SD)	OFP M (SD)	OTA M (SD)	OTP M (SD)
*I intend to freelance (work on my own) on the fireground when necessary to get the job done.	5.89 (1.60)	5.96 (1.22)	6.14 (1.30)	6.07 (1.22)
I am going to make an effort to do what the message urged me to do.	5.63 (1.18)	6.00 (.96)	5.69 (1.17)	5.69 (1.07)
I f I see that my colleagues are not following proper safety rules, regulations and standards I will say something to them.	6.19 (.88)	5.81 (.96)	5.93 (.88)	6.14 (.88)
I plan to act in ways that are compatible with the position promoted by the message.	5.56 (1.28)	5.93 (.83)	5.69 (1.00)	5.62 (1.05)
I intend to stay informed of job-related health and safety issues.	5.93 (.96)	6.00 (.73)	5.93 (.80)	6.03 (.82)
I intend to behave in ways that are consistent with the message.	5.41 (1.37)	6.00 (.88)	5.59 (1.24)	5.45 (1.45)
I intend to make a positive effort to encourage other firefighters to stay in verbal communication with their partners at all times.	6.44 (.85)	6.59 (.50)	6.38 (.68)	6.21 (.82)
I intend to never lower my guard on the fireground.	6.41 (.85)	6.48 (1.01)	6.52 (.51)	6.45 (.57)
I intend to learn from others' mistakes.	6.63 (.57)	6.67 (.48)	6.72 (.46)	6.66 (.48)

Note. N = 232. * Reverse scored. Item mean scores reflect the following response choices: 1 = strongly disagree, 2 = disagree, 3 = moderately disagree, 4 = neither agree nor disagree, 5 = agree, 7 = strongly agree.

Table 4.38

Topic-specific Intention to Behave Measures for Occupational Safety Narrative Messages Voice by Medium MANOVA and ANOVA F Ratios

		ANOVA								
	MANOVA	A*	B	C	D	E	F	G	H	I
Variable	F	F	F	F	F	F	F	F	F	F
Voice (V)	1.14	.49	.36	.01	.19	.02	.62	2.70	.07	.20
Medium (M)	.25	.00	.79	.23	.57	.32	.91	.01	.00	.03
V by M	1.48	.08	.19	2.88	1.22	.01	2.36	1.37	.25	.32

Note. MANOVA F ratios were generated from Hotelling's Trace statistic. MANOVA df = 9, 100. ANOVA df = 1, 111. Item F scores reflect the following: A = I intend to freelance (work on my own) on the fireground when necessary to get the job done; B = I am going to make an effort to do what the message urged me to do; C = I f I see that my colleagues are not following proper safety rules, regulations and standards I will say something to them; D = I plan to act in ways that are compatible with the position promoted by the message; E = I intend to stay informed of job-related health and safety issues; F = I intend to behave in ways that are consistent with the message; G = I intend to make a positive effort to encourage other firefighters to stay in verbal communication with their partners at all times; H = I intend to never lower my guard on the fireground; I = I intend to learn from others' mistakes. *Reverse scored.

Findings for the Health Narrative Messages Intentions to Behave Measure

Participants were asked to rate their level of intention to behave on a 7-pont Likert-type scale specifically based on the health narrative message they read or listened to. A MANOVA yielded no main effects or an interaction on the intentions to behave measure. The tests of the between-subjects effects for the intention to behave measure yielded no lower order effects. Results indicate no differences between group means. Table 4.39 provides means scores and

standard deviations and Table 4.40 provides the *F* ratios for the MANOVA. It is important to note that the majority of means scores for the intention to behave measure fell in the range of moderately agree to agree.

Table 4.39

Health Narrative Message Intention to Behave Items Means and Standard Deviations

Item	HFA M (SD)	HFP M (SD)	HTA M (SD)	HTP M (SD)
I intend to stay informed or job-related health issues.	5.81 (1.06)	5.72 (1.28)	5.97 (.73)	5.90 (.86)
I am going to make an effort to do what the message urged me to do.	6.00 (.75)	5.86 (1.03)	6.07 (.46)	5.90 (.95)
I intend to change my lifestyle to improve my overall health.	5.50 (1.21)	5.55 (1.15)	5.66 (.97)	5.38 (1.40)
I plan to act in ways that are compatible with the position promoted by the message.	5.69 (.88)	5.55 (1.09)	5.76 (.64)	5.66 (.94)
*I do not intend to worry about my fitness level.	5.92 (1.50)	6.00 (1.20)	6.31 (1.11)	6.00 (1.20)
I intend to behave in ways that are consistent with the message.	5.81 (.80)	5.17 (1.47)	5.24 (1.24)	5.41 (1.21
I intend to make a positive effort to encourage other firefighters to stay in top physical fitness.	5.46 (1.33)	5.38 (1.50)	5.76 (1.02)	5.55 (.95)
I intend to incorporate cardiovascular exercise into my weekly routine.	6.00 (.80)	6.14 (.83)	6.21 (.73)	6.07 (.84)
I intend to learn from others' mistakes.	6.46 (.71)	6.34 (.94)	6.41 (.68)	6.41 (.57)

Note. N = 232. * Reverse scored. Item mean scores reflect the following response choices: 1 = strongly disagree, 2 = disagree, 3 = moderately disagree, 4 = neither agree nor disagree, 5 = agree, 7 = strongly agree.

Table 4.40

Topic-specific Intention to Behave Measures for Health Narrative Messages Voice by Medium MANOVA and ANOVA F Ratios

		ANOVA								
	MANOVA	A	B	C	D	E*	F	G	H	I
Variable	F	F	F	F	F	F	F	F	F	F
Voice (V)	.47	.77	.21	.01	.25	.68	.51	1.05	.21	.01
Medium (M)	.24	.16	.82	.25	.52	.25	1.03	.40	.00	.18
V byM	.83	.01	.00	.53	.01	.68	3.12	.07	.83	.18

Note. MANOVA F ratios were generated from Hotelling's Trace statistic. MANOVA df = 9, 101. ANOVA df = 1, 112. Item F scores reflect the following: A = I intend to stay informed or job-related health issues; B = I am going to make an effort to do what the message urged me to do; C = I intend to change my lifestyle to improve my overall health; D = I plan to act in ways that are compatible with the position promoted by the message; E = I do not intend to worry about my fitness level; F = I intend to behave in ways that are consistent with the message; G = I intend to make a positive effort to encourage other firefighters to stay in top physical fitness; H = I intend to incorporate cardiovascular exercise into my weekly routine; I = I intend to learn from others' mistakes. *Reverse scored.

CHAPTER 5: SUMMARYAND DISCUSSION

The first section of this chapter summarizes the major findings of this study relative to the research hypotheses and research questions and discusses the significance of the findings relative to the literature. In the second section, alternative theoretical explanations of narrative effects, limitations of the research design, lessons learned and practical recommendations concerning research design and narrative messaging, and directions for future research are presented.

Summary of Findings

The purpose of this study was two-fold. First, it aimed to compare first-person and third-person narratives manipulated by medium and topic to gain a better understanding about which message features enhance emotional response, perceptions of message effectiveness, perceptions of source credibility, perceptions of similarity, level of transportation, topic-specific belief measures, and intentions to behave. The second objective was to test narrative impact in a real-world setting with individuals involved in a dangerous occupation where conveying health and safety information effectively is critical. The contention of this research relied heavily on narrative theory and the premise that absorption into a story may be a key determinant of narrative impact.

Overall, the narrative messages transported participants generating some support for hypothesis grounded in previous research. However, counter to expectations, differences between narratives in first-person voice compared to narrative messages in third-person voice were not found. Additionally, differences between audio and print narratives were not discovered

for the majority of measures. However, one anomalous finding appeared. That is, significant differences were found on several of the variables between the two topics. Each finding will be discussed below along and possible explanations of the findings will be given in light of the existing literature.

H 1: First-person narratives will produce a greater number of thoughts related to processing the narrative.

R Q 1: Will audio narratives produce a greater number of thoughts related to processing the narrative?

Support was found for this hypothesis and there is evidence to suggest that audio messages were more effective at producing a greater number of thoughts related to processing the narrative. The findings from the thought-listing exercise demonstrate that first-person narratives had more thoughts listed (847 units of analysis) while third-person narratives had fewer (794 units of analysis) indicating a greater number of thoughts were elicited by first-person narratives. Additionally, audio messages had more thoughts listed (861 units of analysis) while print narratives had fewer (780 units of analysis) indicating a greater number of thoughts were elicited by audio messages. There was also a difference between occupational safety narrative messages with 875 units of analysis and health narrative messages with a total of 766 units of analysis. Overall, the largest number of thoughts fell into the narrative linked thought category (i.e., thoughts linked to the participants own knowledge, memories and experiences in relation to the narrative). This was followed by narrative thoughts (i.e., thoughts that deal specifically with the narrative) and supportive thoughts (i.e., general statements favoring or mimicking the message position in the narrative). There were a limited number of non-narrative thoughts (thoughts that deal with production elements such as acting, editing, sound quality, or actor

diversity) and negative evaluative thoughts (thoughts that clearly express a negative opinion, value, or judgment). Furthermore, there were two coding categories did not apply (i.e., other thoughts and counterarguments). Overall, the results suggest that the participants were processing the narrative, evaluating it positively and thinking about how the narrative reflected their own lives.

H 2: First-person narratives will produce stronger emotional responses (positive or negative) than third-person narratives about health and occupational safety narrative messages.

RQ 2: Will audio narratives produce a stronger emotional response (positive or negative) than print narratives about health and occupational safety narrative messages?

Hypothesis 2 was not supported. There was no difference found between first-person and third-person narrative messages in producing stronger emotional responses (positive or negative). Additionally, research question 2 which queried which media type would produce a stronger emotional response (positive or negative) indicated no difference between audio and print narratives. The findings did, however, demonstrate a difference between the two topics. While the participants were interested in both topics, the occupational safety narrative messages elicited more surprise, sadness, and fear while the health narrative messages elicited more guilt.

Nevertheless, it is critical to point out that the mean scores for the majority of the emotional response items hovered between no emotional response, to a moderate emotional response meaning the narratives did not elicit strong emotions. This was unexpected given that past research indicates that emotion is a core component of narrative impact (Oatley, 2002) and transportation includes strong affective responses and low levels of critical thought, which, in turn, affect attitudes and narrative evaluations (Green & Brock, 2000; Escalas, 2007). Also

puzzling is that the mean scores on the transportation and effectiveness measures were high, meaning the participants were transported and thought the narrative messages were effective.

Perhaps the lack of emotional response could indicate that the plot or characters were not fully developed, or that there was not enough dramatic tension in the narrative messages, but this does not really make sense given the results on the transportation and effectiveness measures. Or perhaps the participants did not feel the particular emotions listed on the questionnaire (e.g., interest, enjoyment, surprise, sadness, anger, disgust, contempt, fear, guilt, shame, shyness, and hostility inward) because they were well-trained in the situations and safety procedures presented.

Alternatively, the best explanation may be that the participants were not comfortable indicating they had an emotional response to the narrative messages. "Representing the epitome of heroism, rationality and safety, firefighting has, at its very core, a series of popular cultural beliefs and values which draw heavily upon key facets of hegemonic masculinity" (Thurnell-Read & Parker, 2008, p. 128; also see Baigent, 2001; Cooper, 1995; Hall, Hockey, & Robinson, 2007). In regards to firefighting, this translates into significant emphasis placed upon physical competence, technical proficiency (with regard to knowledge of and familiarity with a range of specialist equipment), a sense of collective obligation and reciprocity between team members, and the production of emotional control and restraint (Thurnell-Read & Parker, 2008). Social norms have historically curtailed the public expression of male emotion in the fire service (Scott & Myers, 2005; Thurnell-Read & Parker, 2008). Given that traditionally, such expression has been regarded as a sign of femininity, Yarnal, Dowler, & Hutchinson (2004, p. 689) argue that any such ‘‘display of emotions by male firefighters would show a crack in the armor of

masculinity that would be out of place in a moral landscape that precludes expression of masculine weakness." Additionally, Scott and Myers (2005, p. 73-74) found that:

> Firefighters acknowledged a range of negative emotions such as fear, disgust and stress that could potentially interfere with their abilities to administer medical care or fight fires. If they allowed themselves to feel these natural human emotions, they would not be capable of focusing on their job responsibilities. In another sense, firefighters need to manage their own emotions on scene in order to avoid exposing their frustrations to clients and other members of the community. Rather than controlling one's emotions to focus on the task, firefighters need to manage negative emotions in a manner that prevents them from being exposed to the client, preventing the escalation of negative client emotions.

Some have even argued that emotion management may be a coping mechanism that benefits personnel, assisting them in coping with stress, avoiding negative emotional contagion, and reaping the rewards of emotional engagement in client interaction (Conrad & Witte, 1994; Shuler & Sypher, 2000). One way organizations formally or informally encourage members to regulate emotions that are deemed socially objectionable or undesirable is through normalization (Ashforth & Kreiner, 2002). Members reframe difficult situations and preserve the status quo by diffusing or recasting emotions in a manner consistent with the organization's cultural values (Scott & Myers, 2005).

These findings suggest the importance of emotional control and restraint among fire service personnel. If indeed this is the case, then asking firefighters to share their emotional response to a narrative message is asking them to undertake a traditionally feminized quality that is not constructed as part of the value of occupational competence implicit to the identity of a

firefighter. As such, it is not surprising then that the narratives did not elicit strong emotional response.

H 3: First-person narratives will be perceived as more effective at communicating the intended message than third-person narratives.

R Q 3: Will audio narratives be perceived as more effective at communicating the intended message than print narratives?

This hypothesis was not supported. Differences by voice and medium were not found, however, as with emotional response, differences were found between the two topics. While all the narrative messages received high effectiveness ratings indicating that the participants thought they were effective at communicating the intended message, the occupational safety narratives were found to be significantly more effective in comparison with health narrative messages. One possible explanation for this is that the firefighters may be weary of messages pertaining to the importance of diet and exercise because they are so similar to stories that have already been heard before (Schank & Abelson, 1995, p. 6) or because the settings in which the stories take place are so familiar to their own locations that their scrutiny fosters disbelief (Prentice, Gerrig, & Bailis, 1997; also see Slater, 1990). Nonetheless, other studies have concluded that familiarity with settings and similarity with previously heard stories might not be a constraint (Green, 204: Mazzocco, Green, & Brock, 2003; Wheeler, Green, & Brock, 1999). Health communicators would benefit from clarity on any constraints perceptions of similarity and familiarity have on narrative judgments, so future research should address these concerns.

H 4: Perceived source credibility (comprised of trustworthiness, and expertise) will be higher for first-person narratives than for third-person narratives.

R Q 4: Will perceived source credibility (comprised of trustworthiness, and expertise) be higher for audio narratives than for print narratives?

Hypothesis 4 was not supported by the data. Differences in source credibility by treatment were found to be significant by topic only. Results indicate that the main character in the occupational safety narrative was seen as more of an expert than the main character in the health narrative. A possible explanation for this could be the fact that the main character in the occupational safety narrative message acted in a very clever way during critical moment in the story, a situation which called for a high level of technical knowledge and rational thought. While the health narrative messages did contain vivid descriptions of working on an active fire, perhaps they did not offer anything as novel as that particular scene in the occupational safety narrative messages. Additionally, the related research question 4 regarding which media type would be most effective at producing greater perception of source credibility for the story character indicated no difference between audio and print narratives. This is not completely surprising given the participants could not actually see the main character as with an image-based medium. Nevertheless, it is important to note that regardless of the narrative type, the participants scored the main character as being both trustworthy and an expert. A possible explanation is inspired by Mills' (1966) findings that suggest when a source appeared to be concerned about the audience's welfare, as was the case for the narratives used in this study, there was an increase in persuasion. Thus, it could be that the participants scored the main character as being an expert and trustworthy in particular, because he clearly was telling the story with the best interest of other firefighters in mind.

Traditional persuasion research suggests that perceived expertise of the source on the persuasive topic generally facilitates persuasion (Simons, Berkowitz, & Moyer, 1970; Wilson &

Sherrel,1993). Gaining a better understanding of the extent to which source judgments such as expertise, and trustworthiness influence effects of narrative communication would be very beneficial for designers of communication-based programs that promote health behaviors (Hinyard & Kreuter, 2007). For instance, formative research could help tease out what source attributes appeal to different receivers and then narratives could be written based on those preferences.

H 5: First-person narratives will produce a greater perception of similarity than third-person narratives.

RQ 5: Will audio narratives produce a greater perception of similarity than print narratives?

Support was not found for hypothesis 5. Overall, participants' mean scores fell between 1 and 7 indicating that they thought the main character was neither like them or not like them. It is unclear why this might have occurred. The narratives were written intentionally so that the participants could easily find similarities between the characters and themselves. Nevertheless, Slater and Rouner (2002) suggest that personal similarity to characters in a narrative may be less important than how emotionally involved one becomes with those characteristics as a consequence of the degree of narrative absorption or transportation. This suggestion however is at odds given the results of this study which indicate that participants did not emotionally respond to the narrative messages and did not perceive they were similar to the main character, yet they were still transported by the narrative messages. One could speculate then that the participants may have either felt different emotions than tested for or identified with the main characters in a different way. For instance, by sharing the perspective of the character; feeling with the character, rather than about the character. It is also possible that firefighters are trained

to think more rationally about the situations depicted. As for research question 5, no significant differences were found between audio and print narrative messages regarding which was most effective at producing a greater perception of similarity between story characters and audience members.

In the same vein, the finding that background and status did not correlate highly in the factor analysis was not expected. It is not possible to determine if this occurred because there were only two items in the factor (i.e., background and status were included while social class and economic situation were not included from the original scale by McCrosky, Richmond and Daly (1975), or if it had something to do with the participants' perceptions of the main characters. It is important to note however that, McCrosky (n.d.) states that while the original scale provides usable measures, the alpha reliabilities have not been optimal and new measures are now being tested. Additional research is required to answer this question.

H 6: First-person narratives will produce a greater level of transportation than third-person narratives.

RQ 6: Will audio narratives produce a greater level of transportation than print narratives?

Hypothesis 6 was not supported. No significant differences were found between first and third-person narratives. In fact, participants rated all the narrative messages high in transportation, regardless of narrative type. Reasons why this may be the case are explored in this section.

First, levels of transportation between the treatments may have varied little because the participants found the test narratives to be personally relevant or identified with the characters. Identification is a mechanism through which audience members experience reception and

interpretation of the text from the inside, as if the events were happening to them (Cohen, 2001). Green (2008) proposes that factors such as personal relevance that make it easier for readers to identify with characters and become interested with a story may facilitate the experience of transportation and ultimately lead to belief and behavior change. Nevertheless, this study did not measure identification or take into account other factors of identification such as empathy for, or liking of characters. Future research might address identification and whether different dimensions of identification have different outcomes.

Next, results of this study imply that transportation occurred regardless of the medium of the narrative (print or audio). This finding is in-line with other narrative research examining transportation (Green, 2008). A reasonable explanation for this phenomena comes from Green, Brock, and Kaufman (2004) who suggest the effects of a story are more dependent upon the elements of the story that transport the audience (i.e., use of imagery, suspense, emotional content) than upon the mode or source of delivery. Perhaps then, the narratives were strong or compelling enough to be transporting regardless of any potential added benefit the audio provided.

Further, one can imagine that the quality of a narrative would have an impact on whether or not an individual will be transported (Green & Brock, 2005; Slater and Rouner, 2002a). Absorption into the different test narratives used in this study may have occurred, as Slater, Rouner, and Long (2006) contend, due to the storyline appeal, production quality, and the unobtrusiveness of the educational messages. It is important to note, however, that research has not yet come up with a formula for creating a transporting and influential narrative (Green, 2008).[3] It is therefore likely that there is not one simple answer to this question. Nevertheless,

[3] To compare different structural elements see, Graesser, Olde, & Klettke, 2002 to Nell, 2002 to Oatley, 2002 to Jacobs, 2002.

narrative craftsmanship in itself is definable (e.g., Bloom, 1994; Kreuter et al., 2007; Rosenblatt, 1978; Surmelian, 1969). (See Table 2.2 on page 46 for a list of attributes) Further, it seems logical that a well-crafted narrative would be one that would be transporting as well. Attributes such as how the sequence of events in the story are presented, how the characters are portrayed, the structure including use of suspense and dramatic tension, imagery and emotion, and production techniques can certainly affect quality and possibly transportation. These attributes derive from theories in psychology (see: Burner, 1996; Schank & Berman, 2002; Gerrig, 1993), drama, (Bennet & Howard, 1996; Hatcher, 1996) and screenwriting (McKee, 1997). It is thought that a well crafted narrative increases the ease of processing and emotional involvement (Kreuter, et al., 2007). Behaviors or decisions that are represented or modeled clearly and comprehensibly and portray the strength and volatility of emotions encourage audience members to develop empathy and involvement with characters. Also, narratives that incorporate concrete images and explain ideas in terms of human actions and in terms of sensory information evokes pre-existing knowledge, expectations, emotions, increases attention and assists in memory and recall (Kreuter, et al., 2007). Additionally, a quality narrative facilitates observational learning and ensures that causal links in decision-making are explicit. However, how these attributes are represented, sequenced, framed, and matched to audiences and objectives could be what makes the difference between a quality (and possibly transporting) narrative and a lesser narrative. The fact that the participants of this study were transported by all eight treatments suggests that the test narratives are quality narratives.

That said, what cannot be easily explained from the results of this study is why the transportation measure was not significant by topic when other measures (i.e., emotional response, thought listing, effectiveness, and the source credibility) were. One thought is while

the quality of the health and occupational safety narrative messages may have been good enough to transport the participants, there may have been certain attributes of narrative quality that differed and resulted in mixed results. To examine if this is true, the inventory of narrative quality attributes by Kreuter et al. (2007) was used to compare the health and occupational safety narrative messages. Table 5.1 defines the attributes and provides a summary of the comparison. While both of the topics contained elements of the 12 attributes, it is believed they varied in the degree they included certain aspects of four attributes in particular (e.g., plot development, suspense/ dramatic tension, canonical violation, and cultural appropriateness). First, the climax for the health narrative message was not as exciting in comparison to that of the occupational safety narrative (getting into shape versus escaping certain death). Additionally, the level of suspense in the occupational safety narrative message was much more intense (e.g., being trapped in a warehouse fire) as opposed to the health narrative message (e.g., being physically challenged during a working fire). In the occupational safety narrative message, the main character took a big risk by freelancing. He was driven by the thought that he could quickly do something that would ultimately save his fellow firefighters a lot of time and effort in fighting a fire- an action that nearly cost him his life. As readers, we are riveted when a character encounters a situation that involves risks and elated when he averts danger and is rewarded. In the health narrative message, the character was driven by more rational thought that he had better do something about his physical conditioning to avoid injury or death- not quite as enthralling comparatively speaking. This resonates well with the findings of Hall, Hockey, & Robinson

Table 5.1

A Comparison of Quality Attributes between the Health and Occupational Safety Narrative Messages (* Kreuter, et al., 2007, p. 230)

Attribute*	Description*	Health Narrative Message	Occupational Safety Narrative Message
Coherence	Links between events, actions of characters, and context of action are clear and sensible	Similar	Similar
Plot development	Sequence of events builds toward climax and resolution	Climax not as powerful	Strong climax
Theoretical adherences	Messages, behaviors, models conform to theoretical explanations of how people act	Similar	Similar
Character development	Information about characters presented and sequenced to create understanding of character emotions, motives and behavior	Similar	Similar
Characters' articulateness	Characters express thoughts clearly, in language easily understood and in ways that resonate with or inspire the audience	Similar	Similar
Emotional intensity/range	Portrayal of strength and volatility of emotions	Similar	Similar
Suspense/dramatic tension	Portrayal of conflict, uncertainty, or unresolved events	Dramatic tension not as strong	Dramatic tension intense
Canonical violation	Departure from the expected or violation of norms	Less norm violation	More norm violation
Fidelity/realism	Situations, characters and their response to events are perceived as realistic	Similar	Similar
Imagery	Characters, events, message themes are associated with or represented by recognized images or symbols	Similar	Similar
Cultural appropriateness	Use of visual and linguistic conventions familiar to audience; characters act in culturally familiar and acceptable ways	Included perhaps unfamiliar image of fire in a high rise	Bow-string warehouses are familiar to participants
Production values	Technical aspects of production: lighting, color, cameras, close-ups, editing, sound	Similar	Similar

(2007) who note that amongst the male firefighters featured in their research "[C]ommonsense and the ability to think clearly as part of a team in dangerous situations" (p. 543) were valued more than mere physical strength. Further, in terms of canonical violation while freelancing goes against training in the fire service, doing it to open doors from the inside that could have been easily opened from the outside at an unpopulated warehouse where there is not even someone to rescue is outrageous and may have increased attention and cognitive involvement in terms of seeking to understand the situation. Moreover, in the occupational safety message, the main character acted uncommonly and confessed he had made a big mistake by freelancing that could have resulted in his death. This action took a lot of courage on the main characters part. In comparison, being slightly overweight and out of shape is not that uncommon and doing something proactive about one's health is certainly warranted. Lastly, the health narrative contained scenes where firefighters had to fight fires in high rise buildings. While there are a few high rise buildings in DeKalb County, the majority of the buildings are under three stories. This may have affected identification and perceived realism of the health narrative. Additionally, the story took place in the past with a fire company using a bell system to alert companies of working fires. DeKalb County now uses a different system to alert fire personnel of fires. Thus, younger firefighters who have never been exposed to a bell system may have not been able to identify with this aspect of the story. In comparison, the occupational safety narrative contained culturally familiar and acceptable fire service scenes. It is clear after careful review that the two topics used in this study differed in terms of certain aspects of quality. These differences may account for some of the differences in the results. A recommendation for future research is to make sure the test narratives match in terms of quality attributes.

