Talking about Narrative Messages: The Interaction between Elaboration and Interpersonal Validation

Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

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2020

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Abstract

Past research has found that generally having a discussion with other people about a health message after exposure can help increase the effectiveness of the message. While certain factors, such as conversational valence and the relationship between conversational partners, can impact the effectiveness of such a conversation, there is little research into the causal mechanisms that drive the impact of a discussion on attitudinal outcomes. To investigate the potential mechanisms of how a discussion of a health message can lead to more positive outcomes than there being no discussion, this dissertation turns to the elaboration likelihood model (Petty & Cacioppo, 1986) and self-validation theory (Petty et al., 2002). These theories suggest that discussion of a health message leads to more elaboration about the message. This higher level of elaboration leads to more thought confidence which results in more positive attitudes towards the health topic. Additionally, it is theorized that interpersonal discussion of a health message leads to more perceived validation of thoughts which has also been shown to positively influence though confidence. Dissertation hypotheses were tested within the context of a narrative about BRCA mutation testing for women in their 20s. To test whether elaboration was higher in interpersonal discussions than in other situations, this dissertation asked participants to either to discuss a health message, to think carefully and write about the message, or were not directly asked to elaborate on the health message. Additionally, those who were asked to discuss the health message were given exclusively

positive feedback by a confederate (whom participants thought was another participant in the study). Results indicate that those who had a discussion did not engage in more elaboration than those who were asked to write about the message or were not given any elaboration instructions, nor was condition related to differences in perceived validation. However, as expected elaboration and perceived validation were related to thought confidence, which was in turn related to more positive attitudes towards BRCA mutation testing. While results failed to support the notion that interpersonal discussion of a health message leads to more positive attitudes than if no discussion happens, it does offer support for the propositions of self-validation theory (Petty et al., 2002). Additionally, results have important theoretical and practical implications for health communication practitioners.

Dedication

To my immediate family: Mom, Dad, Don, Tim, & Tink. Thank you for putting up with me all these years. I love you all.

Acknowledgments

I would first like to acknowledge my advisors, Dr. Shelly Hovick and Dr Emily Moyer-Guse. Thank you for your unending support and guidance while I was uncertainly searching for my niche in communication. Dr. Jesse Fox also deserves major props for being an amazing, and honest sounding board and being a great mentor. Dr. Kimberly Neuendorf and Dr. Paul Skalski (miss you P$) deserve untold credit as well for helping me discover my love of research.

The biggest thank you goes out to my family of choice, the Sunday Night Dinner crew (Kate, Nathan, Sarah, Bridget, George, and Simon). Without all of you putting up with my freak outs, stats questions, geek rants, and force feeding me vegetables, I would not have made it. You continuously prove that you are the best friends I've ever had, and that you are my people. Special shout out to Kate for being my emotional rock and best friend during this whole process and for Sarah who had to deal with real time reactions to the editing of this dissertation. I should also acknowledge the rest of the SoC grad students as we are truly a village! Michael Schur should also get a shout out because without his shows, I would not have survived this process.

Finally, thank you to my immediate family, Mom, Dad, Don, Tim, and Tink. You all put up with so much from me yet continue to love and support me through everything (whether you want to or not). Without you, I wouldn't be where I am at now. Who would've thought even 10 years ago I'd proudly graduating from Ohio State?

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Rader, K., Neuendorf, K. A., & Skalski, P. D. (2016). Audio-visual translation in international film: Intercultural experience as moderator in audience recall and enjoyment. Journal of Intercultural Communication, 42.

Fields of Study

Major Field: Communication

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Chapter 1: Introduction

Narrative persuasion research has focused largely on direct media effects; specifically, how encountering a narrative impacts an individual's psychological, attitudinal, and behavioral reactions. Narratives, stories that have a beginning, middle and end that provides a conflict and resolution (Hinyard & Kreuter, 2007), have been shown to have a significant impact on attitudes and behavioral intentions, especially within the health communication realm (Shen & Han, 2014). However little research has looked into how interpersonal communication following viewing of a persuasive narrative impacts attitudinal and behavioral outcomes. As a result, the potentially rich influence of interpersonal communication (i.e., when information is exchanged by multiple people in an encounter; Berger, 1977) on the process of narrative persuasion has largely been ignored. Studies of narrative persuasion, particularly those utilizing entertainment-education (E-E, Singhal & Rogers, 2001) have shown that exposure to health-related narratives can spark interpersonal discussion about the issues portrayed in those narratives (Papas-DeLuca, et al., 2008; Rosenthal et al., 2018; Wang & Singhal, 2016), yet we know little about the effect of interpersonal discussion on attitudes.

Entertainment-education refers to a media message that is designed to both entertain and educate an audience, in order to increase their knowledge and create favorable attitudes about a pro-social topic (Singhal & Rogers, 2001). Studies have shown that the persuasive effects of a public health campaign are heightened when a

discussion of the health issue happens (Jeong & Bae, 2018). Thus, encouragement of interpersonal discussion of narrative messages could help bolster the strong, positive effects of these narratives on health behaviors (Chatterjee et al., 2009; Papas-DeLuca et al., 2008).

