EFFECTS OF VIDEO AND PRINT NARRATIVES ON
COMMUNICATING HEALTH RISKS: AN EXPERIMENT

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ABSTRACT

This study examined the effects of health message types and media channels on communicating the risks of tanning among college students. A 2x2 factorial experiment (\(N = 165\)) was conducted to compare the persuasiveness of two message types (narrative vs. exemplar) and two media channels (video vs. print). Results indicate that narratives presented in video had a stronger effect on individuals, generating less favorable attitudes toward tanning and greater intentions to stop using tanning beds than did the print narrative. Both video and print narratives led to a higher level of engagement and transportation than exemplar messages. Messages presented by video were perceived to be more persuasive than print messages, regardless of the message type. These findings provided partial support for the hypotheses. Implications and limitations of the study as well as the directions for future studies will be discussed.
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INTRODUCTION

In recent years, scholars have begun to examine and analyze health issues using narratives, or storytelling. As an ancient communication method, narratives are believed to have the ability to influence people’s perceptions, attitudes, behavioral intentions, and behaviors. In the health communication field, researchers have consistently found that narratives generate better persuasive effects than informational or statistical messages (Block & Keller, 1997; Thompson & Haddock, 2008; Whalen & Maurer-Starks, 2007).

Researchers have investigated this phenomenon to learn why narratives can lead to effective persuasion. Green and Brock (2000) suggested that stories persuade people by transporting them away from the physical world and absorbing them into the narrative world. Others have posited that identification is an important mechanism through which narratives persuade people; when people become involved with a story’s characters and generate connections between themselves and the characters, they are more likely to be influenced and persuaded by those characters (Dal Cin, Zanna, & Fong, 2004; Moyer-Gusé, 2008; Slater & Rouner, 2002). Additional research suggests narratives can capture an audience’s attention and reduce resistance or counter-arguments, leaving the audience more likely to be persuaded by the argument concealed in the narrative (Busselle & Bilandzic, 2009; Moyer-Gusé, 2008).

While significant attention has been focused on the effects of using narratives to persuade an audience, little research has been done to compare and contrast the impact of this practice to that of using non-narratives with exemplars, defined here as informational articles with brief descriptions of an event or case. Like narratives, these exemplars can make a message more engaging and help people form more direct perceptions and
judgments on issues (Zillmann, 1999). Both narratives and exemplars are widely used by health communication researchers and practitioners to communicate the risks of behaviors such as smoking, and medical issues such as cancer, obesity, and HIV. Several studies have compared the persuasive effects of both narrative and non-narrative messages to the persuasiveness of other message types, such as statistical information or factual information. However, little research has been done to directly compare the effects of narratives with those of exemplars (Greene & Brinn, 2003; Kreuter, et al., 2010; Lemal & Bulck, 2010; Slater, et al., 2003). This study will undertake this comparison by focusing on the issue of skin cancer, a topic that is highly relevant to college students.

Skin cancer is one of the most critical and under-recognized health issues that college students face today. Medical evidence shows that skin cancer is typically caused by excessive and unprotected sun exposure, especially exposure received at an early age (Jorgensen et al., 2000). To pursue a tanned skin color, college students often engage in excessive unprotected sun exposure and indoor tanning activities, without recognizing that these behaviors can lead to cancer (de Gruijl, van Kranen, & Mullenders, 2001; Miller, Hamilton, Wester, & Cyr, 1998).

Given the severity of the skin cancer issue, it is important for health communication researchers and practitioners to find suitable channels and methods for raising awareness of skin cancer among college students and to find effective message strategies to improve students’ understanding of the risks associated with tanning. Several researchers have found narratives to be an effective message type to change students’ tanning attitude and behaviors (Greene & Brinn, 2003; Thompson & Haddock, 2008;
Moyer-Gusé, Jain, & Chung, 2012; Whalen & Maurer-Starks, 2007). However, most prior studies have used only a single media channel to present their messages. This means it is not clear whether or not the use of narratives across different channels would make a difference in changing behavioral attitudes and intentions.

Although researchers believe narrative transportation is not limited to the consumption of written material, but could also be applied to different channels such as video and audio (Green & Brock, 2000), no empirical studies have been done to compare the effects elicited by different channels. Therefore, the second question this paper will address is whether narratives in video and narratives in print will yield different persuasive effects. In the following section, I will first review the literature on narrative, exemplification, and channel effect. I will then discuss details of an experiment to compare the effects of message types and channels (e.g., video and print).
LITERATURE REVIEW

Narratives in Communication

Narratives are widely used in different fields of communication such as advertising and health communication. They are commonly 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., 2010, p. 57). Narratives can “touch our emotions, impact what we believe, teach us new behaviors, and shape our cultural identity” (Dal Cin, Zanna, & Fong, 2004, p. 176). Using empirical studies, scholars have found that narratives have stronger persuasive effects on people’s perceptions, attitudes, behavioral intentions, and even actual behaviors than non-narrative information (Block & Keller, 1997; Thompson & Haddock, 2008; Whalen & Maurer-Starks, 2007).

According to Petty and Cacioppo’s (1986) Elaboration Likelihood Model (ELM), persuasion occurs through a deliberate process whereby people think about the persuasive message and its favorability. In general, the amount of thinking (or elaboration) is the key to the persuasion process, and people’s motivation and ability to process the information are important determinants of their information processing route (Chaiken, 1980; Petty & Cacioppo, 1986).

Specifically, if an individual has the motivation and capability to process the message, persuasion will likely occur via the central message route. In this case, individuals will carefully scrutinize the message and consider the merits associated with the information in support of an advocacy. As a result, people’s thoughts, positive or negative, about the advocacy will be elicited. If people have high confidence in these new
thoughts, it is very likely they will integrate these thoughts into their existing cognitive structure; this is how attitude change happens. Alternatively, if a person lacks the motivation or the ability to process information carefully, he or she can also make a simple evaluation and a quick judgment based on peripheral cues; in this way, their attitudes may be changed via the peripheral route (Petty & Cacioppo, 1986).

The ELM model assumes that an audience’s motivation to process information is an important key to their attitude change and persuasion. Usually, people tend to carefully process information that is relevant and important to them. By contrast, if a recipient has little interest in an issue, he will have little motivation to engage in any systematic processing of messages about the issue.

However, some scholars have pointed out that the dual process model is of limited use in understanding how individuals process narratives and entertainment-education contents (Green & Brock, 2000; Slater & Rouner, 2002). When it comes to narratives, the audience’s intent and motivation to process information becomes less important in determining whether or not they will process the information carefully, since compelling stories innately have the ability to attract people’s attention (Slater & Rouner, 2002). In other words, even though message recipients may lack interest in a topic, a compelling story can still draw their attention and engage them either cognitively or emotionally.

In recent years, researchers have extended the persuasion literature by exploring and analyzing narratives’ persuasive effects and underlying mechanisms. Among the key mechanisms through which narratives can lead to effective persuasion are transportation, identification, and narrative engagement (Green & Brock, 2000; Moyer-Gusé, 2008; Slater & Rouner, 2002). The primary mechanism through which narratives persuade
people is transportation. Transportation into the narrative world is commonly defined as “an integrative melding of attention, imagery, and feelings, focused on story events” (Green, 2006, p. 164). As noted earlier, Green and Brock (2000) found that narratives and stories could persuade people by transporting them into the story and absorbing them into the narrative world. When people are transported from their physical world to the world of a story, they may forget to use the schemas, rules and/or experiences of the real world to question story claims. As a result, they are likely to change their real-world beliefs in response to information, claims, and advocacy presented in narratives (Green, 2006).

Additionally, when people are transported into the narrative world, they may tend to perceive the narrative world as similar to the real world and consider the narrative experience as a real experience. Since real experience has a powerful ability to change people’s beliefs and attitudes, the more similar the narrative world is to the real world, the more persuasive the narrative can be (Green & Brock, 2000; Green, 2006).

In contrast to the dual process models that rely on cognitive elaborations, narrative scholars believe transportation is “a convergent process, where all mental systems and capacities become focused on events occurring in the narrative” (Green & Brock, 2000, p. 702). That is, when people are exposed to narratives, the amount of elaboration or thought they require to process information is not the primary key to the narrative’s persuasive process; rather, the extent to which people become immersed into the narrative world is what largely influences narrative’s persuasive effects. Empirical studies have showed that narratives can increase college students’ perceptions of binge drinking risks by transporting them into stories (Thompson & Haddock, 2008; Whalen & Maurer-Starks, 2007). Additionally, scholars found that highly transported people
appeared more accepting of the story they viewed and tended to have more positive story-consistent evaluations than their counterparts who were less transported (Green & Brock, 2000).