Nevertheless, even if a narrative is of high quality, how quality translates into narrative impact may depend on a few things including the situation, how the narrative is applied, and how the narrative is perceived by an audience. Almost by definition, messages designed to change beliefs, attitudes, intentions, or behaviors will advocate a position that is discrepant from the position of the receiver. As with any kind of message, consumers of narratives are often an active audience, bringing their own interpretations to stories and finding different meanings. Moreover, lessons from stories may resonate with people in ways that depend on their own background and current situation. Granted, narratives have been shown to be effective in a wide variety of settings, including health (Kreuter et al., 2007) and consumer behavior (Escalas, 2004a). For example, entertainment-education programs typically embed health messages in radio or television programming addressing issues such as family planning, gender inequality, and even leprosy (see Singhal, Cody, Rogers, & Sabido, 2003). With enough skill, it may be possible to write a transporting story about anything. Moreover, research has not yet identified conditions under which simply providing arguments for a position will be more influential than creating a story (Green, 2008). However, it may be the case that the some health topics such as diet and exercise face more resistance to communication and to optimal behavior because they are complicated behaviors that are affected by an entire network of health attitudes and beliefs that are interrelated (and that do not always involve rational thought), not because these topics are harder to write a transporting narrative for.

Before going further, it may be useful to distinguish the ways that persons might resist a persuasive message versus from the ways they resist behaviors. Starting with resistance to communication Kreuter et al (2007) state, resistance may include counterarguing the message claims, ignoring the messages altogether, or denying the validity of the message due to the

message source. It is thought that the power of narrative in fact lies in reducing the amount and effectiveness of counterarguing, through identification with narrative characters, and making narrative events seem more like real experience (including providing concrete examples of events and vivid mental images of story events or characters) all of which leads to positive associations with specific beliefs and behaviors (Dal Cin, Zanna, & Fong, 2004; Green, Kass, Carrey, Herzig, Feeney, & Sabini, 2008).

Resistance to behaviors on the other hand, might include denying the effectiveness of the behavior or simply refusing to take an action (Kreuter, et al., 2007). Two types of behavioral theories are important to consider when thinking about behavior change - theories of behavioral prediction and theories of behavior change. Predictive theories address *why* people change behavior. They identify what prompts people to perform (or not perform) a health-related behavior. In contrast, behavior change theories explain *how* people change behavior. They describe the "stages" that individuals may go through as they change their behavior. Over the years there has been a growing recognition of the usefulness of behavioral theory in the development of behavior-change interventions (see, e.g., IOM Committee on Communication for Behavior Change in the 21st Century: Improving the Health of Diverse Populations, 2002) including developing storylines and scripts (Petralia, Galavotti, Harford, Pappas-DeLuca, & Mooki, 2007). Reviews of the literature (Glanz, Lewis, Rimer, 1997; Noar, 2007; Noar and Zimmerman, 2005) have suggested that the most commonly used theories of behavioral change and prediction include the Theory of Planned Behavior (Ajzen, 1985, 1991; Ajzen & Madden, 1986), the Theory of Subjective Culture and Interpersonal Relations (Triandis, 1972, 1977), the Transtheoretical Model of Behavior Change (Prochaska & DiClemente, 1983, 1986, 1992; Prochaska, DiClemente, & Norcross, 1992; Prochaska, Redding, Harlow, Rossi,& Velicer,

1994), the Information/Motivation/Behavioral-skills model (Fisher & Fisher, 1992), the Health Belief Model (Becker, 1974, 1988; Rosenstock, 1974; Rosenstock, Strecher, & Becker, 1994), Social Cognitive Theory (Bandura, 1977, 1986, 1991, 1994, 1997), and the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975; Fishbein, Middlestadt, & Hitchcock, 1991). While these theories all have differences among them, the vast majority contain common factors that are useful in predicting and understanding any given behavior (Fishbein et al., 2001).

There is growing consensus that eight factors best explain and predict behavior (Fishbein, 1992; Fishbein, Triandis, Kanfer, Becker, Middlestadt, & Eichler, 2001). Although different theories use different terms, these eight factors include: 1) Intention to perform the behavior; 2) Environmental (external) constraints or barriers; 3) Skills (the necessary abilities to perform the behavior); 4) Attitude (benefits of the behavior outweigh the risks); 5) Perceived social (normative) pressure (individuals' perceptions that other important people think they should/should not perform the behavior); 6) Self-image (behavior suits how people see themselves); 7) Emotional reaction; and 8) Self-efficacy (feeling capable of performing the behavior). In particular, most of the theories suggest that the most proximal influences of any behavior come down to just three factors- intention, skills, and the absence of environmental constraints.[4] "In contrast, attitudes, norms, self-standards, emotional reactions, and self-efficacy are

[4] Alternatively, I propose that behavior is more determined by whether something is fun (the behavior has positive consequences), easy (the beliefs or skill set that make doing a particular behavior easy) and popular (perception that people important to an individual think that s/he should do the behavior; norms have two parts: who matters most to the person on a particular issue, and what s/he perceives those people think s/he should do). My favorite example of a fun, easy and popular behavior and one of epic proportion is world-wide mobile phone use. There are now five billion mobile subscribers in the world with more than a billion mobile phone connections being added to the global tally in just an 18 month period from 2008 to 2010, and the numbers continue to rise (Wireless Intelligence, 2011). Using a cell phone is fun, easy and definitely popular while being on a restrictive diet, not so much.

viewed primarily as influencing the strength and direction of intention, although they also may have a direct influence upon behavior" (Fishbein, 1992, 251). It is important to note however, that all of these variables as determinants of intentions and behavior really depend upon both the behavior and the population under consideration. While some behaviors may be primarily influenced by attitudinal considerations, others may be primarily influenced by norms, while still others may depend primarily on self-standards, emotion, or self-efficacy.

What this all implies then is that narratives might actually be quite suited as a behavior change strategy. When people become transported into a narrative world, their emotional responses and their creation of vivid mental images of characters and settings influence their beliefs and behaviors. In fact, research has shown that narratives may be especially useful in cases where individuals might be motivated to resist a persuasive message (Slater & Rouner, 1996) or where there are barriers to understanding a technical or complicated message (Green, 2008).

In conclusion, this study demonstrates that health and occupational safety narrative messages can transport individuals. While the study was not designed to show impact, the data indicate that the participants were able to make evaluations and form judgments by engaging with and constructing the test narratives. It is recommended that health communicators and health promoters alike continue to investigate how narratives convey information about behavior risk and model risk avoidance.

H7: First-person narratives will produce more message consistent beliefs than third-person narratives.

RQ7: Will audio narratives produce more message consistent beliefs than print narratives?

This hypothesis was not supported. Overall, the mean scores for both topics reflect that participants, on average, agreed with most of the belief statements regardless of the treatment.

No significant differences in beliefs were found between audio and print occupational safety and health narrative messages. Given that the belief items were inline with optimal behavior, and not in any way controversial, it is not surprising that the participants agreed with items. Additionally, it is entirely possible that the participants answered the belief items they way they did due to demand characteristics, believing they were answering in a way that aligned with what the researcher/fire department was looking for instead of being honest. Lastly, it is important to note that it is not possible to tell whether the results of the belief measure reflect beliefs the participants held before the experiment, or whether they were the result of being persuaded by the narrative messages.

H8: First-person narratives will produce greater intentions to behave according to the message.

RQ8: Will audio narratives produce greater intentions to behave according to the message.

This hypothesis was not supported. Overall, the mean scores for both topics reflect that participants on average, agreed to strongly agreed that they intended to behave in an optimally safe and/ or healthy manner regardless of the treatment. Additionally, no significant differences in intention to behave were found between audio and print occupational safety and health narrative messages. It is not entirely surprising that the participants agreed with the intention to behave items especially given that the items aligned with behavior promoted by the fire service. Nevertheless, the results may be the result of the participants answering the intention to behave items in a fashion that aligned with what the researcher/fire department would hope their answer to be—and this may well be honest. Please note, that it is not possible to tell whether the results of the intention to behave measure reflect intentions the participants held before the experiment or whether they were the result of being persuaded by the narrative messages.

In summary, having eight treatments in this study allowed for comparisons to be made between narrative formats. What can be concluded is that the participants were transported by the narrative messages. However, voice and medium did not enhance emotional response, perceptions of message effectiveness, perceptions of source credibility, perceptions of similarity with the main character, level of transportation, topic-specific belief measures, or intentions to behave. However, there were significant differences between topics with occupational safety narratives producing more thoughts and emotional response, being perceived as more effective, and having the main character viewed as having more expertise than for the health narrative messages.

Alternative Theoretical Explanation for the Study Results

Because there were no significant differences found on most of the dependent variables between narrative messages that differed by voice and medium in this study, alternative hypothesis and theoretical explanations to the transportation theory are warranted. In summary, the data from this study indicate that:

- Participants' emotional response to all eight narrative messages was weak to moderate;
- Participants thought all eight narrative messages were effective;
- Participants perceived the main character to have high source credibility for all eight narrative messages;
- Participants perceived the main character to be neither like them or not like them for all eight narrative messages;
- All eight narrative messages transported the participants;
- Participants from all eight treatments agreed with message consistent beliefs; and

- Participants had similar intentions to behave for all eight narrative messages.

The participants in this study were absorbed by the narratives and actively processed the narratives. In addition, the participants' overall perceptions to the narrative messages were positive. Unexpectedly, there were no differences found between first-person and third-person narratives and audio and print narratives. The question remains as to what could account for such findings.

One possible explanation is that involvement levels with the issue topic were so high among participants that it may have helped in facilitating transportation, but negated or mediated differences between treatments. It is likely the situations presented in the messages represented highly involving and rational decision situations concerning life and death work situations for the firefighters. It is thought that factors such as personal relevance that make it easier for readers to identify with characters and become interested with a narrative may facilitate the experience of transportation and ultimately lead to belief and behavior change (Green, 2006). Thus, given the participants' likely high level of involvement, it may have been easier to transport them with the messages because the firefighters could relate to the narratives and this happened regardless of the type of media used or the voice of the narrator. This could potentially account for the fact that the participants were all transported, indicated all eight narratives were effective, and that their beliefs mirrored optimal behavior. Nevertheless, the occupational safety narrative message may have represented a somewhat less-involving situation for the firefighters, accounting for the variation found between the two topics. Future research should measure topic and message involvement so that this can either be ruled out as a mediating variable or provide an explanation for the current findings.

Limitations of Research Design

As with all research, the current study has limitations that should be noted. Limitations include the sample, the topics, the kind of information included in the messages, the length of the questionnaires and scale construction. First, because the participant sample was drawn from professional firefighters from DeKalb County, Georgia, generalizations of findings are limited. It is possible that the sample may differ in average age and experience compared to other fire departments. Moreover, the sample did differ in average education level with that of the general population of the United States. All the participants for this study had the equivalent of a high school diploma, while on average only 86. 2 percent of all males in the United States have completed 4 years of high school or more according to 2009 statistics (U.S. Census Bureau, 2011, p. 149). Additionally, this sample composed strictly of male firefighters may have provided a different kind of data. While previous research has shown no gender difference in transportation (Green, 2006), there is speculation that men and women may be transported into different types of stories (Green, 2006; Green & Brock, 2000). Transportation also shows a moderate correlation with dispositional empathy as well as indicates that individuals with a propensity to be absorbed in activities (e.g., Tellegen & Atkinson, 1974) and/or those with the tendency to form mental images (Sheehan, 1967) may be more strongly impacted by narratives (Green, 2006). Thus, differences in demographics, life experience or individual differences may affect certain measures.

Second, the current findings may have resulted from one of the topics (the importance of diet and exercise to prevent cardiovascular disease) being one that the participants have heard many arguments for. While initially familiarity of the topic was thought to be a strength, it is quite possible that many of the participants had already formed strong attitudes about diet and

exercise. Further, because of the constant media attention given to diet and exercise, the participants could have been suffering from message fatigue. Comparatively, the occupational safety message topic (on the dangers of freelancing on the fireground) is one that is certainly familiar to firefighters, but is not one that is disseminated with as much regularity or from as wide a range of channels as the health narrative message. It is likely that reports from the fire department are typically one of the only sources of information regarding freelancing. As a consequence, this may have been one of the reasons that the occupational safety narrative messages were perceived to be more like a report than a story. At this point, more information is needed about the best way to convey persuasive information on familiar but important topics. Future studies may also benefit by including measures that capture the types of evidence that audience members find persuasive in relation to their own concepts of risks from personal experience. Lastly, the message types (e.g. narrative) used in this study may not be typical of those used by fire departments for training purposes. Other messages used may include statistics and reports with varying amounts of evidence. Thus, future studies could manipulate a range of message features within message types to examine their effects.

Third, it must be noted that the way that some of the scales were constructed may have affected their usefulness. For instance, Ohanian's (1990) source credibility scale was altered to leave out irrelevant information and to decrease the length of the questionnaire. This may have affected how the items correlated with one another on the factor analyses. In the future it would be advisable to use alternative valid and reliable measures that are shorter in length. Another improvement to the current study would have been to make sure questions were measured correctly. For example, the manipulation check asking, "Who is this message is about?" should have been closed-ended. As a result of it being open-ended, participants could have been

penalized for giving the "wrong" answer. As it stands, less than half of the participants indicated that the narrative messages were about firefighters. Perhaps a closed-ended question specifically asking participants to think about the improbability of the message would have provided richer data. Additionally, the emotional response scale used in the measures taken before participants were exposed to the stimulus materials was not found to be useful. The firefighters did not seem comfortable with using an emotional response scale, perhaps because they felt uncomfortable reporting emotions in this professional setting as indicated by their informal comments at the time.

Additionally, the questionnaires were quite lengthy and this could have affected survey response. The message from most literature on survey construction is clear: don't make questionnaires too long. Failure to observe this rule will produce a decline in response rates (Anderson, Basilevsky, & Hum, 1983; Burchell & Marsh, 1992) and an increased probability of premature termination (Sheatsley, 1983), random responding (Krosnik, 1991), or other behavior patterns which result in lower quality data (Burchell & Marsh, 1992; Herzong & Bachman, 1981). Perhaps most importantly, it is thought that responses obtained towards the end of a long questionnaire can be of lower quality because the participants become fatigued and less motivated (Cannell & Kahn, 1968; Courtenay, 1978; Festinger & Katz, 1965; Goode & Hatt, 1952; Sheatsley, 1983).[5] Survey fatigue is defined as the time and effort involved in participating in a survey (Sharp & Frankle, 1983). It is generally agreed that responding to a lengthy questionnaire can require considerably cognitive effort to interpret meanings, search memories, and integrate retrieved information (Krosnick, 1991). Adequate motivation is considered

[5] Alternatively, other studies have shown that shorter questionnaires are not better from the perspective of response rate and data quality (Berdie, 1973; Champion & Sear, 1969; Roscoe, Lang, & Sheth, 1975; Subar, Ziegler, Thompson, Johnson, Weissfeld, Reding, Kavounis, & Hayes, 2001).

essential to obtaining continued participation and valid data (Cannell & Kahn, 1968; Sudman & Bradburn, 1974) and motivation presumably declines as the interview continues beyond an optimal point (Cannell & Kahn, 1968) increasing the chances that participants will look for easier ways of responding (Krosnik, 1991). Nonetheless, to the extent that a topic is of interest to the participant, he or she may overcome low motivation and respond more accurately. In regards to this study, response rates for the items were high at approximately 98 percent for second questionnaire overall indicating that even if the participants were fatigued, they were at least invested enough to respond to the majority of the questions. It is unclear to what extant the responses suffered.

Future Research

This study has explored how emotional response, perceptions of message effectiveness, perceptions of source credibility, and perceptions of similarity persuades a non-college population based on narrative transportation theory. Many gaps in the existing knowledge about the effectiveness of using narrative communication for presenting persuasive health and safety messages were brought to light by this study. Suggestions for further areas of exploration are detailed in this section.

Future studies would be served well to continue testing with non-college populations. While there appears to be a great deal of automaticity associated with the processing of narrative information (Bower & Black, & Turner, 1979; Graesser, 1981), whether or not other samples with varying education, intelligence, or cognitive complexity would respond similarly to transporting narratives deserves examination. Individual differences such as involvement with the topic, information sufficiency, motivation, and self-efficacy could also affect how information is processed and is worthy of examination.

Future research could also attempt to replicate the results of this study with other professional firefighters with different narrative message topics related to the fire service. There may be differences in the degree to which different topics (i.e., health and wellness and firefighter safety) elicit narrative thought and/or transportation and their subsequent effects. Another interesting extension of the current research would be to manipulate transportation rather than measure it. One way this could be achieved is by manipulating factors such as different degrees of character development, moment-by-moment plot twists, use of suspense, different types of emotion, and use of imagery in the narrative. Another possibility would be to interfere with one's processing of narrative cues, such as placing distractions within the narrative. For example, in a study by Green and Brock (2000) instructions were given to participants to focus on the surface aspects of the story, such as difficulty and grammar. The data showed that reduced transportation led to reduced story-consistent beliefs and evaluations (Green & Brock, 2000). This information would help health and safety communicators write transporting narratives.

Additionally, future studies may help add to the conceptual clarity in the literature regarding what it means to identify with a character (Slater 2002a). As it stands, identification is understood in a variety of ways by different theorists and this confusion has inhibited the development of a comprehensive theory of identification and its consequences. Cohen (2001) proposes the literature includes at least four dimensions that are central in defining identification (i.e., absorption into the story, how "gripping" the story is for the audience member, the experience of having empathy for characters, and perceived similarity or liking to characters and wanting to be like characters). The study of identification within media studies has focused on explaining with whom audiences identify and what the consequences of this identification are,

but it has failed to clearly articulate the nature of identification. Thus, future studies could tease the four aspects apart. Furthermore, more conceptual clarity is needed between liking, similarity, and imitation because currently it is unclear whether these three possible responses are indeed components of identification, whether they are all necessary for identification to take place, or what the sufficient conditions are needed for identification to take place.

Another interesting proposition would be to explore the implications of self-generated stories on narrative processing and narrative impact.[6] Of particular interest, is whether self-generated stories are more likely to positively influence transportation (i.e., reduce negative cognitive responding, increase the realism of the experience, and produce strong affective responses) than narratives that are delivered already constructed. The underpinnings of narrative impact are the need to understand real others in their social world and to construct possible futures and possible selves in order to plan ahead. Thus, taking a constructivist approach, one could argue that narrative is a form of "world making" (Burner, 1997), or rather that individuals use stories as a way to make sense of the world. However, Yaskowich & Henderikus write, "Narratives become narratives only insofar as they emerge out of the telling as *our* stories" (2003, p. 721). Each story we tell is an idiosyncratic record of what got built into us as a result of our varied experiences. Likewise, when we hear a story we process the information it contains by comparing it to self-relevant information stored in memory (Debevec and Romeo 1992). This process is called self- referencing and occurs when one processes information by relating it to one's self or personal experiences (Burnkrant and Unnava, 1989). Studies in psychology have demonstrated that self-referencing enhances learning and the recall of information (e.g., Klein and Loftus 1988; Rogers, Kuiper, and Kirker 1977). Further, beneficial effects of emotional

[6] This thought occurred to me during the course of data collection for this study. Often after debriefing was over, participants would stay behind to share personal stories about their experiences as a firefighter. These stories were rather notable for accounts of turning points featuring presumably profound changes in their lives.

disclosure through expressive writing about traumatic or stressful experiences have been widely reported (Smythe, 1998; Klien & Boals, 2001), as well as the importance of using self-reflective narratives to process illness (Dean, 1995; Yaskowich & Henderikus, 2003). Research has also found that narrative self-referencing leads to a favorable evaluation of an advertised product, regardless of argument strength (Escalas, 2007). It could be argued when one self-references by thinking about an episode from one's past, it is likely they are "transported" by the autobiographical story. Nevertheless, what is unclear is whether the stories we generate ourselves versus the ones we hear from other people differ in their ability to evoke narrative thought and persuade via narrative transportation.

Further exploration of differences between media as a mediator of transportation is also a potentially fruitful direction for empirical work. This statement is based off two observations made during the course of collecting data. The first is that many of the participants in this study verbally stated their disappointment with being randomly assigned to a print narrative message versus an audio narrative message for the intervention. The next point is that in almost every fire station that was visited, no matter what time of day, morning or afternoon, the television was on in the common room with firefighters watching it when they had free time. Given these observations, interesting propositions can be made in terms of future research.

As stated previously, studies suggest that equivalent levels of transportation can be created across different media (Dal Cin, et al., 2004).al Cin, Zanna, & Fong, 2004; Green, 2008; Green & Brock, 2000, 2002; Morgan, Movius, & Cody, 2009). Indeed, the data from this study indicate that all eight treatments transported the participants with only a few differences being found on a select number of variables between the participants that listened to the narrative message versus reading it. In a similar study by Stitt & Nabi (2005), it was shown that video did

not enhance transportation above and beyond the effects of text. However, if firefighters prefer one medium over another, it is possible that they will pay more attention to the medium they prefer when data are not being collected in a forced-exposure setting. The idea that media have a uniform effect on viewers is a simplified position. Thus, it seems likely that to explain differences in media effects, additional research is warranted and alternative mechanisms may need to be considered. For example, differing degrees of credibility may be attributed to different media as a result of their history of use in a particular culture and preferences likely reflect habitual use, and factors such as affinities for certain types of genres (Oliver, 2002) and more transitory states such as mood (Zillmann, 1988). Nonetheless, this may help explain the audible sighs and verbal comments that were encountered after randomly assigned participants were handed a document to read instead of a portable compact disc player to listen to.[7]

Another factor to consider is the degree to which imagery is provided (as in watching) versus must be created by the recipient (as in reading or listening). It is logical to think that transportation is more likely to occur with video over written media due to including more of the senses than does print. Furthermore, it has been hypothesized that people who spontaneously form vivid mental images (i.e., have imagery ability) may gravitate toward texts that allow them to exert this ability, whereas people who do not "think in pictures" may prefer films, which provide imagery for them (Green, Brock, Kaufman, 2004, p. 313). Green (2008) also hypothesizes that individuals high in need for cognition, are more transported into text, whereas people low in need for cognition are more transported into movies Acknowledging the importance of a viewer's ability and selection preferences, matching media type to individuals' preferences may be an effective means of promoting transportation.

[7] Thus, one can only speculate that if video had been offered as a test medium, participants would have been disappointed if they were not randomly assigned for it as well.