Although it is understood that narrative exposure can lead to more story-consistent beliefs (Green & Brock, 2000), there are gaps in our knowledge about how this process happens, particularly the role of interpersonal communication with others regarding the narrative. Studies have shown that viewing of persuasive media can lead to interpersonal discussion about the media and presented health topic (Chaterjee et al., 2009), which can amplify persuasive outcomes (Rimal et al., 2013).Therefore, interpersonal discussion may be influential in the narrative persuasion process, although narrative theories generally do not take interpersonal discussion of the messages into account.

Overview. To better understand the effects of interpersonal discussion on persuasive media effects this dissertation turns to the elaboration likelihood model (Petty & Cacioppo, 1986) and self-validation theory (Petty et al., 2002). Using these theories as guides, this dissertation proposes two underlying mechanisms driving the influence of interpersonal communication on media effects: the *intra*personal and *inter*personal hypotheses. According to the *intra*personal hypothesis (Southwell & Yzer, 2007), which is based on the elaboration likelihood model (Petty & Cacioppo, 1986), conversations that follow persuasive message exposure allow for deeper elaboration on the health message, which may reinforce attitudes or lead to attitude change. The *inter*personal hypothesis, which is based on self-validation theory (Petty, et al., 2002) predicts that

conversation, in addition to leading to further elaboration, allows for validation from others on people's thoughts about a message. This perceived validation can impact (positively or negatively) our confidence in our reactions to the message and, in turn, reinforce or change attitudes. Combining these two explanations (the *intra*personal and *inter*personal hypotheses), it was proposed that audience members' elaborations on a health message are important predictors of persuasion effects. The more people elaborate and drew connections between the narrative and their own world, the more attitude change or reinforcement should happen. Furthermore, it was proposed that the validation people receive from others during interpersonal discussions of a health narrative serves as a way for audience members to validate their thoughts regarding the health message and gain confidence in the soundness of their ideas. Once they perceive their thoughts as valid, people's attitudes and behavioral intentions should strengthen. In this dissertation, these predictions were tested in an experiment, wherein participants viewed a narrative about BRCA genetic mutation testing and were either asked to discuss the narrative with a peer or to write about their thoughts about that narrative. This study provides important new evidence about the role of interpersonal communication in the process of media persuasion and will help guide the development of interventions that incorporate these techniques.

Chapter 2: Literature Review

Conceptual and Operational Issues Surrounding Interpersonal Discussion

Interpersonal discussion, when investigated as variable in media effects research, has not been uniformly defined or measured (e.g., Brennan et al., 2016; Kam & Lee, 2012; Rimal et al., 2013). For example, a recent meta-analysis looking at interpersonal communication generated by mass media health campaigns did not provide definitions of interpersonal communication or discussion used across studies (Jeong & Bae, 2018). This lack of conceptualization regarding interpersonal communication is problematic because it makes it hard to draw conclusions about the role of interpersonal communication across such studies. When looking at individual studies investigating interpersonal discussion's influence on persuasive media message, researchers simply state they are interested in conversations (e.g., Robbins & Niederdeppe, 2017) or interpersonal discussions (e.g., Dunlop et al., 2008) resulting from campaign exposure, without giving any definition to these terms. Southwell & Yzer (2007) acknowledge the difficulty in defining interpersonal communication, but define interpersonal discussion as a consequential behavior (e.g., one person's behavior is influenced by the other person) that happens in diverse contexts. Interpersonal discussion is defined here as occurring when two people exchange information and/or opinions about a media message through any channel. This is not meant to say that interpersonal communication/discussion can *only* take place between two people. The distinction between interpersonal and small group

communication is not entirely clear, as the upper limit of people included in interpersonal communication is contested and definitions based on the number of participants have been criticized (Berger, 1977).

Discussion has primarily been measured by self-reports, asking participants if they had discussed either the target health topic (e.g., HIV/AIDS related behaviors, Chaterjee, et al., 2009; drugs, Kam & Lee, 2012) or a specific media message (e.g., PSAs, Dunlop, 2011; E-E program, Pappas-DeLuca, et al., 2008). Researchers tend not to gather information such as the length of the discussion, the valence of the discussion, or with whom the discussion took place. Furthermore, participants are rarely asked to discuss the health message as part of the study (e.g., alcohol use, Hendriks et al., 2014; AIDS, Lubinga et al., 2016; HPV vaccine, Dunlop et al.,, 2010; teen pregnancy, Moyer-Gusé et al., 2019). When participants are asked to discuss a health message, these conversations usually took place over the span of five (e.g., Dunlop et al., 2010; Hendriks et al., 2014) to ten (Moyer-Gusé et al., 2019) minutes. Additionally, the level of familiarity with conversational partners varies greatly across studies, from discussions between complete strangers (Hendriks et al., 2014) to friends (Dunlop et al., 2010) and family members (e.g., mothers and daughters, Moyer-Gusé et al., 2019). Taken together, it is clear that there is a lack of conceptual and operational uniformity in the investigation of the role of interpersonal discussion in media effects research, which makes it hard to draw conclusions about the role of interpersonal communication. Thus, this research, with its explicit definition of the type of interpersonal communication under investigation and use of experimental methods, hoped to build a strong conceptual foundation and

operational uniformity when it comes to research regarding the discussion of persuasive media messages.