The second important key to narrative persuasion is identification. Moyer-Gusé (2008) identified two distinct persuasive narrative processes: narrative involvement (that is, the audience’s engagement in the storyline) and involvement with characters. Transportation is the core variable of the narrative involvement process, while identification refers to the process of involvement with characters. According to Moyer-Gusé (2008), identification is “an emotional and cognitive process whereby a viewer takes on the role of a character in a narrative” (p. 410). Identification may include several aspects such as liking the character, empathy with him or her, and similarity with the character. For example, a reader may share some similarities with a character in a story; therefore the reader may feel they are alike. If bad things happen to the character, the reader may feel sorry for the character and experience negative emotions just as the character does.

A third variable, narrative engagement, is also a key mechanism of narrative’s persuasion. As with transportation, narrative engagement refers to the state in which the attention of the message recipient shifts from the physical world to the narrative world, and the awareness of one’s surroundings is lost. When people are engaged in the narrative, they may lose their self-awareness. A recipient may be not aware of his or her own social role and may take on the perspective of the character with whom he or she identifies, forgetting themselves. Engaged recipients will not feel it difficult to comprehend or pay attention to a story, but rather find it easy to focus on the story.
without noticing other things. Hence, with full attention paid to a story, engaged recipients are very likely to fully receive and understand the information contained in narratives (Busselle & Bilandzic, 2009). Scholars suggested that a certain level of message engagement must be attained for the subtle form of persuasion imbedded in narratives to work (Moyer-Gusé, Jain, & Chung, 2012). Engagement could also increase narrative enjoyment and foster story-consistent attitudes (Busselle & Bilandzic, 2009; Green & Brock, 2000; Green, Brock & Kaufman, 2004).

In addition to these three major variables that play critical roles in persuasion, narratives have other advantages over other message and evidence types. One major characteristic of a narrative is that its aim is to tell a story rather than to persuade. Thus by their nature, narratives don’t contain explicitly persuasive messages. When a recipient’s attention is occupied by a compelling story, that recipient does not tend to, and is not likely able to, generate cognitive thoughts and counter-arguments (Dal Cin, Zanna, & Fong, 2004; Moyer-Gusé, 2008; Slater & Rouner, 2002). Empirical evidence has shown that people exposed to narrative messages that emphasize environmental causes and the negative outcomes of obesity have fewer counterarguments towards such messages than those exposed to factual evidence information. Therefore the former are more likely to believe that environmental factors can cause obesity (Niederdeppe, Shapiro, & Porticella, 2011). In another study, scholars found that narratives could effectively change people’s attitudes toward drinking and driving behavior through reducing reactance (Moyer-Gusé, Jain, & Chung, 2012).

To summarize, researchers have identified transportation, identification, engagement, and reduced counter-arguments as major mediators that contribute to
narrative’s persuasive effects and have conducted numerous studies to test their validity. Besides, a similar message type has also attracted a great amount of research attention.

Exemplification

Like narratives, exemplars are commonly used in media messages including news articles, health communication PSAs, and advertisements. Exemplars are defined as “case descriptions or specifications of singular incidents that fall within the realm of a particular social phenomenon and that exhibit the pertinent properties of this phenomenon to some degree” (Zillmann, Gibson, Sundar, & Perkins, 1996, p. 427). Lacking direct contact with a phenomenon or issue, people may need both general descriptions of the interested issue (e.g., the number of people involved, severity of the issue, frequency of the issue, etc.) and case descriptions, such as exemplars, to understand the issue and form perceptions and judgments on or about the issue or phenomenon (Zillmann, 1999).

According to Zillmann (1999), a single event must be representative and typical to be an exemplar of the group of events. A group of people may share similarities; an exemplar needs to represent the similarity among this group so that it can elicit empathy among the group members. For example, a drinker who has a car accident after drinking could represent a typical case among drinkers, but could not be a representative exemplar for smokers. Another characteristic of exemplars is that they are subject to quantification (Zillmann, 2006). For instance, smoking can damage people’s skin (light damage) but it can also lead to lung cancer (heavy damage).

Since both narratives and exemplars are message types that contain characters, scholars sometimes treat these two types of messages in very similar ways. Some
scholars even treat narratives as a type of exemplars (Green, 2006; Green & Brock, 2002). No clear distinction between these two similar variables has yet been made.

Although messages with exemplars and narratives share a lot in common, they are different in certain aspects. First, narratives contain elements such as characters, plot, causal relationship, and sequence of the events, while an exemplar is generally a case description without all the required narrative elements. Second, narratives frequently employ vivid and detailed language that is likely to transport people away from the physical world. In contrast, exemplars typically only contain the main plot of a story using abstract language without descriptive details. Finally, narratives rely on compelling stories to persuade people, while exemplars need to depict a typical situation to provide reliable information and help readers understand and form judgments about the issue or phenomenon (Zillmann, 1999, 2006).

Scholars have explored the persuasive effects of exemplification in some detail. Since exemplars have a greater level of vividness than general statements of fact, they can be comprehended and processed more easily (Brosius & Bathelt, 1994). Prior studies have shown that people are more likely to form perceptions and judgments about an issue when they are exposed to exemplars when compared to those exposed to general statements about the same issue (Brosius & Bathelt, 1994; Hamill, Wilson, & Nisbett, 1980). Including exemplars in articles has been shown to increase the readers’ engagement with articles and to affect recipients’ perceptions and judgments about the issues addressed in the articles (Kim, et al., 2012; Zillmann & Brosius, 2000). In one study, people who viewed news articles with exemplars experienced greater narrative
engagement and reported higher intention to quit smoking when compared to those who viewed news articles without exemplars (Kim, et al., 2012).

While studies have explored the persuasive effects of narratives and exemplars separately in the area of health communication, little research has been done to distinguish these two message types from each other, or to directly compare how they persuade people in different manners. Therefore, the first purpose of this paper is to compare narratives’ and exemplars’ persuasive effects. I use the issue of skin cancer to explore this question.

**Issue of Skin Cancer**

As the most common kind of cancer in the United States, skin cancer is also one of the most deadly diseases among college students. Scientific evidence shows that skin cancer is usually caused by excessive and unprotected sun exposure, especially sun exposure received in one’s early years (Jorgensen et al., 2000). In recent years, the increased use of indoor tanning beds, especially among teenagers, has made the situation even worse. An increasing number of studies have concluded that indoor tanning is highly associated with skin cancer (de Gruijl, van Kranen, & Mullenders, 2001; Miller, Hamilton, Wester, & Cyr, 1998). One meta-analysis (The International Agency for Research on Cancer (IARC) Working Group on artificial ultraviolet light and skin cancer, 2007) examining more than 7000 cases showed that tanning bed use was significantly associated with an increased risk of melanoma, the most deadly form of skin cancer. The first use of tanning beds before age 35 can significantly increase the user's risk of getting skin cancer, a finding which suggests that young people who use tanning beds are facing
extreme jeopardy. However, many students are apparently unaware of the risk of unprotected sun exposure and indoor tanning.

Persistent misunderstandings about tanning make skin cancer prevention among the public quite difficult. Since 1929, when Coco Chanel encouraged young girls to pursue a golden tanned skin color, certain health experts have promoted the benefits of sunshine. They have noted, for example, that sun exposure can promote the quality and circulation of blood and improve the bone growth of children (Jorgensen et al., 2000). Even with increasing evidence that shows tanning to be the number one cause of skin cancer, many people still hold the belief that tanning can benefit their health. Even among people who are aware of the risks of tanning, a large portion of them still choose to do so anyway. This is particularly prominent among young women aged 17 to 30, who believe tanning can make them look prettier and skinner (IARC, 2007).

Recognizing the harm of skin cancer, health communication researchers have made efforts to find suitable channels and methods for spreading awareness about the dangers of tanning. A specific goal is to try to find effective strategies to improve student understanding of these dangers. Some researchers have found narrative to be an effective message type for increasing people’s perceived risk of skin cancer and changing their attitudes toward tanning, decreasing their tanning behaviors (Greene & Brinn, 2003; Janssen, et al., 2013; Lemal & van den Bulck, 2010). For example, scholars (Janssen, et al., 2013) found that tanning bed users who were exposed to a narrative could better imagine themselves getting skin cancer and thus had stronger feelings about their own skin cancer risk. Students exposed to narratives were also much more likely to engage in health-promoting behaviors to prevent themselves from getting skin cancer compared to
students who did not view the narrative (Lemal & van den Bulck, 2010). Green and Brinn (2003) found narrative can also effectively decrease college women’s tanning bed use.