Lastly, there are a variety of factors that affect people's behavior and play a role in media processes and effects. Never before in history have public narratives (e.g., books, movies, news, stories, TV programs), and emerging technologies been so readily accessible or varied. The diversification of the media environment affects activity levels (Lin, 1996), and thus the process of experiencing narratives may change depending on the medium used. Intrinsic properties of a medium may also shape the form of narrative and affect narrative use and experience. Ryan (2004) argues in *Narrative across Media*, that it is important to look at medium as an object of semiotic inquiry stating, "Media are not hollow conduits for the transmission of messages but material supports of information whose materiality, precisely, "matters" for the type of meanings that can be encoded" (p.1). Between the availability of technology and the proliferation of narratives, individuals not only have more choice in what they listen to, read and view, but also more control in the stories they construct. The VCR and DVD and DVR allow users to play back and re-run narrative, thus controlling the flow of programming. Computers mimic the capabilities of all past narrative media (i.e., television and radio) as well as offer multi-sensory interactive media that allow individuals to construct their own narratives. For instance, some computer games are designed in such a way that allow players access to narrative worlds that contain enactments of events, or embedded story information where players are encouraged to construct their own stories (Biocca, 2002). Furthermore, hypertext found in documents on the web, allows for alternative endings to narratives and digressions that can be as long and complex as the main text (Cobley, 2001) thus allowing individuals the opportunity to fully engage with a narrative and experience new combinations of narratives with only a click of the mouse. As individuals are given more and more media choices, their motivations and satisfactions for consuming mediated narratives as well as using media technologies will continue to be important

components of research (Ruggiero, 2000). Other areas of potential study include identifying and describing narrative genres, devices, or problems that are unique to a medium and also asking if the properties of a given medium are favorable or detrimental to transportation.

Closing Thoughts

Stories can be powerful forms of communication. Their capacity lies in their ability to induce a significant shift in one's worldview (Petraglia, 2007). They do this by creating cognitive and affective associations that influence psychosocial variables such as self-efficacy, outcome expectations, and risk perception. Moreover, narratives play a key role in shaping our behavior (Johnson, 2002; Slater, 2002). Thus, narrative messages may provide an effective tool for health communicators.

This study sheds light on how different media (print and audio) and the perspective (first-person versus third-person) through which a narrative is told can affect narrative impact among a non-student population. Future research should continue to examine narrative impact in an attempt to provide a more comprehensive understanding of the role it might play in delivering effective health communication messages to various target populations.

REFERENCES

Abbott, H. P. (2002). *The Cambridge introduction to narrative*. Cambridge, UK: Cambridge University Press.

Abelson, R.P. (1981). The psychological status of the script concept. *American Psychologist*, *36*, 715-729.

Adaval, R., & Wyer, R.S., Jr. (1998). The role of narratives in consumer information processing. *Journal of Consumer Psychology, 7*, 207-245.

Adelman, M.G., & Frey, L.R. (1997). The fragile community: Living together with AIDS. Hillsdale, NJ: Erlbaum.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Bechmann (Eds.), Action control: From cognition to behavior (pp. 11–39). New York: Springer-Verlag.

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

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology, 22*, 453–474.

Ambrosini, V., & Bowman, C. (2001).Tacit knowledge: Some suggestions for operationalization. *Journal of Management Studies*, *38*, 811-829.

Anderson, A.B., Basilevsky, A., & Hum, D. (1983). Missing data: A review of the literature. In In P. Rossi, J.D. Wright, & A.B. Anderson (Eds.), *Handbook of survey research*. New York: Academic Press.

Armes, R. (1994). *Action and image: Dramatic structure in cinema*. Manchester, UK: Manchester University Press.

Ashforth, B., & Kreiner, G. (2002). Normalizing emotion in organizations: Making the extraordinary seem ordinary. *Human Resource Management Review, 12*, 215–235.

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*, 1175-1184.

Bandura, A. (1991). Self-efficacy mechanism in physiological activation and health-promoting behavior. In J. Madden (Ed.), Neurobiology of learning, emotion and affect (pp. 229–269). New York: Raven.

Bandura, A. (1994). Social cognitive theory and exercise of control over HIV infection. In R. J. DiClemente & J. L. Peterson (Eds.), Preventing AIDS: Theories and methods of behavioral interventions (pp. 25–29). New York: Plenum Press.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman.

Baesler, E. J., & Burgoon, J. K. (1994). The temporal effects of story and statistical evidence on belief change. *Communication Research*, *21*, 582–602.

Babrow, A., Kline, K.N., & Rawlins, W.K. (2005). Narrating Problems and problematizing narratives: Linking problematic integration and narrative theory in telling stories about our health. *Narratives, Health, and Healing: Communication Theory, Research, and Practice*. L.M. Harter, P.M. Japp, & C. S. Beck (Eds.). Mahwah, NJ: Lawrence Erlbaum Associates.

Baigent, D. (2001). One more last working class hero: A cultural audit of the UK Fire Service. Retrieved April 9, 2011 from: http://www.fitting-in.com

Basil, M. D. (1996). Identification as a mediator of celebrity effects. *Journal of Broadcasting and Electronic Media, 40,* 478–495.

Baumeister, R.G., & Newman, L.S. (1994). How stories make sense of personal experiences: Motives that shape autobiographical narrative. *Personality and Social Psychology Bulletin, 20,* 676-690.

Becker, M. H. (1974). The health belief model and personal health behavior. *Health Education Monographs, 2,* 324–508.

Becker, M. H. (1988). AIDS and behavior change. *Public Health Reviews, 16,* 1–11.

Bennett, P., & Howard, N. (1996). Rationality, emotion and preference change: Drama theoretic models of choice. *European Journal of Operational Research. 92,* 603–614.

Berdie, D.R. (1973). Questionnaire length and response rate. *Journal of Applied Psychology, 58,* 278-280.

Bereiter, C. (1994). Constructivism, socioculturalism, and Popper's world. *Educational Researcher, 23*, 21-23.

Bettelheim, B. (1943). Individual and mass behavior in extreme situations. *Journal of Abnormal and Social Psychology, 38,* 417–452.

Biener, L. (2000). Adult and youth response to the Massachusetts anti-tobacco television campaign. *Journal of Public Health Management and Practice, 6*, 40–44.

Biener, L., Reimer, R., Wakefield, M., Szczypka, G., Rigotti, N., & Connolly, G. (2006). Relative impact of smoking cessation aids and mass media among recent quitters. *American Journal of Preventive Medicine*, *30*, 217–224.

Biocca, F.(2002). The evolution of interactive media: Toward "being there' in nonlinear narrative worlds. In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 97-130). Mahwah: Erlbaum.

Birkerts, S. (1994). *The Gutenberg Elegies: The fate of reading in an electronic age*. Boston: Faber and Faber.

Black, J. B., & Seifert, C. M. (1985). The psychological study of story understanding. In C. R. Cooper (Ed.), *Researching response to literature and the teaching of literature* (pp. 190 211). Norwood, NJ: Ablex.

Bloom, H. (1994). *The western canon: The books and school of the ages.* New York: Riverhead Books.

Booth-Butterfield, S., & Gutowski, C. (1993). Message modality and source credibility can interact to affect argument process. *Communication Quarterly, 41,* 77-89.

Bordwell, D. (1985). *Narration in the fiction film*. Madison, WI: The University of Wisconsin Press.

Bower, G., Black, J., & Turner, T. (1979). Scripts in text comprehension and memory. *Cognitive Psychology*, *11*, 177-220.

Braverman, J., (2008). Testimonials versus informational persuasive messages: The moderating effect of delivery mode and personal involvement. *Communication Research, 35*, 666-694.

Brock, L.G., & Keller, P.A. (1997). Effects of self-efficacy and vividness on the persuasiveness of health communication. *Journal of Consumer Psychology*, *6*, 31-54.

Brosius, H. B., & Bathelt, A. (1994). The utility of exemplars in persuasive communications. *Communication Research, 21*, 48-78.

Bruner, J. S. (1986). *Actual minds, possible worlds*. Cambridge, MA: Harvard University Press.

Burner, J. S. (1990a). Acts of meaning. Cambridge, MA: Harvard University Press.

Burner, J. S. (1990b). Culture and human development: A new look. *Human Development*, *33*, 344- 355.

Bruner, J. (1997). A narrative model of self-construction. *Annals of the New York Academy of Sciences, 818*, 145-161.

Burchell, B., & Marsh, C. (1992). The effect of questionnaire length on survey response. *Quality and Quantity*, 26, 233-244.

Burke, K. (1945). *A grammar of motives.* Berkeley, CA: University of California Press.

Burnkrant, R. E., & Unnava, H.R. (1989). Self-referencing: A strategy for increasing processing of message content. *Personality and Social Psychology Bulletin, 15,* 628 - 638.

Busselle, R., Bilandzic, H. (2008). Fictionality and perceived realism in experiencing stories: A model of narrative comprehension and engagement. *Communication Theory*, *18*, 255-280.

Busselle, R.W., & Greenberg, B.S. (2000). The nature of television realism judgments: A reevaluation of their conceptualization and measurement. *Mass Communication and Society, 3*, 249-268.

Busselle, R., Ryabovolova, A. & Wilson, B. (2004). Ruining a good story: Cultivation, perceived realism and narrative. *Communications, 29*, 365-378.

Cacioppo, JT & Harkins, S.G., & Petty, R.E. (1981). The nature of attitudes, cognitive responses, and their relationships to behavior. In R.E. Petty , T. Ostrom, & T. Brock (Eds.), *Cognitive responses in persuasion* (pp. 31-54). Mahwah, NJ: Erlbaum.

Cacioppo, J.T., von Hippel, W., & Ernst, J.M. (1997). Mapping cognitive structures and processes through verbal content: The thought listing technique. *Journal of Consulting and Clinical Psychology*, 65, 928-940.

Campbell, R.G., & Babrow, A.S. (2004). The role of empathy in responses to persuasive risk communication: Overcoming resistance to HIV prevention messages. *Health Communication, 16*, 159–182.

Cannell, C. F., & Kahn, R.L. (1968). Interviewing. In G. L. Lindzey & E. Aronson (Eds.), *The Handbook of social psychology, Vol II* (2nd ed). Reading, MA: Addison-Wesley.

Carter, K. (1993). The place of story in the study of teaching and teacher education. *Educational Researcher, 22*, 5-12.

Chaiken, S. (1980). Heuristic versus systematic information processing and the use of source versus message cues in persuasion. *Journal of Personality and Social Psychology*, *39*, 752-766.

Chaiken S. (1987). The heuristic model of persuasion. In M.P. Zanna, J.M., Olsen, & C.P. Herman (Eds.) *Social Influence: Vol. 5. The Ontario Symposium* (pp. 3-39) Hillsdale, NJ: Lawrence Erlbaum Associates.

Chaiken, S., & Eagly, A. H. (1976). Communication modality as a determinant of message persuasiveness and message comprehensibility. *Journal of Personality and Social Psychology, 34*, 605-614.

Chaiken, S., & Eagly, A. H. (1983). Communication modality as determinant of persuasion: The role of communicator salience. *Journal of Personality and Social Psychology, 45*, 241-256.

Chaiken, S., Liberman, A., & Eagly, A.H. (1989). Heuristic and systematic information processing within and beyond the persuasion context. In J.S. Uleman, & J.A. Bargh (Eds.), *Unintended thought* (pp. 212-252). New York: Guilford Press.

Chambliss, M.J., & Garner, R. (1996). Do adults change their minds after reading persuasive text? *Written Communication*, *13*, 291-313.

Champion D., & Sear, A. (1969). Questionnaire response rate: A methodological analysis. *Social Forces, 47*, 335 -339.

Chatman, S. (1990). *Coming to terms: The rhetoric of narrative in fiction and film*. Ithaca, NY: Cornell University Press.

Chen, M., & Bargh, J.A. (1999). Consequences of automatic evaluation: Immediate behavioral predispositions to approach or avoid the stimulus. *Personality and Social Psychology Bulletin*, *25*, 215-224.

Chikerotis, S. (2006). *Firefighters from the heart. True stories and lessons learned*. Clifton Park, NY: Thomson Delmar.

Cobley, P. (2001). *Narrative.* New York: Routledge.

Cohen, J. (1988). Statistical power analysis for behavior sciences (2nd ed) Hillsie, NJ, Erlbaum.

Cohen, J. (1997). Parasocial relations and romantic attraction: Gender and dating status differences. *Journal of Broadcasting and Electronic Media, 41,* 516–529.

Cohen, J. (2001). Defining identification: A theoretical look at the identification of audiences with media characters. *Mass Communication and Society*, *4*, 245–264.

Cole, H.P. (June, 1995). Factors that contribute to miners committing unsafe acts, Invited paper presented to the 85th Annual Convention of the Mine Inspector's Institute of America, Canaan Valley Resort, West Virginia.

Cole, H.P. (1997). Stories to live by: A narrative approach to health-behavior research and injury prevention. In D.S.Gochman (Ed.), *Handbook of health behavior research methods* (pp. 325-348). New York: Plenum Press.

Cole, H.P. (2002). Cognitive-behavioral approaches to farm community safety education: A conceptual analysis. *Journal of Agricultural Safety and Health, 8*, 145-159.

Cole, H.P., Garrity, T. F., & Berger, P.K. (1988). Analogs between medical and industrial safety research on compliance behavior. In D.S. Gochman (Ed.), *Health behavior: Emerging research perspectives* (pp. 337-353). New York: Plenum Press.

Cole, T., & Leets, L. (1999). Attachment styles and intimate television viewing: Insecurely forming relationships in a parasocial way. *Journal of Social and Personal Relationships, 16,* 495–511.

Connelly, R.M., & Clandinin, D. J. (1990). Stories of experience and narrative inquiry. *Educational Researcher, 19*, 2-14.

Conrad, C., & Witte, K. (1994). Is emotional expression repression oppression? Myths of organizational affective regulation. In S. A. Deetz (Ed.), *Communication yearbook 17,* (pp. 417–428). Thousand Oaks: Sage Publications.

Cook, T. (1969). Competence, counterarguing and attitude change. *Journal of Personality*, *37*, 342-358.

Cooper, R. (1995). The fireman: immaculate manhood. *Journal of Popular Culture, 28*, 139–170.

Cortazzi, M. (2001). Narrative Analysis in Ethnography**,** In P. Atkinson, A. Coffey, S. Delamont, L. Lofland, J. Lofland (Eds.) *Handbook of Ethnography* (pp. 384-394) London: Sage Publications.

Courtenay, G. (1978). Questionnaire construction. In G. Hoinville and R. Jowell (Eds.), *Survey research practice.* London: Heinemann.

Crites, S. (1986). Storytime: Recollecting the past and projecting the future. In T.R. Sarbin (Ed.), Narrative psychology: The storied nature of human conduct (pp. 152-173). New York: Praeger.

Cronkhite, G., & Liska, J. (1976). A critique of factor-analytic approaches to the study of credibility. *Communication Monographs, 43*, 91-107.

Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper and Row.

Cullen, E.T., & Fein, A.H. (2004). *Tell me a story: Why stories are essential to effective safety training* (DHHS [NIOSH] Publication No. 2005-152). Cincinnati, OH: National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services.

Czarniawska-Joerges, B. (1997). *Narrating the organization: dramas of institutional identity*, Chicago: University of Chicago Press.

Dal Cin, S., Zanna, M.P., & Fong, G.T. (2004). Narrative persuasion and overcoming resistance. In E.S. Knowles, & J.A. Lin (Eds.), *Resistance and persuasion* (pp. 175-191). Mahwah, NJ: Erlbaum.

Dean, R.G. (1995). Stories of AIDS: The use of narrative as an approach to understanding in an AIDS support group. *Clinical Social Work Journal, 23*, 287 – 304.

Debevec, K., & Romeo, J.B. (1992). Self-referent processing in perceptions of verbal and visual commercial information. *Journal of Consumer Psychology, 1*, 83–102.

Deighton, J., Romer, D., &McQueen, J. (1989). Using drama to persuade. *Journal of Consumer Research*, *16*, 335-343.

Denning, S. (2000). *The Springboard: How storytelling ignites action in knowledge-era organizations*. Boston: Butterworth-Heinemann.

Dijk, T.A. (1975). Action, Action Description, and Narrative, *New Literary History*, 6, 273- 294.

Dijk, T.A. (1976). Philosophy of action and theory of narrative. *Poetics*, 287-338.

Dillard, J.P., & Nabi, R.L. (2006). The persuasive influence of emotion in cancer prevention and detection messages. *Journal of Communication*, *56*, S123-S139.

Dillard, J. P., & Peck, E. (2000). Affect and persuasion: Emotional responses to public service announcements. *Communication Research, 27*, 461–495.

di Wit, J.B.F., Das, E., & Vet, R. (2008). What works best: Objective statistics or a personal testimonial? Assessment of the persuasive effects of different types of message evidence on risk perception. *Health Psychology*, *27*, 110-115.

Dunlop, S., Wakefield, M. & Kashima, Y. (2008). Can you feel it? Negative emotion, risk, and narrative in health communication. *Media Psychology, 11*, 52-75.

Eagly, A.H., & Chaiken, S. (1993). *The psychology of attitude.* Fort Worth, TX: Harcourt, Brace, Jovanovich.

Erikson, E. H. (1968). *Identity: Youth and crisis.* New York, NY: Norton.

Escalas, J.E. (2004a). Narrative Processing: Building Consumer Connections to Brands. *Journal of Consumer Psychology*, *14*, 168-180.

Escalas, J. E. (2004b). Imagine yourself in the product: Mental simulation, narrative transportation, and persuasion. *Journal of Advertising*, *33*, 37–48.

Escalas, J. E. (2007). Self-referencing and persuasion: Narrative transportation versus analytical elaboration. *Journal of Consumer Research*, *33*, 421–429.

Escalas, J. E., Moore, M. C., & Britton, J. E. (2004). Fishing for feelings? Hooking viewers helps! *Journal of Consumer Psychology*, *14*, 105–114.

Evans J. (1996). Deciding before you think: relevance and reasoning in the selection task. *British Journal of Psychology, 87*, 223–40.

Felluga, D. (2011). Terms used by narratology and film theory. *Introductory Guide to Critical Theory*. [January 21, 2011]. Purdue University. Retrieved April 3, 2011 from: http://www.purdue.edu/guidetotheory/narratology/terms

Festinger, L., & Katz, D. (1965). *Research methods in behavioral sciences*. London: Holt, Rinehart & Winston.

Friel, J.K., Stones, M. (1992). Firefighters and heart disease. *American Journal of Public Health*,

Fishbein, M. (1992). Developing effective behavior change interventions: Some lessons learned from behavioral research. *Research Monograph Series 155: Reviewing the behavioral sciences knowledge base on technology transfer,* (pp. 246 – 261). United States Health and Human Services, National Institutes of Health.

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

Fishbein, M., & Cappella, J.N. (2006). The role of theory in developing effective health communications. *Journal of Communication, 82*, 1175-1176.

Fishbein, M., Middlestadt, S. E., & Hitchcock, P. J. (1991). Using information to change sexually transmitted disease-related behaviors: An analysis based on the theory of reasoned action. In J. N. Wasserheit, S. O. Aral, & K. K. Holmes (Eds.), *Research issues in human behavior and sexually transmitted diseases in the AIDS era* (pp. 243–257) Washington, DC: American Society for Microbiology.

Fishbein, M., Triandis, H.C., Kanfer, F.H., Becker, M., Middlestadt, S.E., and Eichler, A. (2001). Factors influencing behavior and behavior change. Baum, A., Tevenson, T.A., & Singer, J.E., (Eds), *Handbook of Health Psychology.* (pp. 3-17).Mahwah , New Jersey , Lawrence Earlbaum & Associates, 2001.

Fisher, W. (1984). Narration as a human communication paradigm: The case of public moral argument. *Communication Monographs*, 51, 1-22.

Fisher, W. (1987). *Human communication as narration*: *Toward a philosophy of reason, value, and action.* Columbia, SC: University of South Carolina Press.

Fisher, J. D., & Fisher, W. A. (1992). Changing AIDS-risk behavior. *Psychological Bulletin, 111,* 455–474.

Forgas, J. P. (1995). Mood and judgment: The affect infusion model (AIM). *Psychological Bulletin*, *117*, 39–66.

Frijda, N. H. (1986). *The emotions: Studies in emotion and social interaction*. New York: Cambridge University Press.

Frijda, N.H. (1988). The laws of emotion. *American Psychologist*, *43*, 349-358.

Gabriel Y. (2000). *Storytelling in organizations: facts, fictions, and fantasies*. Oxford, UK: Oxford University Press.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston: Allyn & Bacon.

Gerbner, G. (1985). 'Homo Narrans: Story-telling in mass culture and everyday life. *Journal of Communication*, *35*, 73-171.

Gerbner. G. Gross, L., Morgan, M., & Signorielli, N. (1994). Growing up with television: The cultivation perspective. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (pp. 17-42). Mahwah, NJ: Erlbaum.

Gergen, K. J., & Gergen, M. M. (1988). Narrative and the self as relationship. *Advances in Experimental Social Psychology, 21,* 17–56.

Gerrig, R. J. (1993). *Experiencing narrative worlds: On the psychological activities of reading.* New Haven, CT: Yale University Press.

Gerrig, R.J. (1994). Narrative thought? *Personality and Social Psychology Bulletin, 20,* 712-715.

Gerrig, R. J. & Prentice, D. A. (1996). Notes on audience response. In N. Carroll & D. Bordwell (Eds.), *Post-theory: Reconstructing film studies* (pp. 388-403). Madison: University of Wisconsin Press.

Gilbert, D. S. (1991). How mental systems believe. *American Psychologist, 46,* 107 -119.

Glanz, K., Lewis, F.M., Rimer, B.K. (1997). Linking theory, research and practice, In: Glanz, K., Lewis, F.M., Rimer, B.K. (Eds.), *Health behavior and health education: Theory, research, and practice*, 2nd ed. (pp. 19 – 35). Jossey-Bass, San Francisco, CA.

Goetz, E. T., Sadoski, M., Stowe, M. L., Fetsco, T. G., & Kemp, S. G. (1993). Imagery and emotional response in reading literary text: Quantitative and qualitative analyses. *Poetics*, *22*, 35-49.

Goode, W.J., & Hatt, P.K. (1952). *Methods in social research.* London: McGraw Hill.

Gonzales, M.H., Haugen, J.A.., & Manning, D. J. (1994). Victims as "narrative critics": Factors influenceing rejoinders and evaluative responses to offenders' accounts. Personality and Social *Psychology Bulletin, 20*, 691-704.

Graesser, A.C. (1981). *Prose comprehension beyond the word*. New York: Springer-Verlag.

Graesser, A.C., Hauft-Smith, K., Cohen, A.D., & Pyles, L.D. (1980). Advanced outlines, familiarity, and text genre on retention of prose. *Journal of Experimental Education, 48*, 281–290.

Graesser, A.C., Olde, B., & Klettke, B. (2002). How does the mind construct and represent stories? In M.C. Green, J.J. Strange, & T. Brock (Eds.), *Narrative impact: social and cognitive foundations* (pp. 229-262). Mahwah, NJ: Lawrence Erlbaum.

Gregory, L.W., Cialdini, R.B., & Carpenter, K.M. (1982). Self-relevant scenarios as mediators of likelihood estimates and compliance: Does Imaging make it so? *Journal of Personality and Social Psychology*, *43*, 89-99.

Green, M.C. (2004). Transportation into narrative worlds: The role of prior knowledge and perceived realism. *Discourse Processes*, *38*, 247–266.

Green, M.C. (2006). Narratives and cancer communication. *Journal of Communication 56*, S163–S183.

Green, M.C. (2008). Research challenges in narrative persuasion. *Information Design Journal 16*, 47-52.

Green, M.C., & Brock, T.C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, *79*, 701–721.

Green, M. C., & Brock, T. C. (2002). In the mind's eye: Transportation-imagery model of narrative persuasion. In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact*: *Social and cognitive foundations* (pp. 315–341). Mahwah, NJ: Erlbaum.

Green, M.C., & Brock, T.C. (2005). Persuasiveness of narratives. In T.C. Brock & M.C. Green (Eds.), *Persuasion: Psychological insights and perspectives* (2nd ed., pp. 117-142). Thousand Oaks, CA: Sage Publications.

Green, M. C., Brock, T. C., & Kaufman, G. F. (2004). Understanding media enjoyment: The role of transportation into narrative worlds. *Communication Theory, 14*, 311–327.

Green, M. C., Garst, J., & Brock, T. C. (2004). The power of fiction: Persuasion via imagination and narrative. In L. J. Shrum (Ed.), *The psychology of entertainment media: Blurring the lines between entertainment and persuasion* (pp. 161–176). Mahwah, NJ: Erlbaum.

Green, M. C., Garst, J., Brock, T. C., & Chung, S. (2006). Fact versus fiction labeling: Persuasion parity despite heightened scrutiny of fact. *Media Psychology*, *8*, 267-285.