Interpersonal Communication and Health Campaigns

Outcomes. Across studies, interpersonal communication about campaign messages and their advocated health behaviors is an important predictor of attitude and behavior change (Jeong & Bae, 2018). And, by and large, studies (across contexts) have found positive behavior change after discussions about health campaigns. Those who had conversations about health campaigns were more likely to intend to quit smoking (Brennan et al., 2016; Dunlop, 2011; Dunlop et al., 2013; Durkin & Wakefield, 2006; Hafstad & Aaro, 1997; van den Putte et al., 2011). Additionally, interpersonal discussion was associated with lower intentions to engage in binge drinking (Hendriks et al., 2012; Hendriks et al., 2013, 2015; Hendriks et al., 2014), intentions to undergo a hearing test (Stephenson et al., 2009), healthy sleeping (Robbins & Niederdeppe, 2017), and intentions to use condoms (Frank et al., 2012). Positive changes in hand washing (Botts et al., 2008), less smoking (Dunlop et al., 2008; Hafstad & Aaro, 1997; Jeong et al., 2015; Morgan et al., 2018; Parks & Kim, 2018), HIV prevention (Chaterjee et al. 2009), higher rates of HIV testing (Do et al., 2016), healthier eating habits (Rimal & Flora, 1998), birth preparedness (Shefner-Rogers & Sood, 2004), and greater frequency of condom use (Sood & Nambiar, 2006) were also associated with interpersonal discussion of health messages.

Studies have looked at attitudinal outcomes resulting from interpersonal discussion. Those who discussed a persuasive media message were shown to have healthier attitudes towards smoking (Anderson & Holody, 2014; Hafstad & Aaro, 1997;

van den Putte et al., 2011), drug use (David et al., 2006), condoms (Frank et al., 2012), sleep (Robbins & Niederdeppe, 2017) and hearing tests (Stephenson et al., 2009). Increases in perceived risk (towards skin cancer, Morton & Duck, 2001), healthier normative perceptions (against binge drinking, Hendriks et al., 2013; Hendriks et al., 2016; against tobacco use, Schuster et al., 2006), and increases in knowledge (HIV/AIDS, Rimal et al., 2013; Snyder, 1991; birth preparedness, Shefner-Rogers & Sood, 2004) have also been found when interpersonal discussions happen after media exposure. Taken together, these studies illustrate that talking about a health message and its targeted health behavior can influence health outcomes, although explanations for these effects are unclear.

The effects of conversation on persuasive media outcomes have largely been positive (e.g., in the direction the campaign intended), but a few studies have found negative effects, primarily when it comes to anti-drug campaigns aimed at youth. In a study that looked at an anti-marijuana campaign in high schools, those who chatted about the campaign with classmates (versus those that did not) illustrated more positive marijuana attitudes than negative attitudes and perceived less disapproval of its use from authority figures (David et al., 2006). In a similar study that looked at an anti-drug campaign aimed at teenagers found that teens who talked to their friends about a drug use campaign were more likely to visit anti-drug websites, although these teens were more likely to use cigarettes (Kam & Lee, 2012). In both of these studies, researchers attributed the negative outcomes of interpersonal discussion about a health message to the fact that these conversations may have been held with peers who had more positive attitudes

towards drug use and were more likely to already be using drugs (David et al., 2006; Kam & Lee, 2012).

Conversational partner type. A variety of conversational partner types have been investigated in studies examining interpersonal discussion resulting from persuasive media exposure, ranging from discussions between sexual and/or romantic partners (Berner et al., 2008; Do et al., 2016; Hafstand & Aaro, 1997; Helme et al., 2011), friends (Botta et al., 2008; Do et al., 2016; Dunlop, 2011) to school peers (David et al., 2006), family (Chaterjee et al., 2009) and doctors (Berner et al., 2008). While studies that do not specify with whom these conversations take place still find effects (e.g., Donne et al., 2016), existing evidence does indicate that the *type* of relationship can moderate interpersonal effects on media persuasion. Jeong and Bae (2018) found that conversations with a spouse or romantic partner had the largest effects on health outcomes, although conversations with general others and peers also led to positive outcomes.

Conversation content. In addition to investigating the nature of relationships between conversational partners, research has also shown that the content of conversations may impact the persuasion process. Whether or not an interpersonal discussion focuses on the campaign itself or on the targeted health behavior is an important distinction (van den Putte et al., 2011). In an investigation into anti-smoking ads, Jeong and colleagues (2015) found that talking about the health message (in general) was not predictive of behavioral outcomes (e.g., making attempts to quit), yet talking about quitting and seeking social support in quitting were related to quit attempts. Furthermore, they found that talk about the message in general was positively related to talk about quitting, which was further predictive of making a quit attempt (Jeong et al.,

2015; van den Putte et al., 2011). Thus, it appears that conversations should focus on the targeted health issues if they are to be successful in amplifying media effects.

The valence of interpersonal conversations (positive or negative) about health messages can be predictive of attitudinal and behavioral outcomes as well. In a study of HIV PSAs in India, positive discussions of PSAs that were supportive of condom use predicted positive attitudes towards condom use, increased self-efficacy, and led to more positive perceptions of subjective and descriptive norms (Frank et al., 2012). Conditional effects of conversation valence have also been found, wherein the valence of the conversation (positive or negative) moderated the effects of the conversation on attitudes (e.g., Brennan et al., 2016; Dunlop et al., 2010). A study looking at discussion's impacts on smoking attitudes found that when conversations about the campaign were positive, and talk about quitting, intentions to quit smoking were high (Brennan et al., 2016). However, when the discussion was negative towards the message, participants reported lower intentions to quit smoking (Brennan et al., 2016). Taken together, this research shows that discussion about media messages, and the content of such discussions, may influence the persuasion process.