Based on the above review, I expect both video and text narratives can not only effectively lead to a high level of transportation, identification, and engagement as well as fewer counterarguments among participants, but also achieve better persuasive effects by influencing college students’ attitudes toward tanning and tanning intention when compared to the use of exemplars. Formally stated, the hypotheses are as follows:

**H1: For the issue of skin cancer, narratives will have a significant impact, such that those exposed to narratives will experience more transportation, more identification, more engagement, and fewer counterarguments than those exposed to exemplars.**

**H2: For the issue of skin cancer, narratives will lead to a significant effect on issue attitude and intention such that participants exposed to narratives will have more negative attitudes toward tanning and less tanning intention than those in the exemplar conditions.**

**Channel Effect**

In studying narrative influence, one of the key questions is whether or not narratives with the same message but delivered via different channels will have the same impact on the audience. Narratives can be presented in many different media channels. People read stories in newspapers, watch stories on television, and listen to stories on the radio. With the multimedia features offered by the Internet, viewers oftentimes have the option to either read or watch a story. While prior research has examined the effects of print and video narratives, few studies have compared their influences across channels.
This raises the question: Do narratives from different channels have different impacts on individuals?

In fact, within health communication research, scholars have found that narratives presented on video result in stronger persuasive effects than textual narratives (see Shen, Sheer, & Li, 2013). Although some researchers believe narratives will have an impact across media channels (Green & Brock, 2000), little attention has been paid to comparing whether narratives conveyed by different media channels can lead to various persuasive effects. Therefore, another purpose of this paper is to explore whether the use of video or text can affect narratives’ persuasive effects, and more importantly, if so, what the underlying mechanism of this outcome may be.

As previously stated, narratives can be communicated through different media channels, including text, picture, audio, video, and so on. These media channels have differing levels of vividness, which may in turn lead to distinct persuasive effects. Vividness is defined as “the representational richness of a mediated environment shaped by its formal features” (Steuer, 1992, as cited in Sundar, Oh, Kang, & Sreenivasan, 2013, p. 395). Steuer (1992) suggests that the number of different senses people are engaging when they receive information (breadth) plus “the level of resolution within each of the perceptual channels (depth)” together determine the vividness of a medium.

Since most people use all five senses in the real world experience, the medium with highest vividness will engage as many senses as possible, to be most similar to the real world experience. One way narrative works is through the compelling realism of experience: this means that if people believe the narrative experience they encounter is real or similar to a real experience, then they are more likely to be persuaded by the
narrative message (Green & Brock, 2002). Therefore people exposed to information presented by vivid modality are more likely to become immersed in the narrative world, or transported into the mediated world, and to be persuaded by the narrative (Sundar et al., 2013). An experiment conducted by Read and his colleagues (2006) showed the successful use of a vivid application with a narrative structure intended to reduce risky sex behaviors. In another study, a story presented in audio modality was more persuasive than the same written message because of its higher vividness and resulting higher transportation (Brosius & Bathelt, 1994).

Choice of media channels can also influence people’s cognitive response (Moyer-Gusé, 2008; Slater & Rouner, 2002). A richer media channel, which consists of more modalities, leads to more positive cognition. Modalities are the channels via which a message is communicated. Each modality has its own distinct characteristics and “people encode this modality-specific content when they process information” (Sundar, 2000, p. 482). Therefore, when people are exposed to stories in different modalities, they tend to build different mental constructs of different vividness, and the extent to which those mental constructs can be recalled are distinct. Some researchers believe that the concept of “redundancy” can be used to explain the phenomenon. Compared to those exposed to information conveyed by single-modality, people exposed to information presented in richer channels have a better chance of fully receiving the information, which leads to more cognition (Hsia, 1971, p. 52; Sundar, 2000).

Social psychologists have found that audiovisual information can be recalled better than visual information alone (Beentjes & van der Voort, 1991; van der Molen & van der Voort, 1997). A study conducted in the Netherlands showed that children who
viewed news stories on television remembered them better than their counterparts who read the same news stories in a newspaper (van der Molen & van der Voort, 1997). Similarly, Beentjes and van der Voort (1991) also found that children who watched a video version of story did a better job of rewriting the story than those who read the print version of the same story. Since memory is an important indicator of cognition, these findings suggest it is reasonable to believe people exposed to richer channels will have more cognition.

Moreover, narratives presented in a richer media channel can also lead the viewer to construct fewer counterarguments (Moyer-Gusé, 2008). Differing from other kinds of persuasive messages, one particular advantage of a narrative is that its aim is to tell stories rather than to directly persuade. Narratives don’t typically contain explicit arguments for recipients to rebut, and the persuasive message is hidden in the stories, so recipients may even not notice the persuasive message. Hence, when people are attracted by a compelling story and become immersed in it, they may lack the motivation or need to critically analyze the arguments imbedded in the story and therefore they may generate fewer counterarguments and more positive thoughts about the stories (Dal Cin, Zanna, & Fong, 2004).

Studies have found that visual modality in particular emphasizes the importance of story source; therefore, character identification might play a more important role in a video narrative’s persuasion (Hinyard & Kreuter, 2007; Pfau, Holbert, Zubric, Pasha, & Lin, 2000). As noted earlier, identification is believed to decrease counter-arguing and selective avoidance, and also to increase perceived vulnerability (Moyer-Gusé, 2008). Therefore, people exposed to video narrative messages are more likely to identify with
the character and perceive the message as relevant to them, and hence less likely to refute the claims presented in the narrative. This in turn leads to increased persuasion.

Last but not least, since a narrative presented by a richer media channel may allow the audience to experience the story with more senses and may have better capacity to transport the audience into the narrative world and help the audience identify with the characters, such a narrative may elicit more affective responses from the audience than a narrative conveyed by a media channel with lower richness.

Based on these findings, it appears reasonable to expect that compared to text, video modality is more likely to elicit a higher level of perceived vividness, transportation, and identification, more positive cognition. Video modality can also be expected to elicit fewer counterarguments and more affective responses among narrative viewers, and therefore be more persuasive such that experiment participants who are exposed to the narrative presented in video are more likely to have negative attitudes toward tanning and less tanning intention than those exposed to the narrative only in print. Additionally, the enhanced effects, including stronger perceived vividness, transportation, identification, cognitions, and affective responses, and reduced counterarguments by a richer media channel together will mediate the media channels’ effects on persuasion. Formally stated, the hypotheses are as follows:

\[ H3: \text{For the issue of skin cancer, narrative in video will lead to a higher level of perceived vividness, transportation, and identification, more positive thoughts, fewer counterarguments, and more affective responses than the print narrative message.} \]

\[ H4: \text{For the issue of skin cancer, narrative in video will lead to a significant effect on issue attitude and intention, such that participants exposed to the narrative in video} \]
will have more negative attitudes toward tanning and less tanning intention than their counterparts exposed to the print narrative.

H5: For the issue of skin cancer, perceived vividness, transportation, identification, supportive thoughts, counterarguments, and affective responses together will mediate the impact of narratives in different channels on persuasion.
METHOD

Research Design and Procedure

To test the hypotheses, a 2 (message: narrative vs. exemplar) × 2 (channel: video vs. print) factorial between-subjects design experiment was conducted. A total of 183 participants were recruited through an online request form sent to three introductory-level courses within the College of Communications at the Pennsylvania State University. Participation was voluntary and participants were given extra credits for their participation in the study. The participants could access the online experiment from any computer that was connected to the Internet.

The online experiment was composed of two major sections and was active (online) for a period of one week. The first section included the consent form and the randomization of participants. The survey link was sent to potential participants by the instructors of three undergraduate classes. By clicking on the link, participants were directed to an applied consent form. After confirming that they were above 18 years old and agreed to participate, they were automatically directed to the second section and randomly assigned to one of the four conditions by Survey Monkey. The second section included the experiment stimulus and main questionnaire of this study, both hosted on Qualtrics. In this section, participants were asked to view a health-related message (either a picture and article or a video) and then complete a questionnaire. After the study, participants were direct-linked to a site where their class-related information was collected in order for them to receive the extra credit. The entire online experiment was expected to take about 15 minutes. Data were collected over a two-week period.
Participants

A total of 183 undergraduate students participated in the study. Of these, 42 viewed the print exemplar message, 43 viewed the print narrative message, 47 watched the exemplar in video, and 51 participants were assigned to the narrative in video condition. Participants ranged in age from 18 to 40 years ($M = 20.25$, $SD = 1.83$), with 81.4% identifying themselves as White, 10.9% as Asian, 4.4% as Black, 2.2% as Hispanic, and 1.1% as Other. The majority of participants were female ($N = 152$), which accounted for 83.1% of the total participants, and 31 participants (16.9%) reported their gender as male.