Green, M.C., Kass, S., Carrey, J., Herzig, B., Feeney, R., & Sabini, J. (2008). Transportation across media: Repeated exposure to print and film. *Media Psychology*, *11*, 512-539.

Greene, K., & Brinn, L. S. (2003). Message influencing college women's tanning bed use: Statistical versus narrative evidence format and a self-assessment to increase perceive susceptibility. *Journal of Health Communication, 8,* 443-461.

Hall, A., Hockey, J., & Robinson, V. (2007). Occupational cultures and the embodiment of masculinity: hairdressing, estate agency and firefighting. *Gender, Work and Organisation*, *14*, 534–551.

Harris, R.J. (1994). *A cognitive psychology of mass communication*. Hillsdale, NJ: Lawrence Erlbaum.

Hass, R. G. (1981). Effects of source characteristics on cognitive responses and persuasion. In R. E. Petty, T. M. Ostrom, & T. C. Brock (Eds.), *Cognitive responses in persuasion* (pp. 141-172). Hillsdale, NJ: Lawrence Erlbaum.

Herman, D. (2003). *Narrative theory and the cognitive sciences.*, Stanford, CA: CSLI Publications.

Heath, C., & Heath, D. (2007). *Made to stick: Why some ideas survive and others die*. New York: Random House.

Hermans, H.J. M. (1992).Telling and retelling one's self narrative: A contextual approach to life-span development. *Human Development, 35*, 361-375.

Herzog, A.R., & Bachman, J.G. (1981). Effects of questionnaire length on response quality. *Public Opinion Quarterly, 45,* 49-59.

Hatcher, J. (1996). *The art and craft of playwriting*. Cincinnati, OH: Storey Press.

Hinyard, L.J., & Kreuter, M.W. (2007). Using narrative communication as a tool for health behavior change: A conceptual, theoretical, and empirical overview. *Health Education & Behavior*, *34*, 777-792.

Hoffner, C. (1996). Children's wishful identification and parasocial interaction with favorite television characters. *Journal of Broadcasting and Electronic Media, 40,* 389–402.

Holland, T.P., & Kilpatrick, A.C. (1993). Using narrative techniques to enhance multicultural practices. *Journal of Social work Education, 29*, 302-375.

Horai, J., Naccari, N., & Fatoullah, E. (1974). The effects of expertise and physical attractiveness upon opinion agreement and liking. *Sociometry, 37*, 601-606.

Horton, D., & Wohl, R. R. (1956). Mass communication and parasocial interaction. *Psychiatry, 19*, 215-229.

Hovland, C.I., Janis, I.L., & Kelley, H.H. (1953). Communication and persuasion: Psychological studies of opinion change. New Haven, CT: Yale University Press.

Hovland, C., & Weiss, W. (1951). The influence of source credibility on communication effectiveness. *Public Opinion Quarterly*, *15*, 635-650.

Howard, G. S. (1991). Culture tales: A narrative approach to cross-cultural psychology and psychotherapy. *American Psychologist, 46*, 187-197.

Institute of Medicine (U.S.). Committee on Communication for Behavior Change in the 21st Century: Improving the Health of Diverse Populations. (2002). Speaking of Health: Assessing health communication strategies for diverse populations. Washington, DC: National Academies Press.

Irwin, C.E., Jr. Cataldo, M.G., Matheny, A.P., & Peterson, L. (1992). Health consequences of behaviors: Injury as a model. *Pediatrics, 90*, 798-807.

Isen, A. M. (1984). Toward understanding the role of affect in cognition. In R. S.Wyer, & T. K. Skrull (Eds.), *Handbook of Social Cognition* (pp. 179–236). Hillsdale, NJ: Lawrence Erlbaum Associates.

Isen, A. M. (1987). Positive affect, cognitive processes, and social behavior. In L. Berkowitz (Ed.), *Advances in experimental psychology* (Vol. 20, pp. 203–253).

Izard. C.E. (1977). *Human Emotions*. New York: Plenum.

Izard, C.E., Libero, D.Z., Putman, P., & Haynes, O.M. (1993). Stability of emotion experiences and their relations to traits of personality. *Journal of Personality and Social Psychology, 64,* 847-860.

Jacobs, R.N. (2002). The narrative integration of personal and collective identity in social movements. In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact*: *Social and cognitive foundations* (pp. 205-228). Mahwah, NJ: Erlbaum.

Janis, I.L., Kaye, D. Kirschner, P. (1965). Facilitating effects of 'eating-while-reading' on responsiveness to persuasive communications. *Journal of Personality and Social Psychology, 1*, 181-185.

Johnson, M. (2002). Foreword. In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. ix- xii). Mahwah, NJ: Erlbaum.

Johnson, H. H., & Izzett, R. (1969). Relationship between authoritarianism and attitude change as a function of source credibility and type of communication. *Journal of Personality and Social Psychology*, *13*, 17-321.

Johnson, H. H., Torvicia, J., & Poprick, M. (1968). Effects of source credibility on the relationship between authoritarianism and attitude change. *Journal of Personality and Social Psychology, 9*, 179-1 83.

Josselson, R., & Lieblich, A. (Eds.). (1993). *The narrative study of lives*. Newbury Park, CA: Sage.

Kales S. (2000). Cardiovascular Fitness in Firefighters (letter). *Journal of Occupational Environmental Medicine, 42*, 467–468.

Kay, B.F., Lund, M.M., Taylor, P.N., & Herbold, N.H (2001). Assessment of firefighters' cardiovascular disease-related knowledge and behaviors. *Journal of the American Dietetic Association, 101*, 807-809.

Kelman, H., & Hovland, C. (1953). "Reinstatement" of the communicator in delayed measurement of opinion. *Journal of Abnormal and Social Psychology, 48*, 327-335.

Kerby, A. P. (1991). *Narrative and the self*. Bloomington: Indiana University Press.

Kim, J.-O., & Mueller, C. W. (1978). *Introduction to factor analysis: What it is and how to do it.* Newbury Park, CA: Sage.

Klein, K. (2003). Narrative construction, cognitive processing, and health. In D. Herman (Ed.), *Narrative theory and the cognitive sciences*, (pp.56-77). Stanford, CA: CSLI Publications.

Klein, K., & Boals, A. (2001). Expressive writing can increase working memory capacity. *Journal of Experimental Psychology, 130*, 520 – 533.

Klein, S. B., & Loftus, J, (1988). The nature of self- referent encoding: The contributions of elaborative and organizational Processes. *Journal of Personality and Social Psychology*, *55*, 5–11.

Knowles E.S., & Linn, J. (2004). *Resistance and Persuasion*. (Eds.) Mahwah, NJ: Lawrence Erlbaum Associates.

Kopfman, J.E., Smith, S.W., Yun, J.K.A., & Hodges, A. (1998). Affective and cognitive reactions to narrative versus statistical evidence organ donation messages. *Journal of Applied Communication Research*, *26*, 279 -300.

Kreuter, M.W., Green, M.C., Cappella, J.N., Slater, M.D., Wise, M.E., Storey, D., Clark, E.M., O'Keefe, D.J., Erwin, D.O., Holmes, K., Hinyard, L.J., Houston, T., & Woolley, S. (2007). Narrative communication in cancer prevention and control: A framework to guide research and application. *Annals of Behavioral Medicine, 33*, 1-15.

Kreuter, M.W., Strecher, V.J., & Glassman, B. (1999). One size does not fit all: the case for tailoring print materials. *Annals of Behavioral Medicine*, *21*, 276-283.

Krueger, R.A. (1994). Focus groups: A practical guide for applied research (2nd ed.). Thousand Oaks, CA: Sage.

Lacy, N. (2000). *Narrative and genre: Key concepts in media studies.* New York: Palgrave Macmillan.

Lang, A. (2002). The limited capacity model of mediated message processing. *Journal of Communication*, *50*, 46-70.

Lang, A., Dhillon, K., & Dong, Q. (1995). The effects of emotional arousal and violence on television viewers' cognitive capacity and memory. *Journal of Broadcasting and Electronic Media*, *39*, 313–327.

Lazarus, R. S. (1991). Emotion and adaptation. New York: Oxford University Press.

Lee, K. M. *(*2004*).* Presence, explicated. *Communication Theory*, *14,* 27–50*.*

Lee, E., & Leets, L. (2002). Persuasive storytelling by hate groups on online. *American Behavioral Science, 45,* 927-957.

Levy, M. R., & Windahl, S. (1984). Audience activity and gratifications: A conceptual clarification and exploration. *Communication Research, 11,* 51-78.

Liebes, T., & Katz, E. (1990). *The export of meaning: Cross-cultural readings of* "Dallas." New York: Oxford University Press.

Lin, C.A. (1996). Looking back: The contributions of Blumler and Katz's uses and mass communication to communication research. *Journal of Broadcasting & Electronic Media*, 40, 574-581.

Linde, C. (2001). Narrative and social tacit knowledge [Special issue]. *Journal of Knowledge Management*, *5*, 1-16.

Lindlof, T.R. & Taylor, B.C. (2002) *Qualitative Communication Research Methods* (2nd edition). Thousand Oaks, California, Sage.

Lindsay, L.L., & Ah Yun, J.K. (2003). Examining the persuasive effect of statistical messages: a test of mediating relationships, *Communication Studies, 54*, 306–321.

Lirtzman, S. I., & Shuv-Ami, A. (1986). Credibility of source of communication on products' safety hazards. *Psychological Reports*, *58*, 707-718.

Livingstone, S. M. (1998). *Making sense of television: The psychology of audience interpretation* London: Routledge.

Livo NJ & Rietz, SA. (1986). *Storytelling process and practice*. Littleton, Colorado: Libraries Unlimited.

Lombard, M., & Ditton, T. (1997). At the heart of it all: The concept of Presence. *Journal of Mass Communication, 3, 157-170.*

Maccoby, E. E., & Wilson, W. C. (1957). Identification and observational learning from films. *Journal of Abnormal Social Psychology, 55,* 76–87.

Maddux, J. E., & Rogers, R. W. (1980). Effects of source expertness, physical attractiveness, and supporting arguments on persuasion: A case of brains over beauty. *Journal of Personality and Social Psychology, 39*, 235-244.

Malley, K., Goldstein, A., Aldrich, T., Kelly, K., Weiden ,M., & Coplan, N. (1999). Effects of firefighting uniform (modern, modified modern, traditional) design changes on exercise duration in New York City firefighters. *Journal of Occupational Environmental Medicine 41*, 1104–1115.

Mandler, J.M., & Johnson, N.S. (1980). Remembrance of things parsed: Story structure and recall. *Cognitive Psychology*, *9*, 111-151.

Mar, R.A., & Oatley, K. (2008). The function of fiction is the abstraction and simulation of social experience. *Perspectives on Psychological Science, 3,* 173-192.

Mayer, R.E. (1996). Learners as information processors: Legacies and limitations of educational psychology's second metaphor. *Educational Psychologist, 31*, 151-161.

Mazzocco, P.J., Green, M.C., & Brock, T.C. (2003). *The effects of prior story bank on the processing of a related persuasive communication*. Unpublished manuscript, The Ohio State University.

Mazzocco, P. J., Green, M. C., & Brock, T. C. (2007). The effects of a prior story-bank on the processing of a related narrative. *Media Psychology, 10*, 61–90.

McCroskey, J. C. (1966). Scales for the measurement of ethos. *Speech Monographs, 33*, 65-72.

McCroskey, J.C. (n.d.). Homophily scales: Old version, new one forthcoming. Retrieved October 2, 2010, from http://www.jamescmccroskey.com/measures/homophily.htm

McCroskey, J.C., Richmond, V.P., Daly, J.A. (1975). The development of a measure of perceived homophily in interpersonal communication. *Human Communication*, *1*, 323-332.

McGinnies, E., & Ward, C. (1974). Persuasibility as a function of source credibility and locus of control: Five cross-cultural experiments. *Journal of Personality, 42*, 360-371.

McGuire, W. J. (1969). The nature of attitudes and attitude change. In G. Lindzey, & E. Aronson (Eds.), The handbook of social psychology (Vol. 3, pp. 136–314). Reading, MA: Addison-Wesley.

McGuire, W.J. (1984). Public communication as a strategy for inducing health-promoting behavioral change. *Preventive Medicine, 13,* 299-319.

McKee, R. (1997). Story: Substance, structure, style, and the principles of screenwriting. New York: Harper Collins.

McKoon, G., Ratcliff, R., & Seifer, C. (1989). Making the Connection: Generalized Knowledge Structures in Story Understanding. *Journal of Memory and Language*, *28*, 711-734.

McLean, K. (2005). Late adolescent identity development: Narrative meaning making and memory telling. *Developmental Psychology, 41,* 683-691.

Melius, J. (2001). Occupational health for firefighters**.** *Occupational Medicine, 16*, 101-108.

Miller, P. J. (1995). Personal storytelling in everyday life: Social and cultural perspective. In R. S. Wyer (Ed.), *Knowledge and memory: The real story* (pp. 177–184). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Miller, G., & Baseheart, J. (1969). Source trustworthiness, opinionated statements, and response to persuasive communication. *Speech Monographs, 36*, 1-7.

Mills, J (1966). Opinion change as a function of the communicator's desire to influence and liking for the audience. *Journal of Experimental Social Psychology*, *2*, 152 – 159.

Mishler, E.G. (1986). The analysis of interview-narratives. In T.R. Sarbing (Ed.), *Narrative psychology: The storied nature of human conduct* (pp. 233-255). New York: Praeger.

Morgan, S.E., Movius, L., & Cody, M.J. (2009). The power of narratives: The effect of entertainment television organ donation storylines on the attitudes, knowledge, and behaviors of donors and nondoners. *Journal of Communication*, *59*, 135-151.

Morse, L., Owen, D., & Becker, C.E. (1992). Firefighters' health and safety. In W.N. Rom (Ed.), *Environmental and Occupational Medicine* (pp. 1197-1204). Boston: Little, Brown and Company.

Murphy, S. L., & Holmes, J.G. (1994). Storytelling in close relationships: The construction of confidence. *Personality and Social Psychology Bulletin, 20*, 650-663.

Murphy, S.T., Monahan, J.L., & Zajonc, R.B. (1995). Additivity of unconscious affect: Combined effects of priming and exposure. *Journal of Personality and Social Psychology*, *69*, 589-602.

Murphy, S. T., & Zajonic, R.B, (1993). Affect, cognition, and awareness: Affective priming with optimal and suboptimal exposures. *Journal of Personality and Social Psychology*, *64*, 723-739.

Musk, A.W., Monson, R.R., Peters, J.M., & Peters, R.K. (1978). Mortality among Boston firefighters, 1915-1975. *British Journal of Industrial Medicine, 35*, 104-108.

National Institute for Occupational Safety and Health. (n.d.). *Fire fighter fatality investigation reports.* Retrieved November 8, 2008, from http://www.cdc.gov/niosh/fire/

Nell, V. (1988). *Lost in a book: The psychology of reading for pleasure*. New Haven CT: Yale University Press.

Nell, V. (2002*).* Mythic structures in narrative: The domestication of immortality*. In* M. C. Green*,* J.J. Strange*, &* T. C.Brock*, (Eds.), Narrative impact: Social and cognitive foundations* (pp*.* 17–37*).* Mahwah, NJ: Erlbaum.

Noar, S.M., Zimmerman, R.S. (2005). Health behavior theory and cumulative knowledge regarding health behaviors: Are we moving in the right direction? *Health Education Research, 20,* 275 – 290.

Oatley, K. (1994). A taxonomy of the emotions of literary response and a theory of identification in fictional narrative. *Poetics, 23*, 53-74.

Oatley, K. (1999). Meeting of minds: Dialogue, sympathy, and identification in reading fiction. *Poetics, 26,* 439–454.

Oatley, K. (2002). Emotions and the story worlds of fiction. In M. C. Green, J. J. Strange, & T.C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 39–69). Mahwah, NJ: Erlbaum.

Ohanian, R. (1990). Construction and validation of a scale to measure celebrity endorsers' perceived expertise, trustworthiness, and attractiveness*. Journal of Advertising*, *19*, 39-52.

Ohanian, R. (1991). The impact of celebrity spokespersons' perceived image on consumers' intention to purchase. *Journal of Advertising Research*, *31*, 46-54.

Oliver, M.B. (2002). Individual differences in media effects. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (pp. 507 – 524). Mahwah, NJ: Lawrence Erlbaum Associates.

Paley, J., & Eva, G. (2005). Narrative vigilance: the analysis of stories in health care. *Nursing Philosophy, 6*, 83–97.

Papa, M.J., Singhal, A., Law, S., Pant, S., Sood, S., Rogers, E.M., & Shefner-Rogers, C.L. (2000). Entertainment-education and social change: An analysis of parasocial interaction, social learning, collective efficacy, and paradoxical communication. *Journal of Communication*, *50*, 31-55.

Pechmann, C., & Reibling, E. T. (2006). Antismoking advertisements for youths: An independent evaluation of health, counter-industry, and industry approaches. *American Journal of Public Health: Research and Practice, 96,* 1–8.

Perse, R. M., & Rubin, R.B. (1989). Attribution in social and parasocial relationships. *Communication Research*, *16*, 59-77.

Peters, E., Lipkus, I., Diefenbach, M.A. (2006). The functions of affect in health communication and in the construction of health preferences. *Journal of Communication*, *56*, S140-S162.

Petty, R. E., DeSteno, D., & Rucker, D. D. (2001). The role of affect in attitude change. In J. P. Forgas (Ed.), *Handbook of affect and social cognition* (pp. 212–233). Mahwah, NJ: Lawrence Erlbaum Associates.

Petty, R.E., Ostrom, T.M., & Brock, T.C. (1981). *Cognitive response in persuasion*. Hillsdale, NJ: Lawrence Erlbaum.

Pennington, N., & Hastie, R. (1992). Explaining the evidence: Tests of the story model for juror decision making. *Journal of Personality and Social Psychology, 62,* 189–206.

Petraglia, J. (2007). Narrative intervention in behavior and public health. *Journal of Health Communication*, *12*, 493-505.

Petraglia, J., Galavotti, C., Harford, N. Pappas-DeLuca, K.A., Mooki, M. (2007). Applying behavioral science to behavior change communication: the Pathways to Change tools. *Health Promotion Practice, 8*, 384-393.

Petty, R.E., & Cacioppo, J.T. (1979). Issue involvement can increase or decrease persuasion by enhancing message-relevant cognitive responses. *Journal of Personality and Social Psychology, 37*, 1915-1926

Petty, R. E., & Krosnick, J. A. (Eds.). (1995*). Attitude strength: Antecedents and consequences*. Hillsdale, NJ: Erlbaum.

Phillips, D.C. (1994), Telling it straight: Issues in assessing narrative research, *Educational Psychologist 29*, p. 13–21.

Polichak, J.W. & Gerrig, R.J. (2002). "Get up and Win!" In M. C. Green, J. J. Strange, & T.C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 71- 96). Mahwah, NJ: Erlbaum.

Polkinghorne, D.E, (1998), *Narrative knowing and the human sciences*, Albany, NY, State of New York University Press.

Pornpitakpan, C. (2004). The persuasiveness of source credibility: A critical review of five decades' evidence. *Journal of Applied Social Psychology*, *34*, 243-281.

Potter, W. J. (1988). Perceived reality in television effects research. *Journal of Broadcasting and Electronic Media*, *32,* 23-41.

Powell, F. (1965). Source credibility and behavioral compliance as determinants of attitude change. *Journal of Personality and Social Psychology*, *2*, 669-676.

Prentice, D. A., & Gerrig, R. J. (1999). Exploring the boundary between fiction and reality. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 529-546). New York: Guilford.

Prentice, D.A., Gerrig, R.J., & Bailis, D. S. (1997). What readers bring to the processing of fictional tests. *Psychonomic Bulletiin & Review, 5,* 416 – 420.

Prince, G. (1991). Narratology, narrative and meaning. *Poetics Today*, *12*, 543-552.

Prochaska, J. O., & DiClemente, C. C. (1983). Stages and processes of self-change in smoking: Towards an integrative model of change. *Journal of Consulting Clinical Psychology, 51*, 390–395.

Prochaska, J. O., & DiClemente, C. C. (1986). Toward a comprehensive model of change. In W. R. Miller & N. Neather (Eds.), *Treating addictive behaviors: Processes of change* (pp. 3–27). New York: Plenum Press.

Prochaska, J. O., & DiClemente, C. C. (1992). Stages of change in the modification of problem behaviors. In M. Hersen, P. M. Miller, & R. Eisler (Eds.), *Progress in behavior modification,* (pp. 184–218). New York: Wadsworth Publishing.

Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change: Applications to addictive behaviors. *American Psychologist, 47,* 1102–1114.

Prochaska, J. O., Redding, C. A., Harlow, L. L., Rossi, J. S., & Velicer, W. F. (1994). The transtheoretical model of change and HIV prevention: A review. *Health Education Quarterly, 21,* 471–486.

Reeves, B., & Miller, M. M. (1978). A multidimensional measure of children's identification with television characters. *Journal of Broadcasting, 22,* 71–86.

Reeves, R., Newhagen, J., Maibach, E., Basil, M., & Kurz, K. (1991). Negative and positive television messages: Effects of message type and context on attention and memory, *American Behavioral Scientist 34,* 679–694.

Reinard, J.C. (1988). The empirical study of the persuasive effects of evidence: The status after fifty years of research. *Human Communication Research*, *15*, 3-59. \

Reinard, J. C. (2006). Communication Research Statistics. Thousand Oaks, CA: Sage Publications.

Ricketts, M.S. (2007). The use of narratives in safety and health communications (Doctoral dissertation, Kansas State University, 2007). *K-State Electronic Theses, Dissertations, and Reports.*

Ricketts, M, & Aramouni, F. (2004). *Occupational safety and health training materials for fruit and vegetable preserving and specialty manufacturing* (Occupational Safety and Health Administration Susan Harwood Grant 46G4-HT13). Retrieved March 25, 2010, from http://www.oznet.ksu.edu/agsafe/OSHA.htm)

Ricketts, M, Marr, C., Slocombe, J., & Upham, W. (2003). *Training materials for preventing injuries from motor vehicles, machinery, and tree-trimming hazards in the landscaping and horticultural services industry* (Occupational Safety and Health Administration Susan Harwood Grant 46G3-HT04) Retrieved March 25, 2010, from http://www.oznet.ksu.edu/agsafe/OSHA.htm

Rimer, B. K., & Kreuter, M.W. (2006). Advancing tailored health communication: A perspective and message effects perspective. *Journal of Communication*, *56*, S184-S201.

Rogers, E.M., & Bhowmik, D.K. (1970). Homophily-heterophily: Relational concepts for communication research. *Public Opinion Quarterly, 34*, 523-538.

Roscoe, A. M., Lang, D., & Sheth, J. N. (1975). Follow-up methods, questionnaire length, and market differences in mail surveys. *Journal of Marketing, 39,* 20 – 27.

Rosenblat, L.M. (1978). *The reader, the text, the poem: The transactional theory of the literary work*. Carbondale: Southern Illinois University Press.

Rosenstock, I. M. (1974). The health belief model and preventive health behavior. *Health Education Monographs, 2*, 354–386.

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1994). The health belief model and HIV risk behavior change. In R. J. DiClemente & J. L. Peterson (Eds.), *Preventing AIDS: Theories and methods of behavioral interventions* (pp. 5–24). New York: Plenum Press.

Ross, J. A. (1973). Influence of expert and peer upon Negro mothers of low socioeconomic status. *Journal of Social Psychology, 89*, 79-84.

Rubin, A.M., & McHugh, M.P. (1987). Development of parasocial interaction relationships. *Journal of Broadcasting & Electronic Media, 31*, 279-292.

Rubin, A. M., & Perse, E. M. (1987). Audience activity and soap opera involvement: A uses and effects investigation. *Human Communication Research*, *14*, 246-268.

Ryan, M.L. (2004). *Narrative across Media: The languages of storytelling.* Lincoln, NB: University of Nebraska Press.

Ryan, M.L. (2006). Semantics, pragmatics, and narrativity: A response to David Rudrum. *Narrative, 14*, 188-196.

Sadoski, M., Goetz, E.T., & Rodriquez, M. (2000). Engaging texts: Effects of concreteness on comprehensibility, interest, and recall of four text types. *Journal of Educational Psychology, 92*, 85-95.

Sarbin, T. R. (1986). The narrative as a root metaphor for psychology. In T.R. Sarbin (Ed.), *Narrative psychology: The storied nature of human conduct* (pp. 3-21). New York: Prager.