Past Experimental Research. Despite the insights gained from past research into the effects of interpersonal discussion on health-related attitudes and outcomes, the above studies have primarily depended on cross-sectional data (e.g., Anderson & Holody, 2014; Chaterjee et al., 2009). The use of experimental methods in this context may help researchers to pinpoint exactly how interpersonal discussion amplifies message effects. Additionally, experimental methods allow for more control and consistency regarding the discussion itself (e.g., conversational partner, conversational content). Some recent

studies on discussions of health campaigns have used experimental methodologies (Hendriks et al., 2015; Robbins & Niederdeppe, 2017) and are reviewed below.

Past studies that have used experimental methods have manipulated various contextual features of the conversation. In a study looking at conversational context, participants were randomized to discuss an anti-binge drinking commercial with either a familiar or unfamiliar partner (Hendriks et al., 2016). Results showed a main effect of familiarity on conversational valence, wherein familiar partners had more negative conversations about the commercial and unfamiliar partners had more positive conversations (Hendriks et al., 2016). Other studies have manipulated either the presence or absence of a conversation (e.g., Dunlop et al., 2010) or the overall valence (positive or negative) of the conversation (Robbins & Niederdeppe, 2017). When participants discussed a radio ad about the HPV vaccine, they reported more positive attitudes than when there was no conversation (Dunlop et al., 2010). Additionally, another study looked at the presence or absence of a conversation in response to a video about sleep hygiene, and further manipulated the conversation (which was with a confederate) so that it was either a neutral conversation (e.g., not about the video), or positive or negative towards sleep hygiene (Robbins & Niederdeppe, 2017). Results indicate that those who had a more positive conversation about sleep hygiene had healthier behavioral intentions than those in the negative chat condition (Robbins & Niederdeppe, 2017). Taken together, these studies help further our knowledge about the role of interpersonal communication in persuasive media effects but illustrate there are still gaps in our knowledge of how this process works.

Mechanisms Driving Interpersonal Discussion Effects

While there is evidence of interpersonal discussion's moderating influence on the relationship between media exposure on health attitudes (Dunlop, et al., 2010; Geary et al., 2007; Gehrau et al., 2012; Southwell & Yzer, 2007), little is known about how discussion affects the persuasion process. That is, what is it about discussion that leads to stronger media effects? For example, does discussion lead to greater cognitive elaboration of the health message? And does discussion allow one to receive validation of his or her understanding of the health message, which strengthens our initial reactions towards the health topic? This dissertation turned to two major theoretical concepts: the elaboration likelihood model (Petty & Cacioppo, 1986) and self-validation theory (Petty et al., 2002) to help explain this process.

Several possible explanations of how discussion impacts the persuasion process have been proposed, grounded primarily in elaboration-based theories such as the elaboration likelihood model (ELM; Petty & Cacioppo, 1986) and self-validation theory (Petty et al., 2002). These explanations suggest that discussion allows for an additional opportunity for individuals to elaborate on the message (a process that will be referred to as the *intra*personal hypothesis; Brinol & Petty, 2015; Southwell & Yzer, 2007). Additionally, discussion may allow us to receive feedback on our reactions, which allows for the validation of our thoughts about the message (a process that will be referred to as the *inter*personal hypothesis; Brinol & Petty, 2015; Geharu et al., 2012). However, these explanations (i.e., the *intra*- and *inter*personal hypotheses) have not been tested in conjunction with each other. Additionally, the *intra*personal hypothesis has been tested only in a single cross-sectional study (Eveland, 2004), which makes causal claims regarding the role of interpersonal discussion and elaboration difficult. In contrast, the

*inter*personal hypothesis has been mostly tested in artificial lab settings, where validation was provided in the form of a statement of consensus with the participants' position. Having participants obtain validation through discussion (rather than via a written statement) could allow for a more externally valid test of this hypothesis. Thus, further research into both the *intra*- and *inter*personal hypotheses is needed to better understand the processes at play.

This dissertation discusses how the *intra*- and *inter*personal hypotheses are supported by deictic shift theory (DST; Hamby et al., 2018), as a way to highlight how investigating what happens after media exposure is important to understand the persuasion process. DST incorporates various narrative persuasion research traditions into a single model of narrative persuasion. The model suggests that narrative absorption (a general sense of immersion or involvement in a narrative, Hamby et al., 2018) and subsequent elaboration on the connections between the narrative and the viewer's world may lead to narrative persuasion effects. According to this theory, transportation, which is the feeling of being swept up into the story world (Green & Brock, 2000) and identification, which is when we experience events through a character's perspective (Cohen, 2001), combine into one overall concept of narrative absorption. Narrative absorption is defined as a general sense of immersion or involvement in a narrative (Hamby et al., 2018).

The section below describes each of these theories (i.e., ELM and self-validation theory), how they overlap with narrative persuasion processes as outlined in DST, and how they relate to the relationships proposed and tested in this dissertation (Figure 1). First the *intra*personal hypothesis and its theoretical basis in both ELM and DST will be

discussed, followed by a discussion of the *inter*personal hypothesis and its own theoretical basis in self-validation theory and its potential overlapping connections to DST.