Manipulation

The two key manipulated variables were message type and message channel. The experimental stimulus materials consisted of four stories: two different channel conditions (print and video) for two message types (narrative and exemplar). Each of the two print messages contained an article and a picture. The article and picture for each condition were uploaded onto the same page of Qualtrics. Because the videos could not be directly uploaded to Qualtrics, I uploaded the videos first to Youtube and then embedded the YouTube links in Qualtrics.

The narrative article was developed based on facts and anecdotes collected from a variety of sources. Following the narrative structure outlined by previous scholars, the story started with an initiating event, was followed by exposition, complication, and a climax, and then ended with an outcome (Knobloch, Patzig, Mende, & Hastall, 2004). The story contained commonly identified narrative elements: an unresolved conflict, a main character, and a resolution (Green & Brock, 2002).
The narrative message contained a story about a young girl who got skin cancer at 17 as a result of her continuous tanning bed use, and survived. The story was presented in vivid, detailed, and image-evoking language. In addition, there was a paragraph describing factual information about skin cancer at the end of the article in the print-narrative condition, included in order to make the content of narrative and exemplar condition consistent. The narrative article was presented in the first-person perspective using a main character named Lauren. The exemplar message contained more factual information and an exemplar, and it was presented in both first-person and third-person perspectives. The language used in the exemplar condition was abstract and neutral. The exemplar in this condition was a short version of the story in the narrative condition and contained only the main plot of Lauren’s story. Most of the details in Lauren’s story were presented in the third-person perspective (see Appendix A).

For example, the second paragraph of the narrative article read as follows: “I tried tanning for the first time in sixth grade. I felt like the pale girl in class. Almost all my classmates were tanning and it seemed like I really stood out. Being tanned gave me confidence, because it helped me blend in with my friends. By the time I got to high school, I was tanning every other day. My family even bought me a tanning bed! We hoped it would save money — considering I spent 100 dollars at tanning salons every single week.”

In the exemplar article, this paragraph was divided into two paragraphs: the first using third-person perspective to present factual information and the second using first-person perspective to present the exemplar. Specifically, this paragraph in the exemplar condition was presented as follows:
“Most kids start to tan in middle school or high school and don’t even think about what could happen to them. Some research studies show that kids start to tan at a very young age, and by the time they get to high school, some of them are tanning every other day or every day in order to fit in.

‘I also started to tan in high school, and my family even bought me a tanning bed to save money.’”

Word count of the article for both print conditions was 490. The two videos were recorded and edited by the author using each of the two articles in print message conditions as the script. A female graduate student memorized the two articles and presented each article in front of the camera, pretending that she was talking about her own experience. The video containing the narrative ran for 2 minutes and 51 seconds, and the video containing the exemplar message ran 2 minutes and 46 seconds. The same picture was used in both print conditions: a screenshot of the narrative video to keep the content of print and video message similar and to prevent participants from imagining the character’s appearance themselves.

**Measurements**

The main dependent variable for this study was message persuasiveness. Specifically, perceived persuasiveness of the message, perceived credibility of the message, attitude towards tanning, and tanning intention were measured to reflect overall message persuasiveness. In addition, potential mediating variables and control variables were also measured.

Immediately after participants viewed the health-related message, they were asked to write down up to four thoughts about the content they had just viewed. Students’
supportive thoughts and counterarguments were coded by a coder who was not aware of the experimental conditions. Counterargument was coded as 1, neutral thought was coded as 2, and positive thought was coded as 3. To check the reliability of coding, the author also coded 30 participants’ thoughts. The results indicated the inter-coder reliability was .82 (Hayes & Krippendorff, 2007). Next, the researcher counted numbers of each person’s counterarguments, neutral thoughts, and supportive thoughts. Each participant’s counterargument index was then computed using the number of counterarguments divided by the total thoughts quantity. The same method was used to compute each participant’s supportive thought index. The index for both counterargument and supportive thought ranged from 0 to 1.

Perceived vividness was measured by two items (Pearson’s $r = .78$) developed based on the definition of vividness (Steuer, 1992) using a 7-point Likert-scale ranging from 1, “strongly disagree” to 7, “strongly agree” for the following statements: “I could fully visualize how this story happened,” and “I was directly experiencing the girl’s story” (see Appendix B for the questionnaire items).

Participants’ feelings of fear were then measured using three affective items (Cronbach’s $\alpha = .97$), including fearful, afraid, and scared. They were asked to rate each item using a 7-point Likert-scale ranging from 1, “none of this feeling” to 7, “a great deal of this feeling.” Transportation was measured using a 7-point Likert-scale (Green and Brock, 2000) ranging from 1, “strongly disagree” to 7, “strongly agree.” The scale contained five items (Cronbach’s $\alpha = .75$): “While I was reviewing the article, I could easily picture the event in its taking place,” “While I was reviewing the narrative, activity going on in the room around me was on my mind,” “I could picture myself in the scene
of the event described in the narrative,” “I was mentally involved in the narrative while reviewing it,” and “While I was viewing the narrative, I forgot myself and was fully absorbed.”

Identification was measured using a 7-point Likert-scale ranging from 1, “strongly disagree” to 7, “strongly agree.” The scale consisted of five items which were adopted from two scales (Cronbach’s α = .86, Busselle & Bilandzic, 2009; Cohen, 2001): “I think I have a good understanding of the girl in the story,” “While viewing the article, I could feel the emotions the individual portrayed,” “During viewing, I felt I could really get inside the individual’s head,” “During viewing, when the individual succeeded, I felt happy, and when she suffered in some way, I felt sad,” and “I felt sorry for the individual in the article.”

Narrative engagement was measured using six items that were adopted from a narrative engagement scale (Cronbach’s α = .92, Busselle & Bilandzic, 2009). A 7-point Likert-scale ranging from 1, “strongly disagree” to 7, “strongly agree” was employed. The items were: “At points, I had a hard time making sense of what was going on in the article,” “My understanding of the character is unclear,” “I had a hard time recognizing the thread of the article,” “I found my mind wandering while viewing the article,” “While viewing the story I found myself thinking about other things,” and “I had a hard time keeping my mind on the article.” All the six items were reverse-coded and then computed into an engagement index.

Attitude towards tanning was measured using a 7-point Likert-scale ranging from 1, “strongly disagree” to 7, “strongly agree.” The scale contained nine items (Armes, 2002, α = .89), such as “I feel favorable about going to a tanning salon,” “I feel favorable
about using a tanning bed.” “It feels physically good to lie under a sunlamp.” “Tanning is good for my health,” and “All things considered, I have a negative attitude toward tanning at this time in my life.”

Tanning intention was measured using a 7-point Likert-scale ranging from 1, “strongly disagree” to 7, “strongly agree.” The scale consisted of two items (Pearson’s r = .87): “I intend to use tanning bed or other tanning tools in the future,” and “I intend to use tanning bed or other tanning tools in next year.”

Perceived message persuasiveness and perceived message credibility were measured by four items (Cronbach’s α = .93) and three items (Cronbach’s α = .88), respectively. The seven items were measured in a 7-point semantic differential scale. The word pairs for perceived persuasiveness were: “not at all persuasive/very persuasive,” “not at all effective/very effective,” “not at all convincing/very convincing,” and “not at all compelling/very compelling.” The word pairs for perceived message credibility were “not at all credible/very credible,” “not at all believable/very believable,” and “not at all truthful/very truthful.”

In addition, participants’ demographic information, tanning history, personal relevance, and familiarity with the issue were also measured as control variables. Specifically, tanning history was measured by five multiple-choice questions. For example, the questionnaire included questions like, “In general, how often do you go to a tanning salon?” Personal relevance was measured by a single item using a 7-point Likert-scale ranging from 1, “strongly disagree” to 7, “strongly agree” in response to the following statement: “The reading material was personally relevant.” Familiarity with the issue was also measured by a single item using a 7-point semantic differential scale
ranging from 1, “not familiar with the issue” to 7, “strongly very familiar with the issue”: “Before I read the message, I was…” In addition, since the videos were made by the author and were not qualified as professional video clips, a single question measuring participants’ perceived quality of the stimulus was included in the questionnaire as a control variable. The question was, “Do you think the message you have just read is of high quality?” Responses were measured using a 7-point Likert-scale ranging from 1, “not at all” to 7, “very much.”

**Data Analysis**

The data were analyzed using SPSS data analysis software. An independent t-test was used to see whether narrative and exemplar, or video and print, lead to different outcomes. MANOVA and MANCOVA were used to test the main effect of the independent variables on the dependent variables, and the potential mediating variables and the interaction effect between two IVs on outcome variables with or without some variables controlled. In addition, the macro INDIRECT test (Hayes, Preacher, & Myers, 2010) was used to evaluate the mediation effect of the potential mediating variables between the independent variables and the dependent variables.
RESULTS

Data Screening

In total, 183 participants fully completed the online experiment. Using data from the experiment, we found 10 participants took either fewer than 7 minutes or more than two hours to view the health-message and complete the questionnaire; therefore, their responses were disqualified. Three participants consistently marked the same number in the 7-point Likert scale, even though some questions were reverse-coded; therefore they were also disqualified and removed from the sample size as outliers. Since white students are more at risk for skin cancer than person of other races, only the data for indicated white students (N = 135) were included in the analysis in this study.