Schank, R. C. (1990). *Tell me a story: Narrative and intelligence*. Evanston, IL: Northwestern University Press.

Schank, R. C., & Abelson, R. P. (1995). Knowledge and memory: The real story. In R. S. Wyer, Jr. (Ed.), *Knowledge and memory: The real story* (pp.1–85). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Schank, R. C., & Berman, T. (2002). The pervasive role of stories in knowledge and action. In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 287–313). Mahwah, NJ: Erlbaum.

Schulman, G., & Worrall, C. (1970). Salience patterns, source credibility, and the sleeper effect. *Public Opinion Quarterly*, *34*, 371 -382.

Schwarz, N., Bless, H., & Bohner, G. (1991). Mood and persuasion: Affective states influence the processing of persuasive communications. *Advances in Experimental Social Psychology*, *24*, 161-199.

Scott, C.W., & Myers, K.K. (2005). The socialization of emotions: learning emotion management at the fire station. *Journal of Applied Communication Research, 33*, 67–92.

Shapiro, M.A. (1994). Think-aloud and thought-list procedures in investigating mental processes. In A. Lang (Ed.), *Measuring psychological responses to media* (pp. 1 - 14). Hillsdale, NJ: Erlbaum.

Shapiro, M. A., Shen, F., & Weisbein, L. (2002). *The effect of cognitive load on perceived reality.* Paper presented at the Association for Education in Journalism and Mass Communication, Miami, FL.

Sharf, B.F., & Vandeford, M.L. (2002). Illness narrative and the social construction of health. T.L. Thompson (Ed.), *Handbook of Health Communication* (pp. 9-34). Mahwah, NJ: Erlbaum.

Sheatsly, (P.B. (1983). Questionnaire construction and item writing. In P. Rossi, J.D. Wright, & A.B. Anderson (eds.). *Handbook of survey research*. New York: Academic Press.

Sheehan, P.W. (1967). A shortened form of Betts' questionnaire upon mental imagery. *Journal of Clinical Psychology, 23,* 386-389.

Sherif, M., & Cantril, H. *The Psychology of Ego-Involvements,* New York: Wiley, 1947.

Sherman, S. J., Cialdini, R.B., Schwartzman, D. F., & Reynolds, K. D. (1985). Imagining can heighten or lower the perceived likelihood of contracting a disease: the mediating effect of ease of imagery. *Personality & Social Psychology Bulletin*, *11*, 118-127.

Schuler, S., & Sypher, B. (2000). Seeking emotional labor: When managing the heart enhances the work experience. *Management Communication Quarterly, 14*, 50–89.

Sharp, L.M., & Frankel, J. (1983). Respondent burden: A test of some common assumptions. *Public Opinion Quarterly, 1,* 36-55.

Simmons, A. (2001). *The story factor: Inspiration, influence, and persuasion through the art of story-telling.* Cambridge, MA: Perseus Publishing.

Simmons, H.W., Berkowitz, N. N., & Moyer, R.J. (1970). Similarity, credibility, and attitude change: A review and theory. *Psychological Bulletin*, *73*, 1-16.

Singhal, A., Cody, M. J., Rogers, E. M., & Sabido, M. (2003). (Eds.). *Entertainment-education and social change: history, research, and practice*. Mahwah, NJ: Erlbaum.

Singhal, A., Sharma, D., Papa, J.J., & Witte, K. (2004). Air cover and ground mobilization: Integrating entertainment-education broadcasts with community listening and service delivery in India. In A. Singhal, M.J. Cody, E.M. Rogers, & M. Sabido (Eds.), *Entertainment-education and social change: History, research, and practice.* Mahwah, NJ: Lawrence Erlbaum Associates.

Skinner, B.F. (1953). *Science and human behavior*. New York: Macmillan.

Slater, M.D. (1990). Processing social information in messages: Social group familiarity, fiction versus nonfiction, and subsequent beliefs. *Communication Research, 17*, 327 – 343.

Slater, M.D. (1997). Persuasion processes across receiver goals and message genres. *Communication Theory,* 7, 125-148.

Slater, M. D. (2002a). Entertainment education and the persuasive impact of narratives. In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 157–181). Mahwah, NJ: Erlbaum.

Slater, M.D. (2002b). Involvement as goal-directed, strategic processing: The extended ELM. In J. Dillard & M. Pafau. (Eds.), *The persuasion handbook: Developments in theory and practice*. Thousand Oaks, CA: Sage.

Slater, M. D., & Rouner, D. (1996). Value-affirmative and value-protective processing of alcohol education messages that include statistical evidence or anecdotes. *Communication Research, 23*, 210-235.

Slater, M.D., & Rouner, D. (2002). Entertainment-education and elaboration likelihood: Understanding the processing of narrative persuasion. *Communication Theory*, *12*, 173-191.

Slater, M.D., Buller, D.B., Waters, E., Archibeque, M., & LeBlanc, M. (2003). A test of conversational and testimonial messages versus didactic presentations of nutrition information. *Journal of Nutrition Education and Behavior*, *35*, 255–259.

Slater, M.D., Rouner, D., Long, M.A. (2006) Television dramas and support for controversial public policies: Effects and mechanisms. *Journal of Communication*, 56, 235-252.

Sood. S., & Rogers, E.M. (2000). Dimensions of parasocial interaction by letter-writers to a popular entertainment-education soap opera in India. *Journal of Broadcasting and Electronic Media*, *44*, 389-414.

Spence, D.P. (1986). Narrative smoothing and clinical wisdom. In T.R. Sarbin (Ed.), *Narrative psychology: The storied nature of human conduct* (pp. 211- 232). New York: Praeger.

Stefanos, N.K., Elpidoforos, S. S., Stavros, G.C., & Christiani, D.C. (2003). Firefighters and on-duty deaths from coronary heart disease: a case control study. *Environmental Health, 2*, 1-14.

Stephenson, M.T., & Palmgreen, P. (2001). Sensation seeking, perceived message sensation value, personal involvement, and processing of anti-marijuana PSAs. *Communication Monographs*, *68*, 49-71.

Stern, B.B. (1994). Classical and vignette television advertising dramas: Structural models, formal analysis, and consumer effects. *Journal of Consumer Research*, *20*, 601-615.

Stitt, C. R., & Nabi, R. (2005). *The persuasive impact of narratives: A comparison across message types and modalities*. Paper presented to the Information Systems Division of the annual International Communication Association, New York.

Strange, J. J., & Leung, C. C. (1999). How anecdotal accounts in news and in fiction can influence judgments of a social problem's urgency, causes, and cures. *Personality and Social Psychology Bulletin, 25*, 436–449.

Strum, B.W. (2000). The 'storylistening' trance experience. *Journal of American Folklore, 113,* 287 -304.

Subar, A. F., Ziegler, R.G., Thompson, F.E., Johnson, C.C., Weissfeld, J.L., Reding, D., Kavouais, K.H., Hayes, R.B. (2001). Is shorter always better? Relative importance of questionnaire length and cognitive ease on response rates and data quality for two dietary questionnaires. *American Journal of Epidemiology, 153*, 404-409.

Sudman, S. & Bradburn, N.M. (1974). *Response effects in surveys: A review and synthesis.* Chicago: Aldine.

Sunwolf, & Frey, L. R. (2001). Storytelling: The power of narrative communication and interpretation. In W. P. Robinson, & H. Giles (Eds.), *The new handbook of language and social psychology* (pp. 119 – 135). Sussex, UK: Wiley.

Surmelian, L. (1969). *Techniques of fiction writing.* Garden City, NY: Anchor Books.

Smythe, J.M. (1988). Written emotional expression: Effect sizes, outcome types, and moderating variables. *Journal of Consulting and Clinical Psychology, 66,* 174 -184.

Tabata, T. (1995). Narrative style and the frequencies of very common words: A corpus-based approach to Dicken's first-person and third-person narratives. *English Corpus Studies, 2*, 91-109.

Tan, E.S. H. (1996). *Emotion and the structure of film: Film as an emotion machine.* Mahwah, NJ: Lawrence Erlbaum Associates.

Tellegen, A., & Atkinson, G. (1974). Openness to absorbing and self-altering experiences ('absorption'), a trait related to hypnotic susceptibility. *Journal of Abnormal Psychology*, *83*, 268 – 277.

Thurnell-Read, T. & Parker, A. (2008). Men, masculinities and firefighting: Occupational identity, shop-floor culture and organizational change. *Emotion, Space and* Society, 1, 127 – 134.

Triandis, H. C. (1972). *The analysis of subjective culture.* New York: Wiley.

Triandis, H. C. (1977). *Interpersonal behavior.* Monterey, CA: Brooks/Cole.

United States Census Bureau (2011). *Statistical Abstract of the United States: 2011*. Retrieved March 2, 2011, from http://www.census.gov/compendia/statab/2011/tables/11s0226.pdf

United States Fire Administration. (n.d.). *USFA Firefighter Fatalities*. Retrieved November 8, 2008, from http://www.usfa.dhs.gov/fireservice/fatalities/index.shtm .

Vena, J. E. & Fiedler, R. C. (1987). Mortality of a municipal-worker cohort: IV. Fire fighters. *American Journal of Industrial Medicine, 11*: 671–684.

Vitz, P.C. (1990). The use of stories in moral development: New psychological reasons for an old educational method. *American Psychologist, 45*, 709-720.

Wallerstein, N., Bernstein, E. (1988). Empowerment education: Freire's ideas adapted to health education. *Health Education Quarterly, 15*, 379-394.

Wallerstein, N, & Weinger, M. (1992). Health and safety education for worker empowerment. *American Journal of Industrial Medicine, 22*, 619-635.

Wang, J., & Calder, B. J. (2006). Media transportation and advertising. *Journal of Consumer Research,* 33, 151–162.

Warren, I. D. (1969). The effect of credibility in sources of testimony on audience attitudes toward speaker and message. *Speech Monographs*, *36*, 456-458.

Watts, W., & McGuire, W. J. (1 964). Persistence of induced opinion change and retention of the inducing message contents. *Journal of Abnormal and Social Psychology*, 68, 233-241.

Wheeler, S.C., Green, M.C., & Brock, T.C. (1999). Fictional narratives change beliefs: Replications of Prentice, Gerrig, & Bailis (1997) with mixed corroboration. *Psychonomic Bulletin and Review*, 6, 136-141.

Whitehead, J. L., Jr. (1968). Factors of source credibility. *Quarterly Journal of Speech,* 54, 59-63.

Whittaker, J. O., & Meade, R. D. (1968). Retention of opinion change as a function of differential source credibility. International Journal of Psychology, 3, 103-108.

Wilson, E. J., & Sherrell, D. L. (1993). Source effects in communication and persuasion research: A meta-analysis of effect size. *Journal of the Academy of Marketing Science, 21*(2), 101-112.

Wilson, T. (1993). *Watching television*. Cambridge, England: Polity.

Wilson, B., Busselle R.W. (2004). Transportation into the narrative and perceptions of media realism, Paper to be presented at the Annual Conference of the International Communication Association, May, New Orleans.

Winterbottom, A., Bekker, H.L., Conner, M., Mooney, A. (2008). Does narrative information bias individual's decision making? A systematic review. *Social Science & Medicine*, 67, 2079-2088.

Wireless Intelligence. (2011.) Global database of mobile market information. Retrieved April 19, 2011 from: https://www.wirelessintelligence.com/Index.aspx?

Wollheim, R. (1974). Identification and imagination. In R. Wollheim (Ed.), *Freud: A collection of critical essays* (pp. 172–195). New York: Anchor: Doubleday.

Worchel, S., Andreoli, V., & Eason, J. (1975). Is the medium the message? A study of the effects of media, communicator, and message characteristics on attitude change. *Journal of Applied Social Psychology,* 5, 157-172.

Wyer, R.S., Adaval, R., & Colcombe, S.J. (2002). Narrative-based representations of social knowledge: Their construction and use in comprehension, memory, and judgment. In M.P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 131-197). New York: Academic Press.

Yarnal, C.M., Dowler, L., Hutchinson, S., 2004. Don't let the bastards see you sweat: masculinity, public and private space, and the volunteer firehouse. *Environment and Planning*, 36, 685–699.

Yaskowich, K.M., & Henderikus, J.S. (2003). Cancer narratives and the cancer support group. *Journal of Health Psychology, 8*, 720 – 738

Zaichkowsky, J.L. (1985). Measuring the involvement construct. *Journal of Consumer Research*, 12, 341-352.

Zillmann, D. (1988). Mood management: Using entertainment to full advantage. In L. Donohew, H.E. Sypher, & E.T. Higgins (Eds.), *Communication, social cognition, and affect* (pp. 147 -171). Hillside, NJ: Lawrence Erlbaum Associates.

Zillmann, D., & Bryant, J. (1994). Entertainment as media effect. In J. Bryant & D. Zillman (Eds.), *Media effects: Advances in theory and research* (pp. 437-462). Hillsdale, NJ: Erlbaum.

APPENDICES

Appendix 1: Focus Group Discussion Guide for Narrative Development

1. Why did you want to become a fire fighter?
    a. In your own view, what does it mean to be a fire fighter?

2. Please share with me any experiences you have had fighting fires and performing rescues.
    b. What is it like to fight a fire?
    c. Can any of you share a story of a really intense fire you had to fight?
    d. Have any of made a rescue? What was that like?

3. Please tell me about your training, in particular regarding health and occupational safety topics.
    e. What training or information have you received specifically about health and occupational safety issues?
    f. What would you change about the way you are trained?
    g. In your opinion, what type(s) of training on health and occupational safety topics is most effective ? What type of training do you get the most out of? What about your colleagues? What was the best training on health and safety like? If your colleagues complain about training, what do they complain about?

4. What safety issues concern you specifically about being a firefighter?
    h. What are some of the safety issues fire fighters have to worry about?
    i. What difficulties do you experience using your equipment?
    j. Is there equipment on the market that your battalion doesn't have that would provide you with more protection than the equipment you are currently using? Please explain.
    k. Are there things that other fire fighters do in emergency situations that worry you?
    l. If you were to ever see one of your colleagues acting in an unsafe manner what would you do?

5. Please tell me about firehouse life.
    m. What is a typical day like at the fire station?

6. How conducive is the environment at the fire station to staying fit and healthy?
    n. Do your colleagues encourage you be healthy? Eat right? Exercise?
    o. How are meals prepared? Are the meals that are prepared healthy? What is typically served? What are the portions like?
    p. How are people's diet restrictions dealt with?

q. What type of physical exercise do you and your colleagues engage in while at the fire station? What about outside of work?

7. Let's talk about health…
    r. What type of health issues to fire fighters typically have?
    s. What type of health issues will force a fire fighter to have to retire?
    t. What are some of the health problems that you personally worry about (not necessarily health problems you have, but are concerned about getting)?
    u. What are you doing to keep yourself safe and healthy? What do other fire fighters do?
    v. Now I'd like to talk specifically about heart disease. If I had never heard of "heart disease" before, how would you describe it to me? What is it?
    w. Now I'd like to talk specifically about <u>heart disease</u>. If I had never heard of "heart disease" before, how would you describe it to me? What is it?
    x. Now I'd like to talk specifically about <u>cancer</u>. If I had never heard of "cancer" before, how would you describe it to me? What is it?
    y. How is _____ related to fire fighting?
    z. Are you familiar with the word "carcinogen"? If I didn't know what that meant, how would you describe it to me? How many cancer-causing agents or carcinogens do you think there are in a typical fire situation?

8. Finally, let's talk about the information needs of fire fighters
    a. In general, do you have enough information to protect yourself and your colleagues from health and safety hazards on the job? If no, what kind of information do you need?
    b. What sources of information do you respect the most regarding health and safety issues?
    c. If you were putting together health messages, say brochures and public service type announcements for other fire fighters, what topics would you include? What messages would you want conveyed? What type of information should be included?
    d. Now, let's go a step further. If you could have any questions answered about a specific health or safety topic in this brochure or PSA, what questions would you want answered?

We've come to the end of our discussion. Do any of you have any additional comments you would like to make on the topics we have discussed?

Appendix 2: Focus Group Discussion Guide- Narrative Message Pretesting for Audio and Print Narratives

1. Please tell me what you thought overall of the information contained in the message.
   Is the message appropriate for fire fighters?
   What would you change about the message?

2. Are there language and terminology corrections that should be made to the messages?

3. Please comment on the quality of the brochure/ audio message.

   Audio: Does the audio message sound professionally produced?
   What do you think of the voice and tone of the narrator ?
   What do you think of the music and sound effects?

   Print: Does the brochure look professionally produced?
   What do you think of the layout of the brochure?
   What do you think about the images used in the brochure?

4. Is the message meaningful to you?
   Does the message contain valuable information?
5. What do you think other fire fighters will think of the message?
6. Do you identify with characters?
7. Is the message believable? Realistic?
8. Do you think that fire fighters could easily find themselves in the situation described in the message?
9. Is the message memorable? Do you think that people will remember it? If yes, why?
10. Does the narrator and/or characters exhibit trustworthiness? Expertise?
11. Do you think the source is credible? Reliable?
12. Were you mentally involved in the message while reading or listening to it?
    While your were listening/ reading the message could you easily picture the events in it taking place?
    Did your mind wander to other thoughts? If so what else were you thinking of?
    Could you picture yourself in the scene of the events described in the message?
    Did you find yourself thinking of ways the story could have turned out differently?
    Did the message make you think about your own practices?
13. Please tell me about any emotions you experienced while reading or listening to the message. (Probe: interest, enjoyment, surprise, distress, anger, disgust, contempt, fear, guilt).
14. Do you think the message was persuasive in any way? If yes how so?
15. Do you think your attitudes and beliefs regarding the topic of the message make you less, or more likely to be persuaded by messages like this?

Appendix 3: Four Narrative Messages used in the Main Study

Narrative 1 (Occupational Safety- 1st person)

Throughout my entire career I've worked in the busiest areas of the city, and every day I learn something new. The most powerful of lessons I learned happened to me when I was a Captain. This particular fire changed the way I work forever.

It was a sweltering day in July. At the time I was the Captain of Engine 27, housed with Truck 62 and the 22nd Battalion and charged with protecting a Southside area of the county.

We had just finished a light lunch after spending the morning cleaning the firehouse, truck, and equipment. We also managed to fit in a ladder-raising drill. In between, we responded to a few medical calls, but we hadn't smelled smoke yet that day. I sat at my desk on the apparatus floor, writing up some reports while the sun beat down on me through the window. Outside the temperature was well above 90 degrees, and inside it wasn't much cooler.

Then a call came in. One of our neighboring companies was dispatched over the fire radio: Engine 75, report to a rubbish fire on 506 River Road." A minute later an excited voice came across the radio: "Engine 75 to Clarke Mill- we've got a fire. Give us a full still at this location." I rang the bells, and we sprinted to the rigs.

As we pulled out of the firehouse, I turned to my crew. "We've got a hit. Engine 75 is already on the scene." From a mile and a half away we could see a thick black plume rising into the sky to the southeast. Engine 62 led the way through the mid-afternoon traffic, and we arrived within two minutes.

The fire was in a one-story bowstring truss battery factory. The building was about 200 feet wide by 125 deep, and a warehouse area to the left was fronted by three large overhead doors. To the right of those doors was an entry door that led to both, the offices on the right, and the warehouse on the left. Heavy black smoke was rising from the rear of the warehouse.

Engine75 already had led a line around the outside to the rear of the building. The intensity of the fire was growing rapidly, so we had no time to waste. I figured if we could open the overhead doors quickly, we could hit it from the front before the trusses would collapse.

Taking one of my senior men, Mike, with me, we headed for the front door. Other members helped the engine and vented windows from the outside. As we passed the Siamese connection for the sprinkler system, I whistled to the engineer of Engine 62 and pointed out the connection. This could save the office area.

Mike and I forced the front door, and we entered a dark hallway filled with light smoke. A door led to an office area to our right, and another door at the end of the hallway to our left led to the warehouse, I guessed. As Mike forced open the door to the warehouse, I heard the Chief on the radio, “Battalion 22 to Clarke Mill. Give me a box alarm.”

The door was no challenge to Mike, and within seconds it was open. Thick gray smoke started to pour into the hallway. Peering into the warehouse, I could see that the gray smoke was baked down to the floor, but there was not a lot of heat. I quickly closed the door so we could mask up and I could relay my plan to Mike: “I’ll lead. Left hand search gets us to the front, and we’ll find a way to open those overhead doors.” We quickly pulled up our boots and put on our masks. “Ready?”

“Let’s go,” Mike nodded, and I opened the door. He slid his bar in the hinge side and tore the door completely off. I set the door off to the side in the hallway. If the conditions were to get too bad, this building could collapse, and I wanted to be able to get out fast.

We slid into the warehouse, and I kept my left shoulder against the wall. Mike had a hand on my boot as we crawled toward the front. I could feel large tanks up against the wall. “Probably oxygen or acetylene,” I thought. We crawled over tools and pieces of steel, which stabbed at our knees as we passed. I felt a wheel to my right. A large truck was almost blocking our path, but we squeezed through. Slipping across the greasy floor, we made our way past the obstacles. The fire was getting worse, and thick black smoke now filled the large warehouse.

“Cap, where are you?” Mike’s voice was muffled inside his mask. “Right in front of you, Mike.” He grabbed my boot, and we pushed on. We encountered even more obstacles, and I still couldn’t see the door. That’s when I said, “I don’t like this Mike. Back out and we’ll open the doors from outside.”

As I was turning to follow Mike out of the building, I thought I saw the rail of the overhead door. Too late. I followed Mike back toward the hallway door.

Back outside, Mike went to the truck to get a saw to cut open the doors. I couldn’t shake the thought, “We were almost there. We should have been able to open it. I know I can get it. I’m going to try one more time.” I disappeared into the smoke by myself and turned left into the warehouse, hugging the wall, retracing my steps. I felt the tanks, the steel, the tools. “Good. I know where I am.”

When I squeezed through the tight space between the truck and the wall, I started to feel heat. The conditions were changing rapidly for the worse. The black smoke was much thicker, and it was moving fast. “This isn’t good,” I told myself, “It’s going to light up soon.” I weighed my odds for a split second and reaffirmed that I had to get out of there - and quickly!

Turning around, I started to slip on the greasy floor as I squeezed past the same obstacles as before. Again I felt the tanks. Good.

It was getting dark, and I couldn't see my hand in front of me. My mind raced. Is this light working? Where am I? Where's the wall? Where's the truck that was parked here? I reached in all directions and felt nothing. I swept out with my leg and still felt nothing.

Conditions were getting worse, and nobody even knew I was here. Reality was hitting me hard. I was lost in a truss building that could collapse at any second.

Moving forward suddenly, I felt something- a chair. I reached forward and felt a desk. Now I knew I was lost. How did I get over here? Somehow I must of crossed over into the office area on the right, and now I didn't have a clue which direction to go to take me out. Meanwhile, the conditions were getting worse by the second.

"Stay clam, Joe." I told myself. "Remain calm. You're okay. You still have air."

I stayed still and tried to get my bearings. How much air did I have left? I grabbed my chest gauge and shined my light on it. The smoke was so thick that I couldn't read it. There couldn't be much air left. I grabbed my radio: "Truck 27 to Battalion 22." No answer. My low-pressure alarm went off. That meant that I had only a few minutes of air left.

Was I on the right channel? I took off my glove and counted the clicks, knowing that four clicks meant I was on the fireground. I tried again: "Truck 27 to Battalion 22." Still no answer.

Now I was really scared, and the faces of my wife and two daughters appeared in the blackness. Could this be the end of the line for me? I've heard of people whose lives flashed before them when they were about to die, and now it was happening to me! I fought the urge to panic and tried to think logically. I held my light in front of my face piece, pointing straight up. I knew the smoke would move away from the fire, so I looked in that direction. With only seconds of air left, I had to stay low and go in that direction.

Suddenly with my chin to the floor, I saw a ray of sunshine, just a glimpse, pointing me in the right direction. "There it is- the way out!"

I dived out into the sunshine and breathed, "Thank you, Lord!" Throwing off my mask, I looked around. The other firefighters were busy working. Nobody even noticed I was missing! That was because the fire was winning and by now had progressed to a 2-11 alarm (third alarm). We still had a job to do, and I had no time to think about what had happened. I had to pick myself up and get back on the horse. With my company, we opened the building and set up for aerial pipe operations.