***Intra*personal hypothesis.** While evidence is growing that discussion can serve as a moderator of media effects, the mechanisms driving the effects of discussion on the persuasion process are not well understood. Two potential mechanisms have been proposed in past research, referred to here as the *intra*personal and the *inter*personal hypotheses. The first, the *intra*personal hypothesis, is based on models of message processing, such as ELM (Petty & Cacioppo, 1986) and DST (Hamby et al., 2018), which explores these processes in the context of persuasive narratives. According to this potential explanation, discussion of media messages leads to more elaboration on the health topic which leads to more persuasion, following the predictions of the ELM and DST.

ELM and elaboration. After decades of confusing and contradictory results of attitude change research, there was a push to establish more accurate and encompassing theories of persuasion (Petty & Cacioppo, 1986). Due to this theoretically murky state of the paradigm, several dual process theories of persuasion were proposed, the most influential being the ELM (Petty & Cacioppo, 1986). According to these dual process theories, people process information in one of two ways, either by giving the provided information careful thought and consideration, or not giving it much thought and depending on surface level cues to determine their attitudes towards attitude targets (Petty & Cacioppo, 1986). The theories term these two routes to persuasion using different terms (i.e., systematic or heuristic processing in the Heurisitc-Systematic Model of

Information Processing, Eagly & Chaiken, 1993), but they are referred to as central and peripheral processing routes in the ELM (Petty & Cacioppo, 1986). Elaboration is defined as "the extent to which a person thinks about the issue-relevant arguments contained in a message," (Petty & Cacioppo, 1986, p. 128). This process can include cognitive actions that "access relevant associations, images, and experiences from memory, scrutinize and elaborate upon the externally provided message arguments in light of the associations available from memory; draw inferences about the merits of the arguments..." (Petty & Cacioppo, 1986, p. 128). Essentially, elaboration exists on a continuum of thought. The more issue-relevant thinking people dedicate to a persuasive communication, the more they are elaborating on it, which is indicative of using the central route of persuasion.

Under the central route, not only do people dedicate more cognitive resources to processing the message, they also generate new arguments for the advocated positions and integrate these and the message's arguments into their underlying belief structure (i.e., schema; Petty & Cacioppo, 1986). Thoughts generated under the central route are then relied on more when accessing and forming attitudes, and these attitudes are more accessible, stronger, and more lasting (Brinol & Petty, 2015). Lower levels of issue relevant thought are indicative of the peripheral route of persuasion (Brinol & Petty, 2015). Thinking under this route can be categorized as automatic, shallow, or heuristic in nature (Petty & Cacioppo, 1986). Since there is less deliberative thinking under the peripheral route, people depend more on peripheral cues to form or change their attitudes. These cues are things like source cues (e.g., expertise or likability) or message cues (e.g., number of arguments in the message). When processing information under the peripheral

route people pay attention to either these source or message cues to determine their attitudes on the advocated position, rather than careful thought and deconstruction of the information and arguments found in the message (Petty & Cacioppo, 1986).

DST and elaboration. Similar to the predictions laid out by ELM, DST posits that the amount of elaboration people undergo predicts persuasive outcomes such as attitude change (Hamby et al., 2018). However, unlike ELM, DST focuses exclusively on persuasive narratives instead of general persuasive messages. Research on narratives, defined as stories that have a beginning, middle, and end that provide a conflict and resolution (Hinyard & Kreuter, 2007), tends to focus on how narratives can be used to persuade audiences. This research is interested in the mechanisms behind this process, particularly elaboration. Generally, it is accepted that when experiencing a narrative, we shift our attentional focus to the story world and engage, cognitively and emotionally, with the story and the characters therein. Extending this viewpoint, Hamby and colleagues (2018) combine research streams from psychology, communication, and related fields into an integrated model of narrative persuasion, termed *deictic shift theory* (DST). DST splits the narrative persuasion process into two phases: absorption and reflection. Absorption (a general sense of immersion or involvement in a narrative, Hamby et al., 2018) happens during the story, when people focus their attentional resources on comprehending the story. Reflection (i.e., elaborating on how the story connects to one's own life, Hamby et al., 2018) happens after the story is over as people relate the story back to our world.

As proposed by DST, absorption does not directly lead to persuasive outcomes; it is through the mediated process of reflection that persuasion happens. This mediated

process is similar to the one proposed by the ELM (Petty & Cacioppo, 1986), wherein the more elaboration on a narrative message that audiences engage in, the more likely persuasive outcomes are to result. Under DST, once people comprehend the story, they may engage in a form of elaboration, termed reflection, wherein people think further about the story and incorporate it into their understanding of their own lives, which allows for persuasion to happen (Hamby et al., 2017). To link a story to their own lives, individuals undergo a matching process, wherein events in the story are matched to their own lives. This process of matching requires a high degree of elaboration and involves the generation of issue relevant thoughts (Hoekens & Fikkers, 2014). Thus, reflection and this matching process can be seen as a form of elaboration, as defined by ELM.