Manipulation Check

The first set of manipulation checkpoints consisted of two multiple-choice questions referring to basic factual information mentioned in the health message. The first question required identification of the health message character’s health issue, and the second question asked about the cause of the health issue. Three participants answered the questions wrongly, indicating that they did not complete viewing the health message; therefore they were removed from the total sample size.

To check the manipulation of narrative, participants were first asked to rate on a 7-point scale (1 = not at all, 7 = definitely) whether the message they just viewed contained a plot. For this question, participants in different groups showed various perceptions, $F(3, 163) = 9.36, p < 0.001$. Post hoc analysis using Tukey’s HSD showed that participants who viewed the print narrative message ($M = 5.54$) and the narrative in
video \((M = 5.57)\) rated higher scores on this question than those viewed the print exemplar message \((M = 4.19)\) and the exemplar in video \((M = 4.49)\).

Similarly, participants who viewed the print narrative message \((M = 6.62)\) and the narrative in video \((M = 6.41)\) also rated higher scores on the question of whether the message contained a main character than those who viewed the print exemplar message \((M = 6.19)\) and the exemplar in video \((M = 5.84)\), \(F (3, 163) = 4.05, p < 0.01\).

The manipulation check results show that those participants exposed to a narrative message (either print or video) were more likely to have recognized that the message contained a plot and a main character—important elements of a narrative, based on Kreuter et. al’s definition (2010). Therefore, the manipulation of the narrative was successful.

**Preliminary Analyses**

Means and standard deviations for all experimental conditions are listed in Table 2. To test the overall effects of message type and message channel on the outcome variables, we conducted a MANOVA procedure using transportation, identification, engagement, supportive thoughts, counterarguments, fear, perceived vividness, perceived persuasiveness, perceived credibility, tanning attitude, and tanning intention as the dependent variables, with message type and message channel as the independent variables. Results showed that message channel had significant main effects on the dependent variables (see Table 2) \([Wilks' A = 0.82, F (11, 121) = 2.49, p < 0.01, \text{partial } \eta^2 = 0.19]\). However, no significant main effect of message type \([Wilks' A = 0.89, F (11, 121) = 1.42, p = 0.17, \text{partial } \eta^2 = 0.11]\) or interaction effect \([Wilks' A = 0.94, F (11, 121) = 0.72, p = .72, \text{partial } \eta^2 = 0.06]\) was found. Univariate results indicated a significant
main effect of message type on participants’ narrative engagement \([F(1, 131) = 3.89, p = 0.05, \text{partial } \eta^2 = 0.03]\). Participants exposed to the narrative messages \((M = 5.46)\) reported a higher level of engagement than those who viewed the exemplar messages \((M = 5.05)\). Additionally, univariate results also showed a significant main effect of message channel on participants’ narrative engagement \([M_{Print} = 5.49 \text{ vs. } M_{Video} = 5.03, F(1, 131) = 4.73, p < 0.05, \text{partial } \eta^2 = 0.04]\), transportation \([M_{Print} = 5.13 \text{ vs. } M_{Video} = 4.77, F(1, 131) = 4.26, p < 0.05, \text{partial } \eta^2 = 0.03]\), identification \([M_{Print} = 5.01 \text{ vs. } M_{Video} = 4.63, F(1, 131) = 5.20, p < 0.05, \text{partial } \eta^2 = 0.04]\), supportive thoughts \([M_{Print} = 0.72 \text{ vs. } M_{Video} = 0.61, F(1, 131) = 4.25, p < 0.05, \text{partial } \eta^2 = 0.03]\), and counterarguments \([M_{Print} = 0.03 \text{ vs. } M_{Video} = 0.09, F(1, 131) = 4.29, p < 0.05, \text{partial } \eta^2 = 0.03]\). Surprisingly, among all the variables mentioned, print messages led to better outcomes than video messages.

Prior studies showed that participants’ tanning history, issue relevance, and familiarity with the issue could influence the message’s persuasive effects (Armes, 2002). Therefore, these three variables should be statistically controlled in analysis.

A further MANCOVA analysis was conducted with both independent and dependent variables remaining the same, and with tanning history, personal relevance with the issue, and familiarity with the issue all controlled as covariates. Consistent with the MANOVA results, the MANCOVA results with three variables controlled as covariates indicated that message channel (see Table 3) \([\text{Wilks’ } \Lambda = 0.81, F(11, 118) = 2.49, p < 0.01, \text{partial } \eta^2 = 0.19]\) had significant effects on the dependent variables, while
the message type had no significant main effects on the dependent variables \( \text{Wilks' } \Lambda = 0.94, F(11, 118) = 1.26, p = 0.25, \text{ partial } \eta^2 = 0.11 \), and the interaction was also not significant \( \text{Wilks' } \Lambda = 0.94, F(11, 118) = 0.74, p = 0.70, \text{ partial } \eta^2 = 0.06 \). Univariate results showed a significant main effect of message type on participants’ narrative engagement \( M_{\text{Exemplar}} = 5.05 \text{ vs. } M_{\text{Narrative}} = 5.47, F(1, 128) = 4.11, p < 0.05, \text{ partial } \eta^2 = 0.03 \) and their narrative transportation level \( M_{\text{Exemplar}} = 4.79 \text{ vs. } M_{\text{Narrative}} = 5.10, F(1, 128) = 4.15, p < 0.05, \text{ partial } \eta^2 = 0.03 \). Participants exposed to the narrative messages reported a higher level of narrative engagement and transportation than those who viewed the exemplar messages. In addition, univariate results also showed a significant main effect of message channel on participants’ narrative engagement \( M_{\text{Print}} = 5.47 \text{ vs. } M_{\text{Video}} = 5.04, F(1, 128) = 4.34, p < 0.05, \text{ partial } \eta^2 = 0.03 \), transportation \( M_{\text{Print}} = 5.11 \text{ vs. } M_{\text{Video}} = 4.79, F(1, 128) = 4.50, p < 0.05, \text{ partial } \eta^2 = 0.03 \), identification \( M_{\text{Print}} = 5.00 \text{ vs. } M_{\text{Video}} = 4.63, F(1, 128) = 5.48, p < 0.05, \text{ partial } \eta^2 = 0.04 \), supportive thoughts \( M_{\text{Print}} = 0.72 \text{ vs. } M_{\text{Video}} = 0.61, F(1, 128) = 4.39, p < 0.05, \text{ partial } \eta^2 = 0.03 \), and counterarguments \( M_{\text{Print}} = 0.03 \text{ vs. } M_{\text{Video}} = 0.09, F(1, 128) = 4.73, p < 0.05, \text{ partial } \eta^2 = 0.04 \). Still, for all the variables mentioned, print messages led to better outcomes than video messages.

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Insert Table 3 here

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In addition, a one-way ANOVA was conducted to test whether participants in various conditions had different evaluations of the quality of the messages. Results showed that participants in different conditions had very distinct evaluations about the
quality of the messages they had viewed \[F (3, 131) = 4.01, p < 0.01, \text{partial } \eta^2 = 0.08\]. Specifically, post hoc analyses using Tukey’s HSD showed that participants who viewed the print messages (either print narrative: \(M = 4.63\) or print exemplar: \(M = 4.79\)) perceived the messages to be of higher quality than their counterparts who watched the messages in video (either narrative in video: \(M = 3.94\) or exemplar in video: \(M = 3.78\)).

To rule out the potential effects caused by participants’ distinct perceptions of the message quality, a further MANCOVA analysis was conducted in which the independent and dependent variables remained the same, while the perceived quality of the message, along with the three confounding variables identified above were controlled as covariates. Results (see Table 4) indicated that message channel \([\text{Wilks’ } \Lambda = 0.81, F (11, 117) = 2.43, p < 0.01, \text{partial } \eta^2 = 0.19]\) had significant effects on the dependent variables, while the message type had no significant main effects on the dependent variables \([\text{Wilks’ } \Lambda = 0.89, F (11, 117) = 1.31, p = 0.23, \text{partial } \eta^2 = 0.11]\), and the interaction was also not significant \([\text{Wilks’ } \Lambda = 0.94, F (11, 117) = 0.70, p = 0.73, \text{partial } \eta^2 = 0.06]\). Univariate results indicated a significant main effect of message channel on participants’ perceived persuasiveness of the message \([F (1, 127) = 4.61, p < 0.05, \text{partial } \eta^2 = 0.04]\). Participants exposed to the messages in video \((M = 5.38)\) perceived the messages to be more persuasive than those who viewed the print messages \((M = 5.03)\).