Over fifty firefighters were now on the scene. For more than two hours we battled the blaze in extremely hot conditions. Finally, we brought the fire under control and my company entered the

unstable remains of the structure to overhaul. As my company opened up sections of collapsed roof looking for small pockets of fire, I retraced my steps to see where I'd been.

One of the mistakes that almost cost me my life was momentarily taking my right hand off the wall on my way back to the hallway door. Leaving the wall for a second as I danced around pieces of scrap steel caused me to miss the door and continue toward the rear of the warehouse. The confusion was magnified when I felt the desk and chair. This caused me to believe that somehow I had crossed the hall into the office section, and now I was totally turned around.

As it turned out, the desk belonged to a warehouse foreman, and I was still in the warehouse only 15 feet past the doorway. My biggest mistake was going in alone, and not letting anybody know I was there. What saved my life was that I resisted the urge to panic. I stayed low, read the direction of the smoke, and moved in the opposite direction.

When the overhauling was completed, we picked up what seemed to be a mile of hose, as well as our tools and equipment. Finally, it was time to head back. Our tired, dehydrated crew staggered back to the truck. The short ride back to quarters was the first chance I had to reflect on what had just happened. I didn't mention it to anyone that day. I guess I was embarrassed that a Captain with twenty-three years on the job almost died fifteen feet from the doorway.

The next workday the Deputy District Chief summoned all the companies that had worked the 2-11 to our firehouse for a critique. After going over the tactics that were used and a few "atta-boys," the Chief asked if anybody had anything to add. There was the usual ribbing of fire company versus fire company, each one bragging that they had saved the day.

The whole time I was sitting there debating to myself, "Should I say anything? Should I admit I messed up? That's a hard thing to do, but I don't want another firefighter to make the same mistake. Maybe next time the ending won't be the same." I cleared my throat and began.

When I told my story, the place got quiet. Later, some of the young firefighters came up to me and said that if it could happen to me, it could happen to them. My story had hit home. Sharing our lessons learned when we make mistake is a way of making our job safer. I learned some valuable lessons at that fire, and I won't get complacent again, not in this job. Even if we do everything right, the unexpected is just around the corner. We have a responsibility to share our experiences with other firefighters.

Narrative 2 (Occupational Safety- 3rd person)

Throughout my entire career I've worked in the busiest areas of the city, and every day I learn something new. One of the most powerful lessons I learned happened to a firefighter on my crew when I was a Captain. This particular fire changed the way me and my crew worked forever.

It was a sweltering day in July. At the time I was the Captain of Engine 27, housed with Truck 62 and the 22nd Battalion and charged with protecting a Southside area of the county.

We had just finished a light lunch after spending the morning cleaning the firehouse, truck, and equipment. We also managed to fit in a ladder-raising drill. In between, we responded to a few medical calls, but we hadn't smelled smoke yet that day. I sat at my desk on the apparatus floor, writing up some reports while the sun beat down on me through the window. Outside the temperature was well above 90 degrees, and inside it wasn't much cooler.

Then a call came in. One of our neighboring companies was dispatched over the fire radio: Engine 75, report to a rubbish fire on 506 River Road." A minute later an excited voice came across the radio: "Engine 75 to Clarke Mill- we've got a fire. Give us a full still at this location." I rang the bells, and we sprinted to the rigs.

As we pulled out of the firehouse, I turned to my crew. "We've got a hit. Engine 75 is already on the scene." From a mile and a half away we could see a thick black plume rising into the sky to the southeast. Engine 62 led the way through the mid-afternoon traffic, and we arrived within two minutes.

The fire was in a one-story bowstring truss battery factory. The building was about 200 feet wide by 125 deep, and a warehouse area to the left was fronted by three large overhead doors. To the right of those doors was an entry door that led to both, the offices on the right, and the warehouse on the left. Heavy black smoke was rising from the rear of the warehouse.

Engine75 already had led a line around the outside to the rear of the building. The intensity of the fire was growing rapidly, so we had no time to waste. I figured if we could open the overhead doors quickly, we could hit it from the front before the trusses would collapse.

I ordered one of my senior men, Mike, to take the probie, Dave inside to see if they could get the warehouse doors open while me and the other members of my crew helped the engine and vented windows from the outside.

Mike's a good fireman. At the time he had 17 years in the Fire Service and I knew I could count on him to break the new guy in and show him the ropes.

It wasn't until the next workday when the Deputy District Chief summoned all the companies that had worked the fire (which ended up being a 2-11 also known as a third alarm fire) to our firehouse for a critique that I found out how close we came to losing Mike at that fire.

During the critique I couldn't help but notice that Mike and Dave who were sitting together looked really uncomfortable. I don't know… their behavior struck me as being odd. Dave had his head down most of the time and Mike kept squirming in his seat. Sure enough, after going over the tactics that were used and a few "atta-boys," the Chief asked if anybody had anything to add. There was the usual ribbing of fire company versus fire company, each one bragging that they had saved the day. And then out of nowhere Mike cleared his throat and began telling what happened to him on the fireground the day before.

When he started telling his story, the place got real quiet.

Mike said he and Dave forced the front door, and entered a dark hallway filled with light smoke. Just as Mike forced open the door at the end of the hallway that lead to the warehouse, he heard the Chief on the radio saying, "Battalion 22 to Clarke Mill. Give me a box alarm."

Mike said as soon as they got the door open thick gray smoke started to pour into the hallway. Peering into the warehouse, he said all he could see was that the gray smoke was baked down to the floor, but there was not a lot of heat so he quickly closed the door so he and Dave could mask up and go over the plan. Mike told Dave he was going to take the lead and do a left hand search to get them to the front, and then they would find a way to open those overhead doors.

Mike said "Let's go," and Dave nodded, and then Mike opened the door. Mike and Dave slid into the warehouse. Mike kept is left shoulder against the wall. Mike said Dave had a hand on his boot as they crawled toward the front. They could feel large tanks up against the wall. They crawled over tools and pieces of steel, which stabbed at their knees as they passed. Mike said he felt a wheel to his right that belonged to a large truck that was almost blocking their path, but they managed to squeeze through. Mike said the floor was real greasy and they slipped a few times as they made their way past the obstacles. By this time the fire was getting worse, and thick black smoke now filled the large warehouse.

It was at this point that Dave called out to Mike and asked him where he was. Mike's voice was muffled inside his mask. "Right in front of you, Dave" Mike said. Dave grabbed Mikes boot, and they pushed on. They encountered even more obstacles, and still couldn't see the door. That's when Mike said, "I don't like this Dave. Back out and we'll open the doors from outside."

As they were turning to get out of the building, Mike thought he saw the rail of the overhead door. "Too late" he thought to himself.

Back outside, Mike told Dave to go to the truck and get a saw to cut open the doors. He looked back at the front door and couldn't shake the thought that they were almost there- that they

should have been able to get to the overhead door and open it. That's when it happened- a bad decision-Mike decided to go back in by himself and give it one more try.

He went back into the warehouse, hugging the wall, retracing his steps. He felt the tanks, the steel, the tools.

When he squeezed through the tight space between the truck and the wall, he said he started to feel heat. The conditions were changing rapidly for the worse. The black smoke was much thicker, and it was moving fast. "This isn't good," Mike thought to himself. "It's going to light up soon." Mike weighed his odds for a split second and reaffirmed that he had to get out of there - and quickly!

Turning around, he started to slip on the greasy floor as he squeezed past the same obstacles as before. Again he felt the tanks.

It was getting dark, and he couldn't see his hand in front of him. His mind was racing. "Is this light working? Where am I? Where's the wall? Where's the truck that was parked here?" He reached in all directions and felt nothing. He swept out with his leg and still felt nothing.

Conditions were getting worse, and nobody even knew he was in there. Reality was hitting him hard. He was lost in a truss building that could collapse at any second.

He kept moving forward and started feeling things he had not encountered previously. Now he knew he was lost. He thought that somehow he must have crossed over into some other room, and now he didn't have a clue which direction to go to get out of there. Meanwhile, the conditions were getting worse by the second.

He remembers telling himself to stay clam- that he still had air.

He stayed still and tried to get his bearings. He started to wonder how much air he actually did have left in his tank and he grabbed his chest gauge and shined his light on it. The smoke was so thick that he couldn't read it. Then his low-pressure alarm went off. That meant that he had only a few minutes of air left.

Mike grabbed his radio: "Truck 27 to Battalion 22." No answer.

Mike wondered if he was on the right channel. He took off his glove and counted the clicks, knowing that four clicks meant he was on the fireground. He tried again: "Truck 27 to Battalion 22." Still no answer.

Now he was really scared, and the faces of his wife and two daughters appeared in the blackness. He thought to himself, could this be the end of the line for me? He had heard of people whose lives flashed before them when they were about to die, and now it was happening to him! He fought the urge to panic and tried to think logically. He held his light in front of his face piece,

pointing straight up. He knew the smoke would move away from the fire, so he looked in that direction. With only seconds of air left, he had to stay low and go in that direction.

Suddenly with his chin to the floor, he saw a ray of sunshine, just a glimpse, pointing him in the right direction. "There it is- the way out!" he exclaimed.

He dived out into the sunshine and breathed. Then throwing off his mask, he looked around. The other firefighters were busy working. Nobody even noticed he was missing! That was because the fire was winning and by now had progressed to a 2-11 alarm. There was still a job to do, and he had no time to think about what had just happened. Mike joined our company, and we opened the building and set up for aerial pipe operations. Thinking back now, that was the first time I had heard or seen him since we had arrived. I should have been more on top of his whereabouts.

Over fifty firefighters were on the scene by that time and we battled the blaze for another two hours. Finally, we brought the fire under control and my company entered the unstable remains of the structure to overhaul. Mike said that when our company opened up sections of collapsed roof looking for small pockets of fire, he retraced his steps to see where he'd been.

He admitted that one of the mistakes that almost cost him his life was momentarily taking his right hand off the wall on his way back out. Leaving the wall for a second as he danced around pieces of scrap steel caused him to miss the door and continue toward the rear of the warehouse. The confusion was magnified when he started bumping into unfamiliar items. This had caused him to believe that somehow he had crossed the hall into another section, and he got totally turned around.

His biggest mistake was going in alone, and not letting anybody know he was there. What saved his life was that he resisted the urge to panic. He stayed low, read the direction of the smoke, and moved in the opposite direction.

Mike said he didn't even have a chance to think about what had happened to him until the ride back to quarters. He never mentioned it to anyone that day. He said he was completely embarrassed as a firefighter with seventeen years on the job almost dying about fifteen feet from a doorway.

After Mike was done telling his story some of the young firefighters said that if it could happen to him, it could happen to them. His story had hit home.

Latter when I was talking to him he admitted that telling that story was one of the hardest things he ever did, but he didn't want another firefighter to make the same mistake. Maybe next time the ending wouldn't be the same.

Sharing our lessons learned when we make mistake is a way of making our job safer. Listening to Mike that day I think we all learned some valuable lessons. We can't allow ourselves to get complacent, not in this job. Even if we do everything right, the unexpected is just around the

corner. We love taking risks as firefighters. That is what attracts a lot of us to this job. But sometimes we don't realize the seriousness of some of our actions. We have a responsibility to share our experiences with other firefighters.

Narrative 3 (Health 1st person)

"Ring, Ring, Ring." The house bell pierced the silence in the bunkroom at 1:30 a.m., just as I was starting to fall asleep on one of my first shifts as probie. "Thank goodness," I thought, as I pulled the blankets over my head. "It's for the engine company, not us." Our rescue squad had already been to three fires during the shift, and I was still wet and dirty from the last one. The overhead door opened for the engine company, and the night air filled the bunkroom. Feeling the cool air on my face and smelling the diesel fumes I settled deeper into the blankets, muttering, "Better them than us."

A few minutes later the speaker crackled, "Squad 2, start into the still alarm fire at 2814 Oak St…" (first alarm), and the bunkroom came to life. "Back to the University of the Hallways" I thought to myself.

"Ring, Ring, Ring, Ring." Four bells were ringing as we ran to the squad. The adrenalin rush quickly brought our tired crew to life. We took great pride in our quick pushouts, and within seconds our squad, with its crew of six, were headed toward the fire. The engine company (one engine and one truck) had responded to an automatic alarm, found heavy fire conditions in the back of an old abandoned eight story apartment building, and escalated the incident to a full still alarm (two engines, two trucks, squad, and battalion chief). There were reports of homeless people possibly being trapped inside on the upper floors.

The excitement of going into a high-rise fire is unparalleled. Mostly, I think it comes from the unknown. You can't see anything until you get to the floor, so you don't know what's waiting for you. These fires are always challenging because of the number of potential victims, the large area to search, and the large areas for the fire to spread. Also, ventilation is at a premium. We can't open a roof like we can in a house, and we usually can't take out a window, so the superheated smoke quickly banks to the floor. Without ventilation, we really feel the heat from the fire and also from the steam created by applying water to the fire. These fires are always extremely hot and extremely challenging.

From the street we could see large puffs of dark grey smoke. As our squad started up the stairs, I was wearing all of my protective gear plus I was carrying rescue gear. Trying to make it up the smoky stairway, this wise guy Dave on our squad says, "Did you know this stuff is bad for your health?" The joke was meant to keep our minds off the ugly reality we knew was possibly waiting for us at the top of the stairs.

When we reached the fourth floor, one of the guys on the crew, Rick, couldn't go any farther without resting. He was only thirty-one at the time but was a bit heavy and out of shape. Some of the guys started razzing him about being voted "Most Likely to Have a Heart Attack on Scene" just a week earlier. Our officer knowing that time was too critical put a quick stop to the joking and asked Rick if he wanted to go back outside but he said, "No, I'll be okay, I just need to catch my breath." Then our officer ordered me- the new guy- to take Rick's gear and we continued up.

The additional gear was like the proverbial straw that broke the camel's back. By the time we reached the eighth floor, sweat was pouring off my body and my heart was pounding out my chest. As soon as we got there, I dropped the equipment on the landing and grabbed the hand railing to catch my breath.

"What are you doing? My officer asked, and without waiting for a response, added, "Now it's time to go to work."

He was right, in our job if you're not dead, you're okay so I grabbed the gear and continued on.

We crept up on the first door we found and Dave pushed in on it. Surprisingly it was unlocked but he encountered resistance. Something was blocking the door. It was an unmistakable feel. "We've got someone!" he yelled. Our captain ordered another guy from our crew, Steve, to help Dave and the rest of us crawled down the hall.

The conditions were getting worse by the second. The smoke was so thick I couldn't see my hand in front of my face. That's when Rick asked our officer if he could be excused, that he was not feeling well. You could tell from his voice that he was in trouble. Our officer ordered one of the other guys to accompany Rick outside and stay there with him waiting for further instructions.

Meanwhile Dave and Steve were trying to pull the victim they had found, a now-unconscious man, around a half-open door.

My officer and I continued down the hall and came across the next door. This one was locked and we had to force it open. We quickly swept the rooms of the apartment with our hands while we crawled around.

Then I felt it! Even to a gloved hand, a human body as an unmistakable feeling to it. People don't feel like furniture or pillows. When we find a body, we know it.

I yelled, "I got one- a women!" He was at my side in seconds.

Long story short we were able to get both victims out of the building. The women made it but the man later died at the hospital we found out.

I don't know how I made it through that fire- on pure adrenalin, I imagine. When we returned to the fire station, my heart was still pounding.

Later that week we got called to a fire in another high-rise, only this time we had to walk up the stairs to the twenty-eighth floor carrying equipment; we all were huffing and puffing on that call. I wanted to vomit at about the eighteenth floor but I held it in. Two days later we were called to a big magnesium fire where we shoveled sand and salt for about two hours solid. Adrenalin can

take a person only so far.

When I started on the squad I thought I was in good shape. Before I entered the fire service I was a competitive bodybuilder. I was as big as a house and felt strong as an ox. People would tell me that I looked like I was made for this job, and I started to believe them. I kept lifting heavy and eating heavy. Cardio workouts were unheard of for me. When I graduated from the Fire Academy I felt invincible.

That first week on the job made me realize the importance of physical fitness- and I don't mean just looking good. There are "show muscles" (muscles that make a person look good, and there are "go muscles" (muscles that affect job performance). I had show muscles already, but I needed some go muscles. After my first week of actual service I knew that physical conditioning is essential to be effective on this job.

When you think about it, professional athletes wake up at certain time on game day, eat a prescribed pre-game meal, stretch and warm up before the competition, and hit the field prepared. By contrast, firefighters jump out of bed at 2:00 a.m., hop on the rig, and two minutes later are running up stairs and crashing doors. This puts a tremendous strain on the heart.

The very nature of our job dictates that we go from zero to 60 in six seconds. The most common cause of death on the fireground is cardiac arrest, and the most common injury is to the lower back. Physical fitness will help prevent these outcomes.

I used the same drive and determination that made me a good bodybuilder to become a fit firefighter. I studied the needs of firefighting and tailored my workouts to meet those needs. the lower back. Fitness will help prevent these outcomes.

However, throwing a few lengths of hose around at drill does not come close to the effort put forth on a real job. Weighted down with over 50 pounds of thermal protective gear, breathing from an air tank, dragging a high pressure hose line through super heated, dense, black smoke and removing ceilings and walls is what you can really expect.

I decided to start cardio workouts. Just as luck would have at the time I lived on the top floor of a six story apartment building with stairs just outside my door. Climbing stairs gives me a superb workout, and an emotional boost besides. Even though I have a one story ranch house now I still run stairs as part of my exercise routine. Sometimes I even time myself to see how fast I can run up them.

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six-story apartment building with stairs just outside my door. Climbing stairs gives me a superb workout, and an emotional boost besides. Even though I have a one story ranch house now I still run stairs as part of my exercise routine. Sometimes I even time myself to see how fast I can run up them.

I also mix calisthenics with a weightlifting routine which has improved my flexibility and stamina. Once I started doing this I immediately noticed an improvement in my firefighting abilities.

Remember Rick the firefighter who couldn't run to the eighth floor carrying some gear and asked to be excused from duty? Since then he and I have run four 26-mile marathons and a 31-mile ultra-marathons over rough terrain together.

After that apartment fire I befriended the guy and we became workout buddies. You have to remember back in those days working out was not exactly a cool thing to do so it was nice to have someone who was supportive.

Now I have peer fitness trainer certification and currently in addition to my firefighter duties in the field I'm part of the Fire Department's Wellness Committee. A few years back I started designing exercises that specifically meet the needs of firefighters, and my colleagues seem to really appreciate them.

At work, we support and trust each other, and we don't want to let our company down. Over the years I have encouraged all the members of this department to watch their diets and start an exercise program.

Of course, some firefighters that still struggle with their workouts.

I tell them that ninety-nine percent of a successful exercise routine is mental, and the mind wants to quit long before the body has to stop. Mental toughness helps push us through these barriers. This same mental toughness will later help push those firefighters down dangerous hallways.

I also preach "predictable is preventable." The job of a firefighter is physically demanding, and physical conditioning can save your life. Year-round physical conditioning is an essential preventive measure- it is the key to preventing serious complications during stress.

In the Fire Service we take pride in everything we do, and having an active, healthy lifestyle plays a big role. We should strive to be the best we can be. That includes becoming as physically fit as possible. I used to train to look good, now I train to do a good job. Let me just say, if you choose fire service you lose the right to be unfit, it's just that simple.

On another note, our lives are not our own - we share them with a lot of other people. Keep yourself physically fit and be sure to get regular checkups from your doctor. Ask that you get screened for signs of coronary artery disease, high blood pressure, high blood cholesterol, and

diabetes. Firefighting is one of the most stressful and dangerous jobs in America. We owe it to ourselves, our families and our fellow firefighters to be in the best physical condition possible.

One of my proudest moments actually came last week when I beat every guy in the company on a fitness test challenge, especially since I'm twice as old as some of the guys! If I can do it, other firefighters can too!

Narrative 4 (Health 3rd person)

Throughout my career I have met a lot of great firefighters who have inspired me. This is a story about one of those firefighters, Darryl, who served on my crew when I was a Captain of a rescue squad in a busy part of town. I don't think I've ever met somebody with as much drive and determination as him. Over the years his efforts to be the best firefighter he can be has inspired many other firefighters to do just the same.

When Darryl started on the squad he thought he was in good shape. Before he entered the fire service he was a competitive bodybuilder. He was as big as a house and felt strong as an ox. People would tell him that he looked like he was made for this job, and he started to believe them. He kept lifting heavy and eating heavy. Cardio workouts were unheard of for him. He recently told me that when he graduated from the Fire Academy he felt invincible. I guess a lot of firefighters do.

Anyway, Darryl learned quickly about the importance of physical fitness- and I don't mean just looking good. There are "show muscles" (muscles that make a person look good, and there are "go muscles" (muscles that affect job performance). Darryl had show muscles already, but he needed some go muscles. He learned this the hard way on this job at the "University of the Hallways" as I call it.

Just the other day in fact we were reminiscing about this one particular fire where it became apparent that Darryl was in bad need of some cardio conditioning.

It was about 1:30 in the morning when the house bell pierced the silence of the bunkroom. "Ring, Ring, Ring." We were all just starting to fall asleep after a busy day. "Thank goodness," I thought, as I pulled the blankets over my head. "It's for the engine company, not us." Our Rescue Squad had already been to three fires during the shift, and I was still wet and dirty from the last one. The overhead door opened for the engine company, and the night air filled the bunkroom. Feeling the cool air and smelling the diesel fumes I settled deeper into the blankets, muttering "Better them than us."

A few minutes later the speaker crackled, "Squad 2, start into the still alarm fire at 2814 Oak St…" (first alarm), and the bunkroom came to life.

"Ring, Ring, Ring, Ring." Four bells were ringing as we ran to the squad. The adrenalin rush quickly brought our tired crew to life. We took great pride in our quick pushouts, and within seconds the squad, with its crew of six, was headed toward the fire. The engine company (one engine and one truck) had responded to an automatic alarm, found heavy fire conditions in the back of an old abandoned eight story apartment building, and escalated the incident to a full still alarm (two engines, two trucks, squad, and battalion chief). There were reports of homeless people possibly being trapped inside on the upper floors.

The excitement of going into a high-rise fire is unparalleled. Mostly, I think it comes from the unknown. You can't see anything until you get to the floor, so you don't know what's waiting for you. These fires are always challenging because of the number of potential victims, the large area to search, and the large areas for the fire to spread. Also, ventilation is at a premium. We can't open a roof like we can in a house, and we usually can't take out a window, so the superheated smoke quickly banks to the floor. Without ventilation, we really feel the heat from the fire and from the steam created by applying water to the fire. These fires are always extremely hot and extremely challenging.

From the street we could see large puffs of dark grey smoke. Our squad started up the stairs wearing all of our protective gear plus carrying rescue equipment.

I remember as we were trying to make it up the smoky stairway, this wise guy Dave on our squad says, "Did you know this stuff is bad for your health?" The joke was meant to keep your minds off the ugly reality we knew was possibly waiting for us at the top of the stairs.

When we reached the fourth floor, one of the guys on the crew, Rick, couldn't go any farther without resting. He was only thirty-one at the time but was a bit heavy and out of shape. Some of the guys started razzing him about being voted "Most Likely to Have a Heart Attack on Scene" just a week earlier.

But I knew that time was too critical and quickly put a stop to the joking. I asked Rick if he wanted to go back outside but he said "No, I'll be okay, I just need to catch my breath." Then I ordered Darryl- the new guy- to take Rick's gear and we continued up.

The additional gear was like the proverbial straw that broke the camel's back. By the time we reached the eighth floor, sweat was pouring off Darryl's body and he was breathing heavy. As soon as we got to the eighth floor landing, he dropped the equipment and grabbed the hand-railing to catch his breath.

"What are you doing? I asked, and without waiting for a response, added, "Now it's time to go to work. In our job if you're not dead, you're okay." Darryl just shrugged and grabbed the gear and we continued on.

We crept up on the first door we found and Dave pushed in on it. Surprisingly it was unlocked but he encountered resistance. Something was blocking the door. It was an unmistakable feel. "We've got someone!" he yelled. I ordered another guy from our crew, Steve, to help Dave and the rest of us crept down the hall.

The conditions were getting worse by the second. The smoke was now so thick I couldn't see my hand in front of my face. That's when Rick asked me if he could be excused, that he was not feeling well. You could tell from his voice that he was in trouble. So I ordered one of the other guys to accompany Rick outside and stay there with him until he heard back from me.

Meanwhile Dave and Steve were trying to pull the victim they had found, a now-unconscious man, around a half-open door.