Elaboration and attitude change. In terms of attitude change, both the amount and valence of elaboration is important (Brinol & Petty, 2015). When people engage in more elaboration on a message and their attitudes are changed, these new attitudes are stronger, more resistant to change, and last longer than attitudes changed under the peripheral route (Petty & Cacioppo, 1986). The resulting attitudes are also more predictive of future behavior (Petty & Cacioppo, 1986). A great deal of research supports this proposition, finding strong links between the amount of elaboration and the strength of the resulting attitude change (see Brinol & Petty, 2015 for an overview). This proposition also has support within research into narrative persuasion (Hamby et al., 2018). Additionally, the direction, or valence, of our elaborations can impact the attitudes that result from a persuasive message. If, when individuals are operating under high levels of elaboration, they generate thoughts that are favorable towards the message. Thus, they are more likely to agree with the message. However, if people generate

unfavorable thoughts while carefully processing the message, they are more likely to be persuaded against the argument of the message (Petty et al., 2002). Generally, careful consideration of persuasive messages involves more thought, accessing more internal information, and making more connections between the information in the message and other pertinent information. Due to this careful consideration, the information will be better integrated into our existing knowledge structure, making the attitude stronger, more accessible, and more likely to predict our behavior (Petty & Cacioppo, 1986). On the other hand, when individuals engage in lower levels of elaboration, the thoughts about the persuasive message are not as integrated into their schema. Thus, the resulting attitudes are more prone to further persuasion attempts and are not likely to last long (Petty & Cacioppo, 1986).

Elaboration and discussion. As past research has shown that elaboration on a persuasive message leads to more persuasion, the *intra*personal hypothesis thus proposes that the act of discussing the topic with others allows individuals an additional opportunity to elaborate on the message (Brinol & Petty, 2015) and allows discussion partners to hear more arguments about the persuasive message than those included in the media message (Harkins & Petty, 1981). Additionally, as talking about a message with someone else requires people to remember parts of the message, they may make more connections between the media message and their own lives that they had not made prior to the discussion, leading to better integration message information into our cognitive schema (Petty & Cacioppo, 1986; Southwell & Yzer, 2007).

***Inter*personal Hypothesis.** Whereas the *intra*personal hypothesis suggests that discussion simply leads to more individual elaboration and reflection on the persuasive

message, the *inter*personal hypothesis suggests that discussion is effective because it allows for outside validation of our elaborations. As highlighted by self-validation theory, discussion allows one to receive validation of the thoughts they generated while elaborating. This validation can lead to increased thought confidence, which may lead to stronger attitudes (Petty et al., 2002). Validation can happen when individuals receive positive feedback on their interpretations (i.e., their interpretations are recognized as valid) of a message (Hardin & Higgins, 1996). Thought confidence is a meta-cognition (i.e., a thought about a thought; Jost et al., 1998), wherein people determine confidence or doubt in their thoughts by evaluating (i.e., validating) their thoughts about the persuasive message as correct and well-founded. Thought confidence is different than attitude confidence as it hypothesized to impact attitude formation and change (Petty et al., 2002). According to self-validation theory, individuals evaluate their thoughts and determine their validity before using these thoughts to generate or change attitudes (Brinol & Petty, 2015). Specifically, people first elaborate on the persuasive message and then evaluate these elaborations to determine if they are correct and valid. If they see those elaborations as valid, they have confidence in them, so they base our attitudes on these confident thoughts (Petty et al., 2002). According to the *inter*personal hypothesis, discussion can serve as a way to validate and check the correctness of our psychological reactions towards a media message against others' thoughts and reactions, leading to greater confidence in one's elaborations (Brinol et al., 2004), which may lead to attitude change or resistance (Brinol & Petty, 2015; Gehrau, et al., 2012; Slater & Rouner, 2002).

Validation and discussion. According to the *inter*personal hypothesis, if interpersonal discussion reinforces initial reactions to and elaborations on a message, then

people's thoughts about the message are validated. This perception of validation results in more confidence in people's thoughts. If the opposite happens; that is, if the discussion calls into question the validity of individual's reactions to the message, they will have less confidence in their thoughts. When people have less confidence in their thoughts, they show less attitude change or reinforcement as they will not depend on these thoughts to form or change attitudes (Petty et al., 2002). One weakness of research into the self-validation hypothesis is that these propositions have not been tested within the context of an interpersonal discussion. As discussed in more depth later, studies wherein participants are given feedback on their reactions give feedback in terms of simple agreement or disagreement, instead of a more protracted conversation or debate. It is possible that when individuals lose confidence in their reactions, they may simply adopt the interpretation of the other person in the conversation. This potential alternative explanation cannot be ruled out based on current research.

The idea of validation of thoughts can be found in both self-validation theory (Petty et al., 2002) and in the social validation process of the shared reality paradigm (Hardin & Higgins, 1996). According to the *inter*personal hypothesis, audiences not only get feedback on their reactions, but also the valence of that feedback can impact outcomes. The present study focuses on positive feedback on the audience's thoughts, termed perceived validation, wherein their thoughts and reactions are validated by others during conversation.