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Insert Table 4 here

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Hypotheses Testing

H1 stated that participants exposed to narratives would have more transportation, more identification, more engagement, and fewer counterarguments. Based on the MANCOVA results listed above, participants exposed to narratives reported a higher level of narrative transportation \([M_{Exemplar} = 4.79 \text{ vs. } M_{Narrative} = 5.09, F(1, 127) = 5.60, p < 0.05, \text{ partial } \eta^2 = 0.04]\) and engagement \([M_{Exemplar} = 5.05 \text{ vs. } M_{Narrative} = 5.46, F(1, 127) = 4.18, p < 0.05, \text{ partial } \eta^2 = 0.03]\) (see Figure 1), while no difference was found in terms of identification \((M_{Exemplar} = 4.72 \text{ vs. } M_{Narrative} = 4.89, p > 0.1)\) or counterarguments \((M_{Exemplar} = 0.07 \text{ vs. } M_{Narrative} = 0.06, p > 0.1)\). Therefore, H1 was partially supported. Participants who viewed the narratives were more engaged in the messages and experienced a higher level of transportation compared to those in the exemplar conditions, while no difference was found between conditions in terms of the identification level or the amount of the counterarguments.

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Insert Figure 1 here
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H2 predicted that participants exposed to narratives would have more negative attitudes toward tanning and less tanning intention. Univariate analysis indicated that the message type had no significant main effects on participants’ attitude towards tanning \((M_{Narrative} = 3.15 \text{ vs. } M_{Exemplar} = 3.29, p > 0.1)\) or tanning intention \((M_{Narrative} = 3.09 \text{ vs. } M_{Exemplar} = 3.31, p > 0.1)\). Therefore H2 was not supported. Participants in the narrative conditions and exemplar conditions didn’t report different attitudes toward tanning or tanning intention.
Since H3, H4, and H5 only focused on narratives in different media channels, only participants who viewed the narrative messages were included in the following analyses.

H3 proposed that the narrative in video could lead to higher levels of perceived vividness, transportation, identification, more supportive thoughts and fear, and fewer counterarguments. However, independent t-test results did not show a significant difference between participants who watched the narrative in video and those who read the print narrative with respect to perceived vividness, $M_{Video} = 5.27$ vs. $M_{Print} = 5.19$, $p > 0.1$, transportation, $M_{Video} = 4.91$ vs. $M_{Print} = 5.24$, $p > 0.1$, identification, $M_{Video} = 4.77$ vs. $M_{Print} = 5.03$, $p > 0.1$, supportive thoughts, $M_{Video} = 0.62$ vs. $M_{Print} = 0.74$, $p > 0.1$, fear, $M_{Video} = 4.50$ vs. $M_{Print} = 5.04$, $p > 0.1$, or counterarguments, $M_{Video} = 0.09$ vs. $M_{Print} = 0.02$, $p > .1$. In addition, controlling for tanning history, perceived quality of the message, personal relevance with the issue, and issue familiarity, the MANCOVA analysis results still showed no significant effects of narrative channel on these outcome variables [$Wilks' \Lambda = 0.84$, $F(6, 55) = 1.74$, $p > 0.1$, partial $\eta^2 = 0.16$]. Therefore, H3 was not supported.

Media channels didn’t influence participants’ perceived vividness, transportation, identification, fear, or cognitive thoughts.

H4 predicted that participants exposed to the narrative in video would have more negative attitudes toward tanning and less tanning intention than those exposed to the print narrative. One-tailed independent t-test results showed that participants exposed to narrative in video ($M = 2.92$) had more negative attitudes toward tanning compared with those who viewed print narrative ($M = 3.45$), $t(64) = 1.84$, $p < 0.05$. Similarly, participants who watched the narrative video ($M = 2.37$) reported a lower level of tanning
intention than those who viewed the print narrative \((M = 3.43), t (64) = 2.13, p < 0.05\).

However, after the four confounding variables were controlled, the MANCOVA results showed no significant main effect of a narrative’s channel type on the message’s persuasiveness \([Wilks' \Lambda = 0.94, F (2, 59) = 1.95, p = 0.15, \text{partial } \eta^2 = 0.06]\). Univariate results showed that participants who viewed different channel types of narrative showed no significantly different attitude towards tanning \([M_{\text{Print}} = 3.37 \text{ vs. } M_{\text{Video}} = 3.01, F (1, 60) = 2.42, p = 0.13, \text{partial } \eta^2 = 0.04]\), while participants who watched the video showed a lower level of tanning intention \((M = 2.57)\) than those who viewed the print narrative message \((M = 3.26, \text{see Figure 2})\), after potential confounding variables were controlled \([F (1, 60) = 3.88, p = 0.05, \text{partial } \eta^2 = 0.06]\). Therefore, H4 was partially supported. The narrative in video led to better persuasion, such that participants exposed to the narrative in video reported less tanning intention in the future compared to those who viewed the print narrative.

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Insert Figure 2 here

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H5 proposed that perceived vividness, transportation, identification, supportive thoughts, counterarguments, and affective responses together would mediate the impact of narrative channels on persuasion (see Figure 3). However, the results of macro INDIRECT mediation test (Hayes, Preacher, & Myers, 2010) showed that none of the proposed mediating variables significantly mediated the effect of narrative channels on participants’ tanning intention, based on the result that all their 95% confidence intervals of indirect effect contained zero: perceived vividness (95% CI: -0.67, 0.17),
transportation (95% CI: -1.54, 0.08), identification (95% CI: -0.10, 1.15), supportive thoughts (95% CI: -.11, .36), counterarguments (95% CI: -.07, .66), and affective responses (95% CI: -.87, .04). Therefore, H5 was not supported.

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Insert Figure 3 here
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**Conclusion**

In summary, narratives led to more engagement and transportation than exemplars, regardless of the media channel. Print messages elicited a higher level of transportation, engagement, and identification, more supportive thoughts, and fewer counterarguments than did messages presented in video, regardless of the message type. However, after the four confounding variables were controlled as covariates, participants exposed to different channels did not show any differences with regard to transportation, engagement, identification, supportive thoughts, or counterarguments, while participants who watched the messages in video perceived the messages to be more persuasive than their counterparts who viewed the print messages, regardless of the message type.

In addition, participants who watched the narrative in video had more negative attitudes toward tanning and reported less tanning intention compared to their counterparts who viewed the print narrative message. After potential confounding variables were controlled, the narrative in video still led to less tanning intention among viewers. Participants who viewed the narrative in video or the print narrative message didn’t report different results with regard to the potential mediating variables, including
perceived vividness, transportation, identification, fear, and cognitive thoughts about the message. No significant mediation effects were found.
DISCUSSION

The present study examines the persuasive effects of message types and media channels on individuals. The first question addressed in the study is whether narratives lead to better persuasion than exemplars. The other main question explored in this study is whether media channels that convey narratives play a role in influencing the message’s persuasion, and identifying the mechanisms that underlie any impact. To answer these questions, an online experiment using a 2 x 2 between-subjects factorial design containing four experimental conditions (narrative in video, exemplar in video, print narrative, and print exemplar) was conducted among college students. The skin cancer issue, a topic highly relevant to college students, was used in this study.

The primary finding of this study is that narratives lead to better transportation and engagement than exemplars, while the two message types do not yield distinct identification or cognitive thoughts among participants. Nor did they elicit various persuasive effects. As noted above, the content of the narrative and the exemplar was almost identical in this study. What, then, does narrative have over the exemplar?

One reason the narrative elicited a higher level of transportation and engagement may be that the story in the narrative condition employed detailed and vivid language, which may have made the story more compelling and attractive. In contrast, the article for the exemplar condition was presented using primarily abstract and plain language with some vivid details removed. Consistent with prior literature, which suggests that a higher level of message vividness can lead to greater transportation (Read, et al., 2006), the results of this study indicate that even though the information contained in the two
message types is identical, different styles of language can result in different levels of engagement.

Another reason for these findings may be that the narrative article presents a continuous story, while the exemplar condition is a story that is separated by factual information. Both narrative transportation and engagement refer to a convergent state in the viewer of immersion into the story and a focusing of all the mental efforts on the story (Green & Brock, 2002; Busselle & Bilandzic, 2009); however, participants who viewed the exemplar were distracted by factual information. For them, the story contained in the message was not continuous, and their attention was drawn away by the factual information. Therefore, they could not be as engaged as their counterparts who viewed the narratives, and hence their transportation and engagement levels were lower than those who viewed the continuous narratives.