Me and Darryl continued down the hall and came across the next door. This one was locked and we had to force it open. We quickly swept the rooms of the apartment with our hands while we crawled around.

Then I felt it! Even to a gloved hand, a human body as an unmistakable feeling to it. People don't feel like furniture or pillows. When we find a body, we know it.

I yelled, "I got one! A women!" Darryl was at my side in seconds.

Long story short we were able to get both victims out of the building. The women made it but the man later died at the hospital we heard.

Darryl said he didn't know how he made it through that fire- on pure adrenalin, he imagined. He said when we returned to the fire station, his heart was still pounding but he was too embarrassed to say anything to anyone.

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When you think about it, professional athletes wake up at certain time on game day, eat a prescribed pre-game meal, stretch and warm up before the competition, and hit the field prepared. By contrast, firefighters jump out of bed at 2:00 a.m., hop on the rig, and two minutes later are running up stairs and crashing doors. This puts a tremendous strain on the heart.

Darryl used the same drive and determination that made him a good bodybuilder to become a fit firefighter. He studied the needs of a firefighting and tailored his workouts to meet those needs. The very nature of our job dictates that we go from zero to 60 in six seconds. The most common cause of death on the fireground is cardiac arrest, and the most common injury is to the lower back. Fitness will help prevent these outcomes.

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Very soon into the job Darryl decided what he really needed was cardio workouts. Just as luck would have at the time he lived on the top floor of a six-story apartment building with stairs just outside his door. Climbing stairs is a superb workout, and an emotional boost besides. Darryl says that sometimes he times himself to see how fast he can run up them.

He also mixes calisthenics with a weightlifting routine which has improved his flexibility and stamina he reports. He said once he started doing this he immediately noticed an improvement in his firefighting abilities.

Remember Rick the firefighter who couldn't run to the eighth floor carrying some equipment and asked to be excused from duty? Since then Darryl has been working out with him and they have run four 26-mile marathons and a 31-mile ultra-marathons over rough terrain together. You can bet he can make it to the top of an eight-story building now without stopping.

A few years back Darryl started designing exercises that specifically meet the needs of firefighters and then he received peer fitness trainer certification. Currently in addition to his firefighter duties in the field he is part of the Fire Department's Wellness Committee.

At work, we support and trust each other, and we don't want to let our company down. Over the years I to have encouraged all the members of this department to watch their diets and start an exercise program as well.

Of course, some firefighters still struggle with their workouts.

Darryl tells me that ninety-nine percent of a successful exercise routine is mental, and the mind wants to quit long before the body has to stop. Mental toughness helps push us through these barriers. This same mental toughness will later help push those firefighters down dangerous hallways.

Darryl also preaches "predictable is preventable." The job of a firefighter is physically demanding, and physical conditioning can save your life. Year-round physical conditioning is an essential preventive measure- it is the key to preventing serious complications during stress.

In the Fire Service we take pride in everything we do, and having an active, healthy lifestyle plays a big role. We should strive to be the best we can be. That includes becoming as physically fit as possible. Darryl used to train to look good, and now he trains to do a good job.

Let me just say, if you choose fire service you lose the right to be unfit, it's just that simple.

On another note, our lives are not our own - we share them with a lot of other people. Keep yourself physically fit and be sure to get regular checkups from your doctor. Ask that you get screened for signs of coronary artery disease, high blood pressure, high blood cholesterol, and diabetes. Firefighting is one of the most stressful and dangerous jobs in America. We owe it to ourselves, our families and our fellow firefighters to be in the best physical condition possible.

If Rick and Darryl can do it, other firefighters can too!

Appendix 4: Screen Shots of Print copy of Fist Person Occupational Safety Narrative

Sharing Experiences

VOLUME I, ISSUE I JULY 2009

Working in pairs

Throughout my entire career I've worked in the busiest areas of the city, and every day I learn something new. The most powerful of lessons I learned happened to me when I was a Captain a number of years ago. This particular fire changed the way I work forever.

It was a sweltering Sunday in July. At the time I was the Captain of Truck 27, housed with Engine 62 and the 22nd Battalion and charged with protecting a Southside area of the county.

We had just finished a light lunch after spending the morning cleaning the firehouse, truck, and equipment. We also managed to fit in a ladder-raising drill. In between, we responded to a few medical calls, but we hadn't smelled smoke yet that day. I sat at my desk on the apparatus floor, writing up some reports while the sun beat down on me through the window. Outside the temperature was well above 90 degrees, and inside it wasn't much cooler.

Then a call came in. One of our neighboring companies was dispatched over the fire radio: "Engine 75, report to a possible fire on 506 River Road." A minute later an excited voice came across the radio: "Engine 75 to Clarke Mill- we've got a fire. Give us a full alarm at this location."

As we pulled out of the firehouse, I turned to my crew. "We've got a working fire. Engine 75 is already on the scene." From a mile and a half away we could see a thick black plume rising into the sky to the southeast. Engine 62 led the way through the mid-afternoon traffic, and we arrived within two minutes.

The fire was in a one-story bowstring truss battery factory. The building was about 200 feet wide by 125 deep, and a warehouse area to the left was fronted by three large overhead doors. To the right of those doors was an entry door that led to both, the offices on the right, and the warehouse on the left. Heavy black smoke was rising from the rear of the warehouse.

Battalion Chief Joe Cater
29 years in the Fire Service

Engine75 already had led a line around the outside to the rear of the building. The intensity of the fire was growing rapidly, so we had no time to waste. I figured if we could open the overhead doors quickly, we could hit it from the front before the trusses would collapse.

Taking one of my senior men, Mike, with me, we headed for the front door. Other members helped the engine and vented windows from the outside. As we passed the Siamese connection for the sprinkler system, I whistled to the engineer of Engine 62 and pointed out the connection. This could save the office area.

Mike and I forced the front door, and we entered a dark hallway filled with light smoke. A door led to an office area to our right, and another door at the end of the hallway to our left led to the warehouse, I guessed. As Mike forced open the door to the warehouse, I heard the Chief on the radio, "Battalion 22 to Clarke Mill. Give me a box alarm."

The door was no challenge to Mike, and within seconds it was open. Thick gray smoke started to pour into the hallway. Peering into the warehouse, I could see that the gray smoke was banked down to the floor, but there was not a lot of heat. I quickly closed the door so I could relay my plan to Mike: "I'll lead. Left hand search gets us to the front, and we'll find a way to open those overhead doors. Ready?"

I said, "Let's go!" and Mike nodded. Then Mike slid his bar in the hinge side and tore the door completely off. I set the door off to the side in the hallway. If the conditions got too bad, this building could collapse, and I wanted to be able to get out fast.

Firefighters on the scene of the battery factory fire.

> "Conditions were getting worse, and nobody even knew I was here."

We slid into the warehouse, and I kept my left shoulder against the wall. Mike had a hand on my boot as we crawled toward the front. I could feel large tanks up against the wall. "Probably oxygen or acetylene," I thought. We crawled over tools and pieces of steel, which stabbed at our knees as we passed. I felt a wheel to my right. A large truck was almost blocking our path, but we squeezed through. Slipping across the greasy floor, we made our way past the obstacles. The fire was getting worse, and thick black smoke now filled the large warehouse.

"Cap, where are you?" Mike's voice was muffled inside his mask. "Right in front of you, Mike." He grabbed my boot, and we pushed on. We encountered even more obstacles, and I still couldn't see the door. That's when I said, "I don't like this Mike. Back out and we'll open the doors from outside."

As I was turning to follow Mike out of the building, I thought I saw the rail of the overhead door. Too late. I followed Mike back toward the hallway door.

Back outside, Mike went to the truck to get a saw to cut open the doors. I couldn't shake the thought, "We were almost there. We should have been able to open it. I know I can get it and it won't take but a second. I'm going to try one more time."

I disappeared into the smoke by myself and turned left into the warehouse, hugging the wall, retracing my steps. I felt the tanks, the steel, the tools. "Good. I know where I am."

When I squeezed through the tight space between the truck and the wall, I started to feel heat. The conditions were changing rapidly for the worse. The black smoke was much thicker, and it was moving fast. "This isn't good," I told myself, "It's going to light up soon." I weighed my odds for a split second and reaffirmed that I had to get out of there - and quickly!

Turning around, I started to slip on the greasy floor as I squeezed past the same obstacles as before. Again I felt the tanks. Good.

It was getting dark, and I couldn't see my hand in front of me. My mind raced. Is this light working? Where am I? Where's the wall? Where's the truck that was parked here? I reached in all directions and felt nothing. I swept out with my leg and still felt nothing.

Conditions were getting worse, and nobody even knew I was here. Reality was hitting me hard. I was lost in a truss building that could collapse at any second.

Moving forward suddenly, I felt something- a chair. I reached forward and felt a desk. Now I knew I was lost. How did I get over here? Somehow I must of crossed over into the office area on the right, and now I didn't have a clue which direction to go to take me out. Meanwhile, the conditions were getting worse by the second.

"Stay clam, Joe." I told myself. "Remain calm. You're okay. You still have air."

I stayed still and tried to get my bearings. How much air did I have left? I grabbed my chest gauge and shined my light on it. The smoke was so thick that I couldn't read it. There couldn't be much air left. I grabbed my radio: "Truck 27 to Battalion 22." No answer. My low-pressure alarm went off. That meant that I had only a few minutes of air left.

Was I on the right channel? I took off my glove and counted the clicks, knowing that four clicks meant I was on the fireground. I tried again: "Truck 27 to Battalion 22." Still no answer.

Now I was really scared, and the faces of my wife and two daughters appeared in the blackness. Could this be the end of the line for me? I've heard of people whose lives flashed before them when they were about to die, and now it was happening to me! I fought the urge to panic and tried to think logically. I held my light in front of my face piece, pointing straight up. I knew the smoke would move away from the fire, so I looked in that direction. With only seconds of air left, I had to stay low and go in that direction.

Working in Pairs

Suddenly with my chin to the floor, I saw a ray of sunshine, just a glimpse, pointing me in the right direction. "There it is- the way out!"

I dived out into the sunshine and breathed, "Thank you, Lord!" Throwing off my mask, I looked around. The other firefighters were busy working. Nobody even noticed I was missing! That was because the fire was winning and by now had progressed to a third alarm fire. We still had a job to do, and I had no time to think about what had happened. I had to pick myself up and get back on the horse. With my company, we opened the building from the outside and set up for aerial pipe operations.

Over fifty firefighters were now on the scene. For more than two hours we battled the blaze in extremely hot conditions. Finally, we brought the fire under control and my company entered the unstable remains of the structure to overhaul. As my company opened up sections of collapsed roof looking for small pockets of fire, I retraced my steps to see where I'd been.

One of the mistakes that almost cost me my life was momentarily taking my right hand off the wall on my way back to the hallway door. Leaving the wall for a second as I danced around pieces of scrap steel caused me to miss the door and continue toward the rear of the warehouse. The confusion was magnified when I felt the desk and chair. This caused me to believe that somehow I had crossed the hall into the office section, and now I was totally turned around.

As it turned out, the desk belonged to a warehouse foreman, and I was still in the warehouse only 15 feet past the doorway. My biggest mistake of course was going in alone, and not letting anybody know I was there. What saved my life was that I resisted the urge to panic. I stayed low, read the direction of the smoke, and moved in the opposite direction.

When the overhauling was completed, we picked up what seemed to be a mile of hose, as well as our tools and equipment. Finally, it was time to head back. Our tired, dehydrated crew staggered back to the truck. The short ride back to quarters was the first chance I had to reflect on what had just happened. I didn't mention it to anyone that day. I was completely embarrassed that a Captain with twenty-three years on the job almost died fifteen feet from the doorway.

The next workday the Deputy District Chief summoned all the companies that had worked the 3 alarm battery factory fire to our firehouse for a critique. After going over the tactics that were used and a few "atta-boys," the Chief asked if anybody had anything to add. There was the usual ribbing of fire company versus fire company, each one bragging that they had saved the day.

The whole time I was sitting there debating to myself, "Should I say anything? Should I admit I messed up? That's a really hard thing to do- I know I would never hear the end of it, but I didn't want another firefighter to make the same mistake. Maybe next time the ending won't be the same." I cleared my throat and began.

> ***"Should I say anything? Should I admit I messed up?"***

When I told my story, the place got quiet. Some of the guys were staring at me in utter disbelief but I could tell some of them understood- that some of them were thinking about the time they made a dumb decision. My story had hit home.

Sharing our lessons learned when we make mistake is a way of making our job safer. I learned some extremely valuable lessons at that fire, and I won't get complacent again, not in this job. Even if we do everything right, the unexpected is just around the corner. We have a responsibility to share our experiences with other firefighters.

Firefighters on the scene of the battery factory fire.

Appendix 5: Pre-measure Questionnaire

Comparing narrative approaches: Features that enhance transportation and message effectiveness

Conducted by

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Please fill out this questionnaire at one sitting. The information you provide will be anonymous. Do NOT put your name on any of the materials (except for the consent form). No identifying information will be entered into a database along with the data. You need not answer any questions you do not want to answer.

Please refrain from talking to your colleagues during the following exercises.

Please circle the response that best describes your answer to the following statements.

Does your Department have a wellness program? (*circle one*)

YES NO I don't know

I participate in my department's wellness program. (*circle one*)

YES NO

I engage in cardiovascular exercise for at least one hour. (*circle one*)

Never Rarely 1-2 times per week 5-6 times per week Everyday

Do you know a colleague who has been injured at an emergency scene? (*circle one*)

Yes No

Do you know a colleague who has been fatally injured at an emergency scene? (*circle one*)

Yes No

Do you know a colleague who has died at an emergency scene? (*circle one*)

Yes No

I always let my officer know where I am and what I am doing on the fireground. (*circle one*)

Yes No

I tell other firefighters about the mistakes I have made as a firefighter. (*circle one*)

Yes No

Please circle the response that best describes your answer to the following statements and questions.

Physical conditioning is important to me.

Not at all 1 2 3 4 5 6 7 Extremely

Maintaining a proper diet is important to me.

Not at all 1 2 3 4 5 6 7 Extremely

I am a good role model for other firefighters.

Not at all 1 2 3 4 5 6 7 Extremely

How much do you know about fire service occupational safety?

Very little 1 2 3 4 5 6 7 A great deal

How much do you know compared to most of your colleagues about occupational safety?

A great deal less 1 2 3 4 5 6 7 A great deal more

Can you identify unsafe occupational practices?

Not at all 1 2 3 4 5 6 7 Extremely

How familiar are you with corrective actions to take to make an emergency scene safer?

Not at all 1 2 3 4 5 6 7 Extremely

Please continue answering the questions on the next page.

Please circle the response that best describes your answer to the following statements.

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
Firefighters must be physically fit.	1	2	3	4	5	6	7
Failure to be observant when working at an emergency scene is the cause for most accidents.	1	2	3	4	5	6	7
Verbal communication with your partner is important in zero visibility.	1	2	3	4	5	6	7
It is important to stay with your assigned partner at all times on the fireground.	1	2	3	4	5	6	7
Training leads to professionalism.	1	2	3	4	5	6	7
Some mistakes can turn out to be learning experiences.	1	2	3	4	5	6	7

Please continue answering the questions on the next page.

Please circle the response that best describes your level of agreement to the following statements.

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
I intend to get into better shape.	1	2	3	4	5	6	7
I intend to follow my department's regulations regarding exercise.	1	2	3	4	5	6	7
I intend to be a good role model to other firefighters.	1	2	3	4	5	6	7
I intend to pay close attention to the instructor during trainings.	1	2	3	4	5	6	7
I intend to follow my department's operating procedures on the fireground completely at every fire.	1	2	3	4	5	6	7

You are almost finished.

Please circle the response that best describes your level of agreement to the following statements.

In your daily life, how often do you…	Rarely or never	Hardly ever	Sometimes	Often	Very often
	1	2	3	4	5
Feel like what you're doing or watching is interesting	1	2	3	4	5
Feel so interested in what you're doing, you are caught up in it	1	2	3	4	5
Feel alert, curious, kind of excited about something	1	2	3	4	5
Feel happy	1	2	3	4	5
Feel joyful, like everything is going your way, everything is rosy	1	2	3	4	5
Feel surprised, like when something suddenly happens you had no idea would happen	1	2	3	4	5
Feel amazed, like you can't believe what's happened, it was so unusual	1	2	3	4	5
Feel anxious	1	2	3	4	5
Feel unhappy, blue, downhearted	1	2	3	4	5
Feel sad and gloomy, almost like crying	1	2	3	4	5
Feel discouraged, like you can't make it, nothing is going right	1	2	3	4	5

In your daily life, how often do you…	Rarely or never	Hardly ever	Sometimes	Often	Very often
	1	2	3	4	5
Feel like screaming at somebody or banging on something	1	2	3	4	5
Feel angry, irritated, annoyed	1	2	3	4	5
Feel mad at somebody	1	2	3	4	5
Feel like something stinks, puts a bad taste in your mouth	1	2	3	4	5
Feel disgusted, like something is sickening	1	2	3	4	5
Feel like things are so rotten they could make you sick	1	2	3	4	5
Feel like somebody is a low-life, not worth the time of day	1	2	3	4	5
Feel like somebody is a “good-for-nothing”	1	2	3	4	5
eel like you are better than somebody	1	2	3	4	5
Feel scared, uneasy, like something might harm you	1	2	3	4	5
Feel fearful, like you’re in danger, very tense	1	2	3	4	5
Feel afraid, shaky, and jittery	1	2	3	4	5
Feel regret, sorry about something you did	1	2	3	4	5
Feel like you did something wrong	1	2	3	4	5
Feel like you ought to be blamed for something	1	2	3	4	5

In your daily life, how often do you…	Rarely or never	Hardly ever	Sometimes	Often	Very often
	1	2	3	4	5
Feel embarrassed when anybody sees you make a mistake	1	2	3	4	5
Feel like people laugh at you	1	2	3	4	5
Feel like people always look at you when anything goes wrong	1	2	3	4	5
Feel sheepish, like you do not want to be seen	1	2	3	4	5
Feel shy, like you want to hide	1	2	3	4	5
Feel bashful, embarrassed	1	2	3	4	5
Feel you can't stand yourself	1	2	3	4	5
Feel mad at yourself	1	2	3	4	5
Feel sick about yourself	1	2	3	4	5

How many years have you been a firefighter? _____

What year were you born? _____

What is the highest academic degree you have earned? _____

When was the last time you attended a health or occupational safety training course?

_____

STOP

I appreciate your time and effort.

Please turn in this questionnaire.

Now please read or listen to the message that has been provided to you.

After you are finished reading or listening to the message, please fill out the last questionnaire.

Appendix 6: Second Questionnaire for the Health Narrative Message

Comparing narrative approaches: Features that enhance transportation and message effectiveness

Conducted by

Lenette Golding, MPH
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University of Georgia
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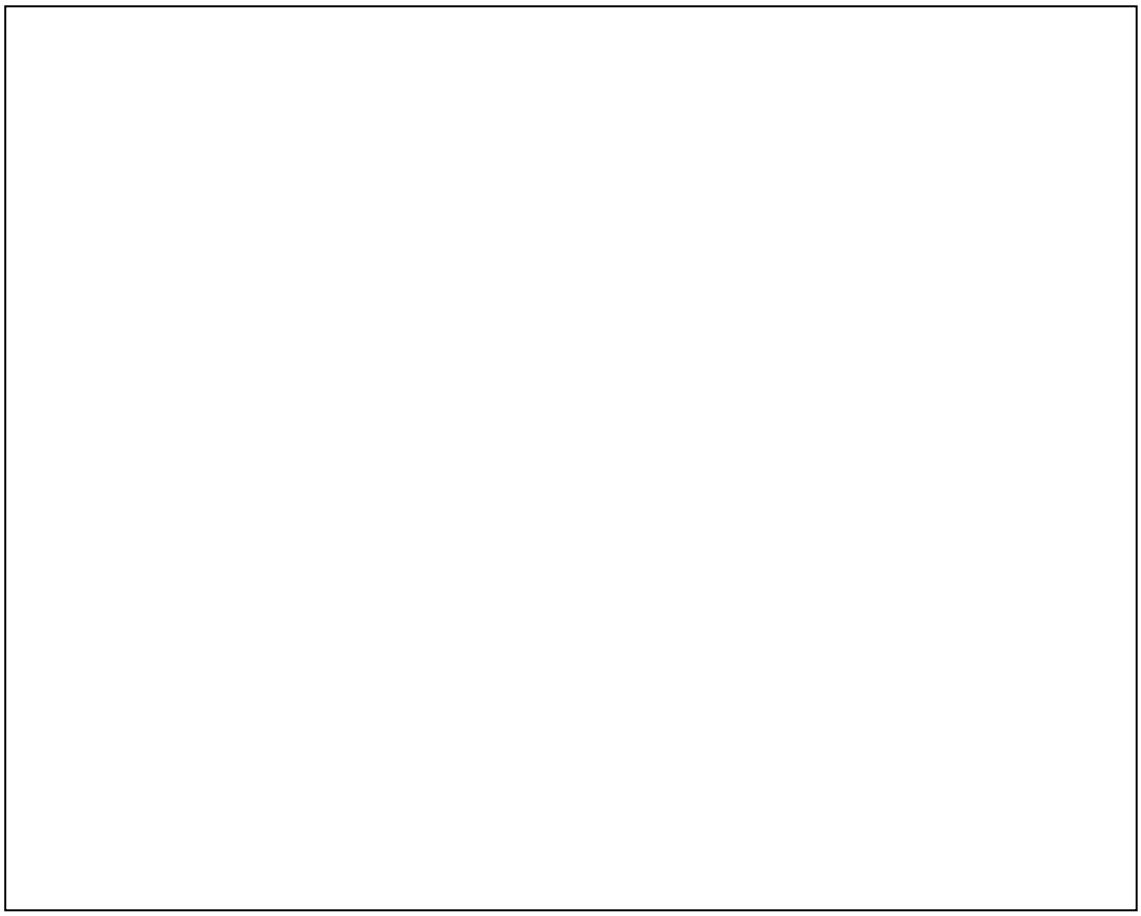
Karen King, PhD (Investigator)
Grady College of Journalism and Mass Communication
University of Georgia
kwking@uga.edu

Please fill out this questionnaire at one sitting. Do NOT refer back to the message you just read or listened to. The information you provide will be anonymous. Do NOT put your name on any of the materials (other than the consent form). No identifying information will be entered into a database along with the data. You need not answer any questions you do not want to answer.

Please write down all the thoughts and feelings that went through your mind when you read or listened to the message. List these thoughts, whether they were about yourself, the character(s) in the message, and/or the message itself; whether they were positive, neutral, and/or negative. Any case is fine. Do not worry about spelling or grammar. More space has been provided than you might need to ensure that you have plenty of room for your answer. Please be completely honest. Your responses will be anonymous.



Now go back and place a plus (+), minus (-), or neutral (0) sign in front of the thoughts and feelings listed on the previous page to indicate whether each thought or feeling was a positive (+), negative (-), or neutral (0) reaction to the message.

Example:

I think the firefighter in the message learned a valuable lesson. +

This message made me anxious. –

The firefighter in this message is average. 0

What is the main idea of the message you read or listened to?

Please list any of images that popped in your head when reading/ listening to this message.

Please circle the number that best indicates how much you felt the following emotions while reading or listening to the message.

	Not at all		Moderately		Extremely
	1	2	3	4	5
Interest	1	2	3	4	5
Enjoyment	1	2	3	4	5
Surprise	1	2	3	4	5
Sadness	1	2	3	4	5
Anger	1	2	3	4	5
Disgust	1	2	3	4	5
Contempt	1	2	3	4	5
Fear	1	2	3	4	5
Guilt	1	2	3	4	5
Shame	1	2	3	4	5
Shyness	1	2	3	4	5
Hostility Inward	1	2	3	4	5

Please proceed to the next section.

Please circle the number indicating how you felt about the message you just read or listened to.