Empirical Support for the *Intra*- and *Inter*personal Hypotheses. Both of these potential mechanisms (*intra*- and *inter*personal hypotheses) of interpersonal communication on persuasive media effects have been tested and evidence supporting

both has been found. Tests of the communication mediation model (Eveland, 2001), which proposes that learning from news sources happens through increased attention and increased elaboration of information, has shown support for the idea that elaboration on a political news story increases knowledge acquisition (Eveland, 2001; Eveland et al., 2003), lending support to the *intra*personal hypothesis. In a cross-sectional study, Eveland (2004) found support for the idea that discussion generates further elaboration on media messages which leads to knowledge outcomes, an idea supported by others (Southwell & Yzer, 2007). Other research has also provided support for the *inter*personal hypothesis, wherein individuals receive validation of their thoughts through discussion (Dunlop, et al., 2010; Gehrau, et al., 2012). In a study looking at the HPV vaccine, interpersonal discussion allowed participants to validate their understanding of the media message (Dunlop, et al., 2010). Furthermore, it is proposed that feedback from others on our thoughts can impact persuasive outcomes (Petty et al., 2002). Another study found that when participants received feedback that their thoughts about a proposed university policy were similar to others, they had higher confidence in their thoughts and more positive attitudes towards the policy as compared to when they were told they held dissimilar attitudes (Petty et al., 2002).

Integration of the *Intra*- and *Inter*personal Hypotheses. While the *intra*- and *inter*personal hypotheses have typically been discussed separately, recent theorizing suggests that they are related in important ways (Brinol & Petty, 2015). Self-validation theory states that simply elaborating deeply on a message may not be enough to spark attitude change; rather, people need to have confidence in their thoughts for them to lead to lasting attitude formation and change (Brinol & Petty, 2015; Petty et al., 2002). While

one can undergo this validation process on their own without further messages or interpersonal feedback, this process takes ability and motivation and involves a lot of cognitive effort that they may not want to expend (Petty et al., 2002). Thus, it has been suggested that those who engage in more elaboration are more likely to validate their own thoughts, which increases confidence in their thoughts and leads to attitude change (Brinol & Petty, 2015; Petty et al., 2002; Tormala & Rucker, 2007). Specifically, when positive thoughts are generated towards a message, increasing confidence in these thoughts leads to more positive attitudes towards a target (Tormala & Rucker, 2007). Because discussion is thought to allow for further elaboration and allows individuals a chance to validate their thoughts, the following hypotheses are proposed.

H1 & H2. Participants in the *inter*personal elaboration condition will report greater elaboration (H1) on the health message and perceived validation (H2) than those in the *intra*personal elaboration or control conditions.

In past studies, participants received feedback about others' reactions to a persuasive message and were led to believe that others had either similar (e.g., "87% of [your] thoughts were similar to those of other students") or dissimilar (e.g., "only 8% of [your] thoughts were similar to those of other students") reactions to the message (Petty et al., 2002, p. 734). When participants were led to believe that others shared similar responses to a message, they showed more confidence in their responses (Tormala et al., 2009). Consistent with self-validation theory, those who were told that there was a consensus with their thoughts (i.e., had their thoughts validated) reported higher confidence in those thoughts and consequently were more favorable towards the targeted attitude (e.g., support for comprehensive exams for undergraduates; Petty et al.,

2002).Thus, these studies show that when people perceive that others have similar reactions to a persuasive message, they have more confidence in their own reactions to the message, leading to attitude reinforcement or change.

In past studies, however, participants were asked to elaborate on a message and then were given feedback that simply gave participants information about whether or not their thoughts were similar or dissimilar to others' thoughts on the topic. Extending this research by having participants discover support for their reactions towards a media message through a protracted conversation that encourages elaboration and includes validation may have similar effects. By having participants express their thoughts about the media message, and then receiving validation from a peer, this dissertation mirrors past methods in a more externally valid way. Here, is expected that receiving validation during a conversation with a peer will be similar to receiving information about the similarity of thoughts, as used in past studies (e.g., Petty et al., 2002). Following this line of thinking, the following hypotheses are extended.

H3. *Inter*personal elaboration will be indirectly associated with thought confidence via perceived validation.

H4. Elaboration will be indirectly associated with narrative-consistent attitudes via thought confidence.

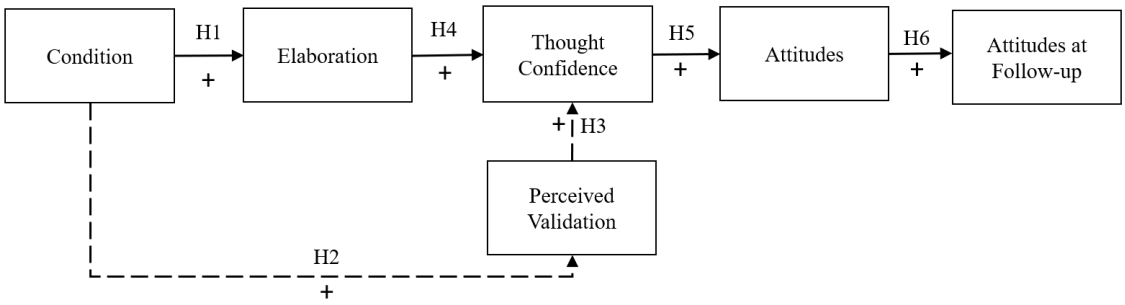
H5. Perceived validation will be indirectly associated with narrative consistent attitudes via thought confidence.