The results also show that message types do not have an effect on participant identification and cognitive thoughts. Identification (the involvement with a character) is a connection between a recipient and a character (Moyer-Gusé, 2008). Since the same character was used under different conditions while telling the same story, it is reasonable to find that participant feelings about the character were constant across both message type conditions.

Cognitive thoughts, it is believed, are related to both participant transportation and identification level. Prior literature suggests that people may lack the ability or motivation to generate counterarguments about a message if they are transported into the narrative world and they are less likely to counter-argue with those characters that they identify with (Dal Cin, Zanna, & Fong, 2004; Moyer-Gusé, 2008; Slater & Rouner, 2002).
In this study, message type has no effect on participant identification. Both narrative and exemplar messages contained a story. This might explain why the message type did not significantly influence participant cognitive thoughts.

Although the narratives led to better effects than the exemplar on upstream variables such as transportation and engagement, the more important outcome variable—persuasion—was not influenced by the message type. The major reason is that unlike prior studies that compared narrative’s effects to statistical information or factual information (e.g., Block & Keller, 1997; Thompson & Haddock, 2008; Whalen & Maurer-Starks, 2007), the stimulus for the control group in this study contains an exemplar. The content of the narrative and the exemplar was almost identical; the variation was that only first-person perspective was used in the narrative condition, while both third-person and first-person perspectives were used in the exemplar condition. In the exemplar condition, the story was shortened into an exemplar with certain details removed, and these eliminated details were presented from the third-person perspective. In other words, the information presented to the participants was identical but presented in different ways. Therefore, the perceived persuasiveness of the two distinct messages did not show significant differences, which might explain why neither case lead to different levels of persuasion. Although narratives were more compelling than exemplars and participants were more engaged in the narratives in this study, the narratives couldn’t lead to better attitude and intention change when compared to the exemplars.

Another possible reason the narratives did not lead to better persuasion in this study may be that skin cancer is not a new topic among college students. Narratives can persuade people through both cognitive and affective effects (Green, 2006). Since the
topic and the story were not novel among the student participants, the affective response elicited may have been limited. Some participants noted that they thought the issue was not novel. In their thought lists, some students wrote comments such as, “The issue is not new to me” and “Heard the similar story before.” For those familiar with the issue and the story, the lack of suspense in the narratives means that the narratives could not elicit more affective responses or better persuasion than the exemplar messages.

Independent t-test results showed that contrary to our predictions, print messages led to a higher level of transportation, identification, and narrative engagement, more supportive thoughts, and fewer counterarguments than video messages. However, it is reasonable to speculate that it is the message quality, not the message channel, which contributes to this finding. ANOVA analysis results show that participants who viewed the print messages perceived the message quality to be significantly higher than their counterparts who watched the videos. After potential confounding variables (including perceived quality of the message) were statistically controlled, no difference was shown in terms of the transportation, identification, engagement level, or cognitive thoughts between the two message channels. As predicted, however, media channels do make a difference in narrative persuasion. Participants who watched the video narrative reported less tanning intention than those who viewed the print narrative message.

As noted earlier, the lack of professional quality of the video might be the main reason why media channels did not show significant effects on upstream variables, including transportation, identification, and so forth. The two videos used in this study were made by the author, and they were not qualified as professional PFA videos. Participants thought the print messages had better qualities than the videos. Several
participants directly criticized the quality of the video in their thought lists. For example, a participant wrote, “The video is not professional” while others observed that the video was “scripted” or directly pointed out, “I thought she was reading a story.”

Still other participants mentioned that the videos they watched were boring, while no print message viewer generated similar comments. This brought out another question: do people have higher expectations of video quality? A character was sitting in front of the camera speaking the same message as that in the textual materials, yet participants felt the videos were boring and perceived them to exhibit lower quality than the textual messages. Based on this observed result, it is reasonable to speculate that people are not satisfied to watch a “talking head” in a three-minute video, even if the “talking head” is telling a story. If this is so, the quality level of what people expect to see in such a video would be an interesting question to address in future research. Equally importantly, what a video could add to a story’s persuasiveness also calls for research attention.

Even though the potential mediating variables do not show the expected differences between two channels, the video narrative does lead to a lower level of tanning intention. A possible reason might be that participants perceived the message in video as more persuasive than print message. In the video, a college girl is talking about “her own experience”; participants are likely to believe that she is telling a real story and perceive the message as more persuasive, which may result in a lower level of tanning intention among the participants.

**Limitation and Future Directions**

The major limitation of this study is that the videos used were made by the author and do not qualify as professional PFA videos. The lack of professional video quality was
found to directly influence the message’s effects on participants, which partly accounts for why we could not find an underlying mechanism to explain why the narrative in video led to better persuasion than the print narrative. Future study should involve professional videos to ensure that the quality of message is constant across different media channels.

Another limitation of the study is that the issue of skin cancer is not a new topic to college students. Many students had been exposed to similar information or stories before they participated in the experiment, which weakened the message’s persuasiveness.

In addition, the participants all were recruited from one college at one university, and the sample size was disproportionate between female and male students, in addition to being racially segregated. Future study should recruit participants more evenly in terms of gender and further explore how and why gender moderates message type’s persuasive effects.

Last but not least, we conducted an online experiment and let participants view the health-related message and finish the questionnaire without any monitoring; thus, we couldn’t be sure all participants viewed the entire message and completed the questionnaire carefully. Future study should consider conducting the experiment in a controlled environment to make sure all the participants are fully engaged and complete the questionnaire.
REFERENCES


sexual behavior among men who have sex with men. *Human Communication Research, 32*(1), 1-34.


The International Agency for Research on Cancer Working Group on artificial ultraviolet (UV) light and skin cancer. (2007). The association of use of sunbeds with
cutaneous malignant melanoma and other skin cancers: A systematic review.  


Appendix A: Figures and Tables

Figure 1. Main Effects of Message Type

Note: Both main effects are significant at a significance level of 0.05.
Figure 2. Main Effect of Media Channel on Tanning Intention (For narratives only)

Note: The main effect is significant at a significance level of 0.05.
Figure 3. Mediation Test Model
Table 1.
Correlation Matrix and Reliabilities

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Note: Numbers in parentheses are reliabilities.

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).
Table 2.
Mean and Standard Deviation Scores of Dependent Variables by Message Types and Message Channels

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<sup>Note:</sup> Cell numbers are means and numbers in parentheses are standard deviations.
Table 3.
Marginal Estimated Means and Standard Deviation Scores of Dependent Variables by Message Types and Message Channels with Three Covariates.

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*Note:* Cell numbers are means and numbers in parentheses are standard deviations.

Tanning History, Personal Relevance, and Issue Familiarity are controlled as Covariates.
Table 4.
Marginal Estimated Means and Standard Deviation Scores of Dependent Variables by Message Types and Message Channels with Four Covariates.

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*Note:* Cell numbers are means and numbers in parentheses are standard deviations.

Tanning History, Personal Relevance, Issue Familiarity, and Perceived Quality of Message are controlled as Covariates.
Appendix B: Experiment Stimulus (Print messages only)

1. Narrative Message

Hi, my name is Lauren. I am a senior in college. I would like to tell you my story about tanning and skin cancer.

I tried tanning for the first time in sixth grade. I felt like the pale girl in class. Almost all my classmates were tanning and it seemed like I really stood out. Being tanned gave me confidence, because it helped me blend in with my friends. By the time I got to high school, I was tanning every other day. My family even bought me a tanning bed! We hoped it would save money — considering I spent 100 dollars at tanning salons every single week.

That summer, I noticed a strange mole on my leg. I had read a story in a magazine about checking abnormal moles, and I was worried that mine might fit the descriptions. I asked my mom to make a dermatologist appointment, but we couldn’t get one in nine months, because there was only one dermatologist in the county.

I wasn’t that worried, but when I went to a family doctor and had a routine checkup, my family doctor was really concerned and got me an appointment the next day! That really freaked me out. A week later, I had the mole removed and I thought everything would be fine.

But then a few days later, my dad told me that we needed to talk. He said, the doctor had my test results, and I had malignant melanoma. I thought, skin cancer? I’m 17, there is no way I can have skin cancer. I sat there in silence. Finally, I asked, "Dad, can I die from this?" He tried to reassure me that they caught it early and I would be okay, but I could tell that he was scared too.

Two weeks later, we went to a melanoma specialist who removed flesh that was half a centimeter deep, around where my mole had been. There’s still an indentation next to where the mole was, and I will probably never get rid of it. On top of that, the cancer could still come back, which haunts me every day. I have to get skin checks with a dermatologist every four months, and check my lymph nodes for swelling because the cancer could spread and even resurface.
Now I never tan — though some of my friends still do. They just don’t get it. My continuous use of tanning bed when I was so young is the main reason why I got cancer.