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
The message is convincing.	1	2	3	4	5	6	7
This message would be helpful in influencing firefighters to comply with their department's regulations and standards.	1	2	3	4	5	6	7
This message makes me feel confident that I can practice behaviors that comply with my department's fitness regulations and standards.	1	2	3	4	5	6	7
This message is effective.	1	2	3	4	5	6	7
This message is not believable.	1	2	3	4	5	6	7
This message is realistic.	1	2	3	4	5	6	7
This message makes me think about my own behaviors.	1	2	3	4	5	6	7
This message is credible.	1	2	3	4	5	6	7
I liked this message.	1	2	3	4	5	6	7
The narrator of this message is a reliable source.	1	2	3	4	5	6	7
My colleagues need to read this message.	1	2	3	4	5	6	7

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
This message is not very persuasive.	1	2	3	4	5	6	7
This message is boring.	1	2	3	4	5	6	7
This message contains valuable information.	1	2	3	4	5	6	7
This message is not compelling.	1	2	3	4	5	6	7
This message didn't tell me anything new.	1	2	3	4	5	6	7
This message is thorough.	1	2	3	4	5	6	7
More people like me should receive this message.	1	2	3	4	5	6	7
This message is appropriate.	1	2	3	4	5	6	7

Who is this message about?

_____

Place an X on <u>one</u> of the seven lines between each pair to indicate your feeling about the person who the action happens to in this message.

Dependable	__	__	__	__	__	__	__	Undependable
Honest	__	__	__	__	__	__	__	Dishonest
Reliable	__	__	__	__	__	__	__	Unreliable
Sincere	__	__	__	__	__	__	__	Insincere
Trustworthy	__	__	__	__	__	__	__	Untrustworthy

Expert	__	__	__	__	__	__	__	Not an expert
Experienced	__	__	__	__	__	__	__	Inexperienced
Knowledgeable	__	__	__	__	__	__	__	Unknowledgeable
Qualified	__	__	__	__	__	__	__	Unqualified
Skilled	__	__	__	__	__	__	__	Unskilled

Thank you for taking the time to complete this questionnaire.

Please circle the number that best describes what the message was like.

The message was:

Like a story	1	2	3	4	5	6	7	Like a report

Circle <u>one</u> of the seven numbers between each pair to indicate your feeling about the person who the message is about.

Doesn't think like me	1	2	3	4	5	6	7	Thinks like me
Behaves like me	1	2	3	4	5	6	7	Doesn't behave like me
Similar to me	1	2	3	4	5	6	7	Different from me
Unlike me	1	2	3	4	5	6	7	Like me
Status like mine	1	2	3	4	5	6	7	Status different from mine
Background different from mine	1	2	3	4	5	6	7	Background similar to mine
Morals unlike mine	1	2	3	4	5	6	7	Morals like mine
Shares my values	1	2	3	4	5	6	7	Doesn't share my values
Treats people like I do	1	2	3	4	5	6	7	Doesn't treat people like I do

You are almost finished.

Please circle the number indicating how you felt about the message you just read or listened to.

	Not at all						Very much
	1	2	3	4	5	6	7
While I was reading/ listening to the message, I could easily picture the events in it taking place.	1	2	3	4	5	6	7
While I was reading/ listening to the message, activity going on in the room around me was on my mind.	1	2	3	4	5	6	7
I could picture myself in the scene of the events described in the message.	1	2	3	4	5	6	7
I was mentally involved in the message while reading it.	1	2	3	4	5	6	7
After finishing the message, I found it easy to put it out of my mind.	1	2	3	4	5	6	7
I wanted to learn how the message ended.	1	2	3	4	5	6	7
The message affected me emotionally.	1	2	3	4	5	6	7
I found myself thinking of ways the message could have turned out differently.	1	2	3	4	5	6	7

	Not at all 1	2	3	4	5	6	Very much 7
I found my mind wandering while reading the message.	1	2	3	4	5	6	7
The events in the message are relevant to my everyday life.	1	2	3	4	5	6	7
The events in the message have changed my life.	1	2	3	4	5	6	7

Please proceed to the next section.

Please circle the number indicating your general attitudes about physical fitness.

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
Firefighters should recognize the signs and symptoms of personal medical emergencies.	1	2	3	4	5	6	7
Firefighters should know the appropriate course of action to take during an emergency.	1	2	3	4	5	6	7
I am responsible for my own well-being.	1	2	3	4	5	6	7
Most cardiovascular health issues are predictable and preventable.	1	2	3	4	5	6	7
Firefighters should participate in their fire department's fitness and wellness programs.	1	2	3	4	5	6	7
Firefighters should be more realistic about what they are able to do rather than act like they are indestructible.	1	2	3	4	5	6	7
All firefighters should recognize that physical conditioning is important to fighting fire.	1	2	3	4	5	6	7
It is not important to workout on my days off.	1	2	3	4	5	6	7

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
All fire departments should have mandatory physical fitness-wellness programs.	1	2	3	4	5	6	7

Please proceed to the next section.

Please circle the number indicating your future fitness practices.

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
I intend to stay informed of job-related health issues.	1	2	3	4	5	6	7
I am going to make an effort to do what the message urged me to do.	1	2	3	4	5	6	7
I intend to change my lifestyle to improve my overall health.	1	2	3	4	5	6	7
I plan to act in ways that are compatible with the position promoted by the message.	1	2	3	4	5	6	7
I do not intend to worry about my fitness level.	1	2	3	4	5	6	7
I intend to behave in ways that are consistent with the message.	1	2	3	4	5	6	7
I intend to make a positive effort to encourage other firefighters to stay in top physical fitness.	1	2	3	4	5	6	7
I intend to incorporate cardiovascular exercise into my weekly routine.	1	2	3	4	5	6	7
I intend to learn from others' mistakes.	1	2	3	4	5	6	7

STOP

You are finished. Please read the debriefing statement.

Thank you so much for participating in our research.

Appendix 7: Second Questionnaire for Occupational Safety Narrative Message Used in the Main Study

Comparing narrative approaches: Features that enhance transportation and message effectiveness

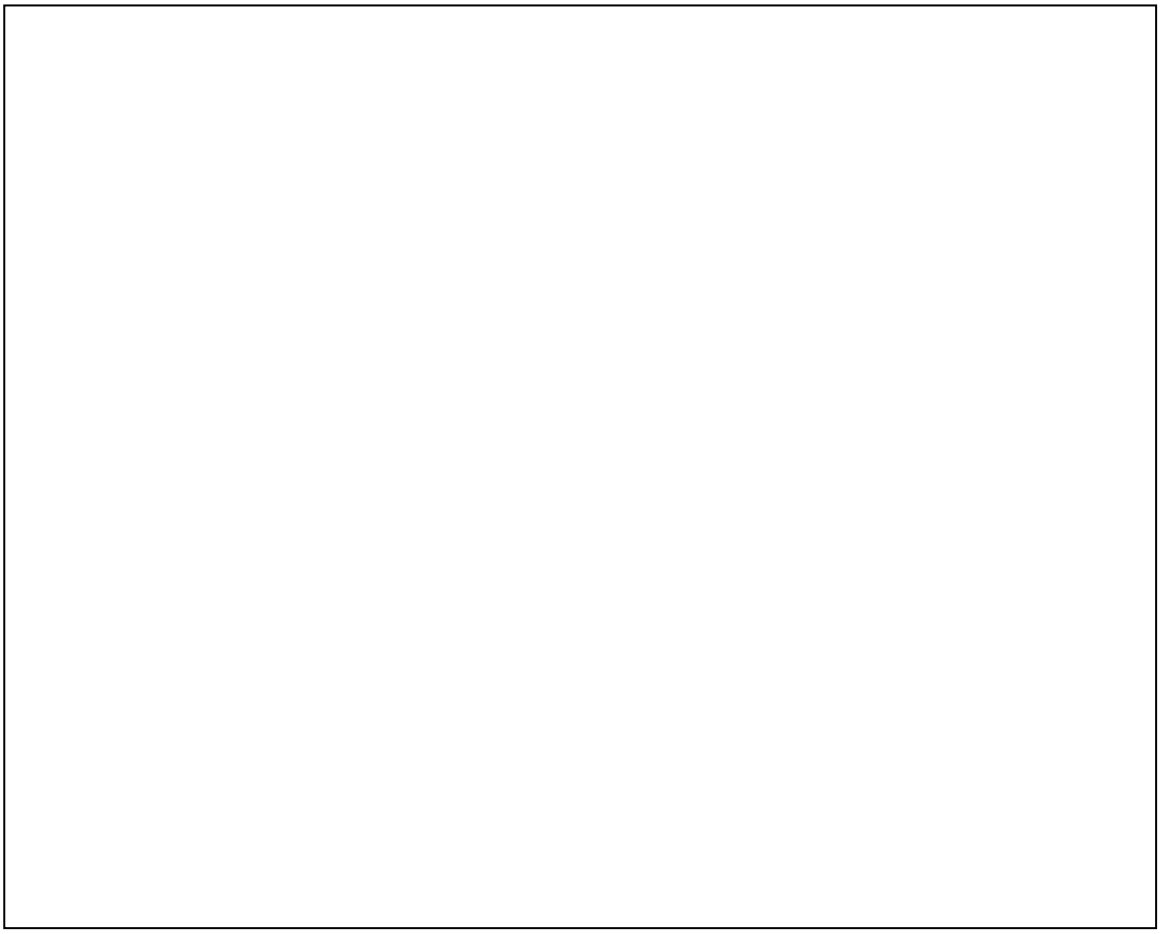
Conducted by

Lenette Golding, MPH
Grady College of Journalism and Mass Communication
University of Georgia
lenetteg@uga.edu

Karen King, PhD (Investigator)
Grady College of Journalism and Mass Communication
University of Georgia
kwking@uga.edu

Please fill out this questionnaire at one sitting. Do NOT refer back to the message you just read or listened to. The information you provide will be anonymous. Do NOT put your name on any of the materials (other than the consent form). No identifying information will be entered into a database along with the data. You need not answer any questions you do not want to answer.

Please write down all the thoughts and feelings that went through your mind when you read or listened to the message. List these thoughts, whether they were about yourself, the character(s) in the message, and/or the message itself; whether they were positive, neutral, and/or negative. Any case is fine. Do not worry about spelling or grammar. More space has been provided than you might need to ensure that you have plenty of room for your answer. Please be completely honest. Your responses will be anonymous.



Now go back and place a plus (+), minus (-), or neutral (0) sign in font of each of the thoughts and feelings listed on the previous page to indicate whether

each thought or feeling was a positive (+), negative (-), or neutral (0) reaction to the message.

Example:

I think the firefighter in the message learned a valuable lesson. +

This message made me anxious. –

The firefighter in this message is average. 0

What is the main idea of the message you read or listened to?

Please list any of images that popped in your head when reading/ listening to this message.

Please circle the number that best indicates how much you felt the following emotions while reading or listening to the message.

	Not at all		Moderately		Extremely
	1	2	3	4	5
Interest	1	2	3	4	5
Enjoyment	1	2	3	4	5
Surprise	1	2	3	4	5
Sadness	1	2	3	4	5
Anger	1	2	3	4	5
Disgust	1	2	3	4	5
Contempt	1	2	3	4	5
Fear	1	2	3	4	5
Guilt	1	2	3	4	5
Shame	1	2	3	4	5
Shyness	1	2	3	4	5
Hostility Inward	1	2	3	4	5

Please proceed to the next section.

Please circle the number indicating how you felt about the message you just read or listened to.

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
The message is convincing.	1	2	3	4	5	6	7
This message would be helpful in influencing firefighters to comply with their department's regulations and standards.	1	2	3	4	5	6	7
This message makes me feel confident that I can practice behaviors that comply with my department's regulations and standards.	1	2	3	4	5	6	7
This message is effective.	1	2	3	4	5	6	7
This message is not believable.	1	2	3	4	5	6	7
This message is realistic.	1	2	3	4	5	6	7
This message makes me think about my own behaviors.	1	2	3	4	5	6	7
This message is credible.	1	2	3	4	5	6	7
I liked this message.	1	2	3	4	5	6	7
The narrator of this message is a reliable source.	1	2	3	4	5	6	7

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
My colleagues need to read/ listen this message.	1	2	3	4	5	6	7
This message is not very persuasive.	1	2	3	4	5	6	7
This message is boring.	1	2	3	4	5	6	7
This message contains valuable information.	1	2	3	4	5	6	7
This message is not compelling.	1	2	3	4	5	6	7
This message didn't tell me anything new.	1	2	3	4	5	6	7
This message is thorough.	1	2	3	4	5	6	7
More people like me should receive this message.	1	2	3	4	5	6	7
This message is appropriate.	1	2	3	4	5	6	7

Who is this message about?

_____

Place an X on <u>one</u> of the seven lines between each pair to indicate your feeling about the person who the action happens to in this message.

Dependable	__	__	__	__	__	__	__	Undependable
Honest	__	__	__	__	__	__	__	Dishonest
Reliable	__	__	__	__	__	__	__	Unreliable
Sincere	__	__	__	__	__	__	__	Insincere
Trustworthy	__	__	__	__	__	__	__	Untrustworthy

Expert	__	__	__	__	__	__	__	Not an expert
Experienced	__	__	__	__	__	__	__	Inexperienced
Knowledgeable	__	__	__	__	__	__	__	Unknowledgeable
Qualified	__	__	__	__	__	__	__	Unqualified
Skilled	__	__	__	__	__	__	__	Unskilled

Thank you for taking the time to complete this questionnaire.

Please circle the number that best describes what the message was like.

The message was:

Like a story	1	2	3	4	5	6	7	Like a report

Circle <u>one</u> of the seven numbers between each pair to indicate your feeling about the person who the message is about.

Doesn't think like me	1	2	3	4	5	6	7	Thinks like me
Behaves like me	1	2	3	4	5	6	7	Doesn't behave like me
Similar to me	1	2	3	4	5	6	7	Different from me
Unlike me	1	2	3	4	5	6	7	Like me
Status like mine	1	2	3	4	5	6	7	Status different from mine
Background different from mine	1	2	3	4	5	6	7	Background similar to mine
Morals unlike mine	1	2	3	4	5	6	7	Morals like mine
Shares my values	1	2	3	4	5	6	7	Doesn't share my values
Treats people like I do	1	2	3	4	5	6	7	Doesn't treat people like I do

You are almost finished.

Please circle the number indicating how you felt about the message you just read or listened to.

	Not at all						Very much
	1	2	3	4	5	6	7
While I was reading/ listening to the message, I could easily picture the events in it taking place.	1	2	3	4	5	6	7
While I was reading/ listening to the message, activity going on in the room around me was on my mind.	1	2	3	4	5	6	7
I could picture myself in the scene of the events described in the message.	1	2	3	4	5	6	7
I was mentally involved in the message while reading it.	1	2	3	4	5	6	7
After finishing the message, I found it easy to put it out of my mind.	1	2	3	4	5	6	7
I wanted to learn how the message ended.	1	2	3	4	5	6	7
The message affected me emotionally.	1	2	3	4	5	6	7
I found myself thinking of ways the message could have turned out differently.	1	2	3	4	5	6	7

	Not at all 1	2	3	4	5	6	Very much 7
I found my mind wandering while reading the message.	1	2	3	4	5	6	7
The events in the message are relevant to my everyday life.	1	2	3	4	5	6	7
The events in the message have changed my life.	1	2	3	4	5	6	7

Please proceed to the next section.

Please circle the number indicating your general attitudes about occupational safety issues.

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
Firefighters should recognize that an emergency scene does not have to be an unsafe environment.	1	2	3	4	5	6	7
I am responsible for the safety of my colleagues.	1	2	3	4	5	6	7
Most accidents are predictable and preventable.	1	2	3	4	5	6	7
Firefighters should be more realistic about what they are able to do	1	2	3	4	5	6	7
Firefighters should not act like they are indestructible.	1	2	3	4	5	6	7
All firefighters should work within the established accountability system at all times.	1	2	3	4	5	6	7
Firefighters should just accept that accidents are an occupational hazard.	1	2	3	4	5	6	7
All firefighters should follow standard operating procedures no matter what.	1	2	3	4	5	6	7

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
Firefighters should fight fire aggressively but provide for safety first.	1	2	3	4	5	6	7

Please proceed to the next section.

Please circle the number indicating your future occupational safety practices.

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
I intend to freelance (work on my own) on the fireground when necessary to get the job done.	1	2	3	4	5	6	7
I am going to make an effort to do what the message urged me to do.	1	2	3	4	5	6	7
If I see that my colleagues are not following proper safety rules, regulations and standards I will say something to them.	1	2	3	4	5	6	7
I plan to act in ways that are compatible with the position promoted by the message.	1	2	3	4	5	6	7
I intend to stay informed of job-related health and safety issues.	1	2	3	4	5	6	7
I intend to behave in ways that are consistent with the message.	1	2	3	4	5	6	7
I intend to make a positive effort to encourage other firefighters to stay in verbal communication with their partners at all times.	1	2	3	4	5	6	7

	Strongly disagree 1	Disagree 2	Moderately disagree 3	Neither agree nor disagree 4	Moderately agree 5	Agree 6	Strongly agree 7
I intend to never lower my guard on the fireground.	1	2	3	4	5	6	7
I intend to learn from others' mistakes.	1	2	3	4	5	6	7

STOP

You are finished. Please read the debriefing statement.

Thank you so much for participating in our research.

Appendix 8- Extra Tables and Figures

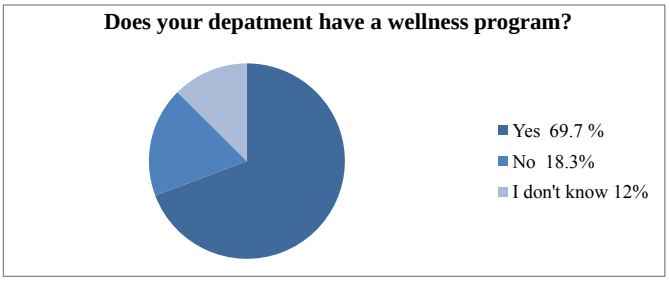


Figure A.1 Response to question on pre-measure questionnaire, "Does your department have a wellness program?"

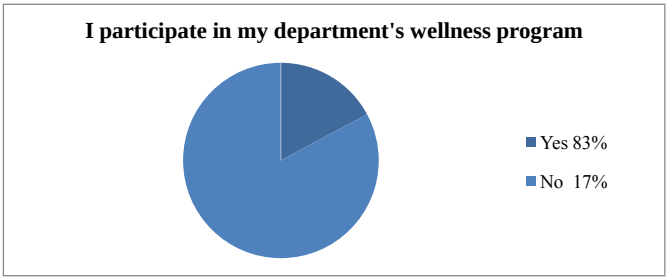


Figure A.2 Response to question on pre-measure questionnaire, "I participate in my department's wellness program."

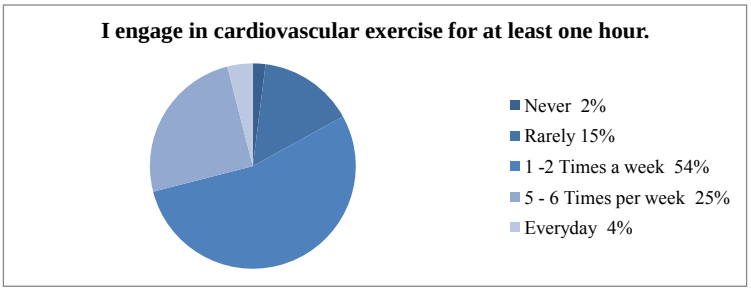


Figure A.3 Response to question on pre-measure questionnaire, “I engage in cardiovascular exercise at least one hour.”

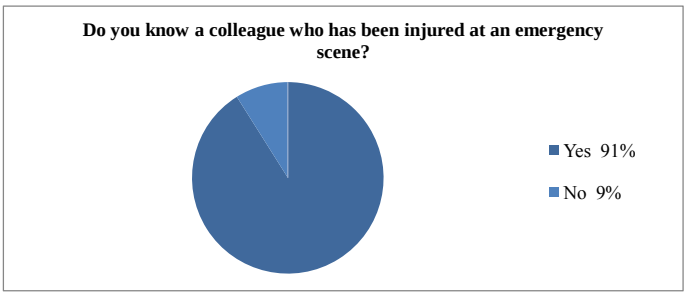


Figure A.4 Response to question on pre-measure questionnaire, “Do you know a colleague who has been injured at an emergency scene?”

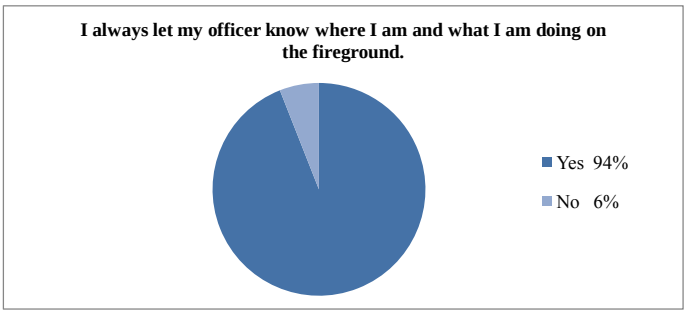


Figure A.5 Response to question on pre-measure questionnaire, "I always let my officer know where I am and what I am doing on the fireground."

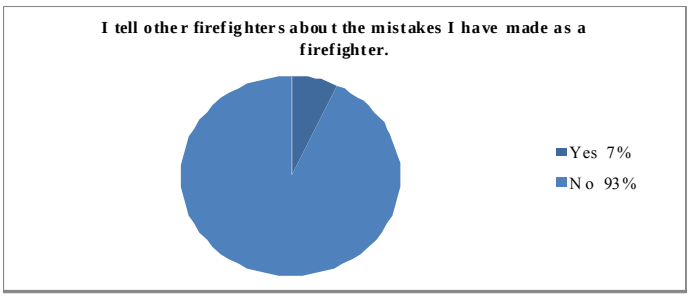


Figure A.6 Response to question on pre-measure questionnaire, "I tell other firefighters about the mistakes I have made as a firefighter"

Table A.1

Mean Scores and Standard Deviations for Beliefs, Attitudes and Intention to Behave Pre-measures

Measure	M	SD
Belief Measure		
Physical conditioning is important to me.	6.02	1.11
Maintaining a proper diet is important to me.	5.50	1.21
I am a good role model for other firefighters.	5.53	1.25
Attitude Measure		
Firefighters must be physically fit.	6.52	.70
Failure to be observant when working at an emergency scene is the cause for most accidents.	5.90	1.10
Verbal communication with your partner is important in zero visibility.	6.76	.75
It is important to stay with your assigned partner at all times on the fireground.	6.66	.69
Training leads to professionalism.	6.92	.97
Some mistakes can turn out to be learning experiences.	6.57	.76
Intention to Behave Measure		
I intend to get into better shape.	6.15	.93
I intend to follow my department's regulations regarding exercise.	5.57	1.21
I intend to be a good role model to other firefighters.	6.18	.86
I intend to pay close attention to the instructor during trainings.	6.36	.76
I intend to follow my department's operating procedures on the fireground completely at every fire.	6.31	.88

Notes. Belief item mean scores reflect the following response choices: Not at all 1 2 3 4 5 6 7 Extremely. Attitude and intention to behave item mean scores reflect the following response choices: 1 = Strongly disagree, 2 = Disagree, 3 = Moderately disagree, 4 = Neither agree nor disagree, 5 = Moderately agree, 6 = Agree, 7 = strongly agree.

Table A.2

Sum of Marginals Between Coders for Scott's Pi for Health Narrative Message (N = 232)

Category	Marginal totals for researcher	Marginal totals for RA1	Sum of marginals
NT	147	140	287
NNT	9	8	17
NLT	439	437	876
NET	9	9	18
PET	21	22	43
ST	117	133	250
SUM	28	21	49
Totals	770	770	1540

Table A.3

Sum of Marginals Between Coders for Scott's Pi for Occupational Safety Narrative Message (N = 232)

Category	Marginal totals for researcher	Marginal totals for RA1	Sum of marginals
NT	208	192	400
NNT	1	1	2
NLT	361	377	738
NET	56	55	111
PET	53	50	103
ST	174	180	354
SUM	23	21	44
Totals	876	876	1752

Table A.4

Kopfman et al. (1998) Scale Factors Descriptive Statistics

			Factor Loadings			
Item	M	SD	1	Communalities	% of Variance	Eigenvalue
Credible	5.96	1.02	**.78**	.61	54.68	2.73
Thorough	5.43	1.22	**.75**	.56	13.45	.67
Reliable	5.52	1.16	**.69**	.48	12.31	.62
Appropriate	6.15	.92	**.71**	.50	10.86	.54
Effective	5.77	1.10	**.77**	.59	8.70	.44

Note. N = 232. α = .79. Item mean scores reflect the following response choices: 1 = strongly disagree, 2 = disagree, 3 = moderately disagree, 4 = neither agree nor disagree, 5 = agree, 7 = strongly agree.