Skin cancer is the most common form of cancer in the United States, and one out of five Americans will get skin cancer in their lifetime. Between 40 and 50 percent of Americans who live to 65 will have skin cancer at least once. One of the most dangerous types of skin cancer is melanoma, and it could be deadly. Using tanning beds can damage the skin and lead to cancer.

2. Exemplar Message

Hi, my name is Lauren. I am a senior in college. I would like to tell you a few things about the problems with tanning.

Skin cancer is the most common form of cancer in the United States, and one out of five Americans will get skin cancer in their lifetime. Between 40 and 50 percent of Americans will have skin cancer at least once before they are 65. Using tanning beds can damage the skin and lead to cancer.

Research has shown that using a tanning bed can significantly increase your chance of getting melanoma. What’s worse, the first use of tanning beds before 35 years old can even significantly increase the risk of getting skin cancer.

Most kids start to tan in middle school or high school and don’t even think about what could happen to them. Some research studies show that kids start to tan at a very young age, and by the time they get to high school, some of them are tanning every other day or every day in order to fit in.

I also started to tan in high school, and my family even bought me a tanning bed to save money.

Most skin cancer will start with a strange mole or pimple. It could be anywhere - on the back, on the leg, on the face, and other parts. Some people may notice it and go to see a doctor. Some common treatments are using a laser to remove the skin cancer,
removing it with surgery, or receiving radiation therapy. Most people will choose to remove it if they find a strange mole on their body. One of the most dangerous types of skin cancer is melanoma, and it could be deadly.

I’m a survivor of melanoma because we caught it early and removed it immediately. We went to a melanoma specialist who removed flesh that was half a centimeter deep, around where my mole had been. There’s still an indentation next to where the mole was, and I will probably never get rid of it.

Skin cancer can still come back even after people have been cured. Most people who have had skin cancer have to get routine checks with dermatologists. They are worried everyday, and their families are concerned, too.

This is also my situation. I still have to get skin checks every four months and check my vital signs because the cancer could resurface anytime.

One of the most common misperceptions of skin cancer is that only old people could get skin cancer and young people won’t, but that’s not true. I’m a victim of tanning, I got skin cancer at a very young age, and I know from my experience that it’s really bad. No matter what you may hear at tanning salons, damage from years of tanning can really hurt you. If you care about your health, you should stop using tanning bed or any other tanning tools.
Appendix C: Questionnaires

Q1: We are interested in what you were thinking while reading the message. Please list all thoughts that came to mind regarding this message.

You may use single words, phrases, or short sentences. Ignore spelling, grammar, and punctuation. There are no right or wrong answers.

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

Please put only one idea or thought in each box.

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</tr>
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<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
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</table>

Q2:

a. Do you think the message you have just read is of high quality?

Not at all 1 2 3 4 5 6 7 Very much

b. Did the article you have just read use mainly a story about or factual information to illustrate the issue?

Used a story 1 2 3 4 5 6 7 Used factual information
c. Did the message contain a plot?

Not at all  1  2  3  4  5  6  7  Definitely


d. Did the message contain a main character?

Not at all  1  2  3  4  5  6  7  Definitely

Q3: Overall, the message I just viewed was...

a. Not at all persuasive  1  2  3  4  5  6  7  Very persuasive

b. Not at all effective  1  2  3  4  5  6  7  Very Effective

c. Not at all convincing  1  2  3  4  5  6  7  Very convincing

d. Not at all compelling  1  2  3  4  5  6  7  Very compelling

e. Not at all credible  1  2  3  4  5  6  7  Very credible

f. Not at all believable  1  2  3  4  5  6  7  Very believable

g. Not at all truthful  1  2  3  4  5  6  7  Very truthful

Q4:

a. Based on the content you have just viewed, what disease did the girl get?

A. Breast cancer

B. Melanoma

C. Leukemia

D. Basal cell cancer
b. Based on the content you have just viewed, what caused the girl’s disease?

A. Excessive sports activity
B. Excessive sun exposure
C. Tanning bed use
D. Family history

Q5: Perceived Vividness

a. I could fully visualize how this story happened.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

b. I was directly experiencing the girl’s story.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Q6: Narrative Transportation

a. While I was reviewing the article, I could easily picture the event in its taking place.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

b. While I was reviewing the article, activity going on in the room around me was on my mind. (R)
c. I could picture myself in the scene of the event described in the article.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree

Q7: Identification

a. I think I have a good understanding of the girl in the story.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree

b. While viewing the article, I could feel the emotions the girl portrayed.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree

c. During viewing, I felt I could really get inside the girl’s head.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree
d. During viewing, when the individual succeeded, I felt happy, and when she suffered in some way, I felt sad.

Strongly disagree 1  2  3  4  5  6  7  Strongly agree

e. I felt sorry for the individual in the article.

Strongly disagree 1  2  3  4  5  6  7  Strongly agree

Q8: Narrative Engagement

a. At points, I had a hard time making sense of what was going on in the article.

Strongly disagree 1  2  3  4  5  6  7  Strongly agree

b. My understanding of the characters is unclear.

Strongly disagree 1  2  3  4  5  6  7  Strongly agree

c. I had a hard time recognizing the thread of the article.

Strongly disagree 1  2  3  4  5  6  7  Strongly agree

d. I found my mind wandering while viewing the article.

Strongly disagree 1  2  3  4  5  6  7  Strongly agree
e. While viewing the article I found myself thinking about other things.

   Strongly disagree  1  2  3  4  5  6  7   Strongly agree

f. I had a hard time keeping my mind on the article.

   Strongly disagree  1  2  3  4  5  6  7   Strongly agree

Q9: Personal Relevance

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

The reading material was personally relevant.

   Strongly disagree  1  2  3  4  5  6  7   Strongly agree

Q10: Familiarity

Before I read the message, I was...

   Not familiar with  1  2  3  4  5  6  7   Very familiar with
   the issue            the issue

Q11: Attitude towards tanning

a. I feel favorable about tanning.

   Strongly disagree  1  2  3  4  5  6  7   Strongly agree

b. I feel favorable about going to a tanning salon.
c  I feel favorable about using a tanning bed.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree

---

d  I feel favorable about going to a tanning salon because I think it is safer than the sun.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree

---

e  I feel favorable about going to a tanning salon because I think it’s a good way to relax.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree

---

f  It feels physically good to lie under a sunlamp.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree

---

g  Tanning is good for my health.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree

---

h  Tanning can make me look better.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree
All things considered I have a negative attitude toward tanning at this time in my life.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree

Q12: Tanning intention

a. I intend to use tanning bed or other tanning tools in the next year.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree

b. I intend to use tanning bed or other tanning tools in the future.

Strongly disagree  1  2  3  4  5  6  7  Strongly agree

Q13: Tanning history

a) In general, how often do you go to a tanning salon? (    )

A. I never go to a tanning salon

B. less than once a month

C. 1 to 2 times per month

D. once per week

E. more than once per week
b) In general, how often do you tan under natural sunlight during summer time? (  )

A. I never tan under natural sunlight
B. less than once a month
C. 1 to 2 times per month
D. once per week
E. more than once per week
F. nearly every day

c) Please indicate approximately how many days in the past year you have tanned (both natural tan and using tanning tool). (  )

A. Never
B. less than 10 times
C. 10 to 25 times
D. 26 to 50 times
E. 50 to 200 times
F. more than 200 times
d) Please indicate approximately how many days in the past 3 months (approximately 90 days) you have tanned (both natural tan and using tanning tool). (  )

A. Never
B. less than 3 times
C. 3 to 6 times
D. 7 to 12 times
E. 13 to 50 times
F. more than 50 times

e) Please indicate approximately how many days in the past 1 month you have tanned (both natural tan and using tanning tool). (  )

A. Never
B. 1 to 2 times
C. 3 to 5 times
D. 6 to 12 times
E. 13 to 25 times
F. All the time

Q14: Demographic information

a) What is your age

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b) **Your race ( )**

A. White American
B. African American
C. American India and Alaska native
D. Asian
E. Native Hawaiian and other Pacific Islander
F. Others

c) **Your gender ( )**

A. Male
B. Female

d) **What is your approximate annual family income before taxes? ( )**

A. Less than $10,000
B. $10,000 to $29,999
C. $30,000 to $49,999
D. $50,000 to $74,999
E. $75,000 to $99,999
F. $10,0000 to $14,9999
G. More than $15,000
e) Which year are you at Penn State? ( )

A. Freshman
B. Sophomore
C. Junior
D. Senior
E. Graduate student

f) Are you an international student? ( )

A. Yes
B. No