It has been noted that elaboration and thought confidence can impact the persistence of attitudes over time. The more an attitude is based on careful elaboration, the more it persists over time due to its more extensive integration into cognitive schema

(Petty et al., 1995). Additionally, the more an attitude is based on careful thought, the stronger the attitude is, and strong attitudes tend to both last longer and are more resistant to attempts at persuasion (Brinol & Petty, 2015). It has also been noted that the more valid people find an elaboration, the more confidence they have in it (Petty et al., 2002) and the greater the likelihood the resulting attitude will persist over time (Brinol & Petty, 2015). There are several explanations for the persistence of strong attitudes over time. If a strong attitude is better integrated into our cognitive schema, it is easier to remember and more accessible (Krosnick & Petty, 1995). Additionally, because a stronger attitude is based on more thoughts and judgments, and individuals tend to have more knowledge about the attitude target, the attitude is very difficult to change leading it to remain stable over time (Krosnick & Petty, 1995). Thus, the following hypothesis is proposed.

> **H6.** The attitudes of participants in the *inter*personal elaboration condition (compared to those in the *intra*personal or control conditions) will persist more over time, because they are based on more confident thoughts.

Figure 1. Model of proposed hypotheses.



Note: "+" indicates that the relationship is positive, as in the antecedent variable is expected to lead to increases in the following variable.

The Health Context

What is BRCA? The proposed hypotheses were tested within the context of an entertainment narrative concerning genetic testing for the breast-cancer (BRCA) gene mutation. The BRCA 1 & 2 genes are tumor genes and mutations within these genes are related to an inability to regulate cell death that leads to uncontrolled cell growth (Carroll et al., 2008). These mutations are related to elevated risk for both breast and ovarian cancer, a higher likelihood of developing secondary cancers, and those with a BRCA 1 gene mutation have lower survival rates than those who had breast cancer but not the mutation (Bayraktar & Arun, 2017). Within the U.S., breast cancer is the most common form of cancer affecting women (CDC, 2018a). While men can also carry the gene mutation and can be diagnosed with breast cancer, it is extremely rare. Women who carry either a BRCA1 or BRCA2 gene mutation are seven times more likely to be diagnosed with breast cancer and thirty times more likely to be diagnosed with ovarian cancer (CDC , 2018b). Those who are positive for a BRCA mutation before a breast cancer diagnosis have treatment options that can lower their risk for developing cancer. These include heightened screening measures, lifestyle changes, chemoprevention drugs, and prophylactic surgery (Eles, 2000). Even though having a BRCA mutation is rare, receiving counseling and testing for the mutation is related to more surveillance and risk reducing surgeries in those who test positive for the mutation (Bayraktar & Arun, 2017).

Additionally, preliminary data suggests that mortality rates decrease after testing and prevention measures are taken (Bayraktar & Arun, 2017).

BRCA Mutation Testing. There is a plethora of psychological and environmental factors that influence whether or not someone undergoes BRCA mutation testing. The perceived benefits of testing, beliefs that breast cancer is curable, the number of perceived barriers to testing, and perceived susceptibility of cancer have all been found to influence testing decisions (Bosompra et al., 2000; Chaliki et al., 1995). However, knowledge of a family history of breast cancer and awareness of genetic tests have been shown to be the most important predictors of genetic testing, in addition to having received genetic counseling (Hurtado-de-Mendoza et al., 2017).

While current testing guidelines indicate only a small portion of the population should be tested for such genetic mutations (U.S. Preventive Services Task Force, 2019), there is high interest in the general population in receiving such tests (Etchegary, 2004). While awareness and interest in genetic testing is high, knowledge and understanding of genetic testing remains relatively low (Etchegary, 2014). Generally, people understand what genes are and how they are related to increased risks of certain conditions, but they do not understand how or why it impacts health (Smerecnik et al., 2008). The public also believes that they understand more about genetics than they actually do (Wang et al., 2005). This knowledge gap is concerning when it comes to perceived risk, especially in young women. Young women tend to overestimate their risk of having a BRCA mutation and developing cancer in the future, which is related to more psychological worry (Brunstrom et al., 2015). As testing for BRCA mutations is not recommended for people without a personal or family history of breast cancer, improving the public's

understanding of their personal risk is important to reduce unnecessary testing. In addition to understanding their own personal risk, being knowledgeable about BRCA mutations and genetics is important when it comes to the provision of social support to those undergoing testing and making medical decisions in light of a positive mutation diagnosis (Evans et al., 2016). Young women who have been given a positive BRCA mutation diagnosis have indicated that romantic partners and friends are not adequately educated on BRCA mutations to provide good social support (Werner-Lin, 2008). Additionally, attitudes about genetics and BRCA mutation testing in the larger population can also impact the treatment decisions that BRCA positive women make, which can have large impacts on their health outcomes (Eles, 2000). Thus, while BRCA mutations only affect a small portion of the population, looking at the knowledge and attitudes of the general population is important.

Interventions to Increase Knowledge of BRCA Testing. Interventions concerning BRCA mutation knowledge and attitudes aimed at the general public are not as common as those aimed at high-risk individuals or those who have been given a positive BRCA mutation diagnosis. Interventions concerned with BRCA mutation testing aim to increase knowledge to encourage informed decision making among those at greater risk (Bowen et al., 2006). Women who have low- to moderate-risk of a mutation who were given either an educational materials or education materials and counseling were both found to have increased their knowledge about BRCA mutation testing. However, those who received both the educational materials and counseling indicated more accurate risk perceptions (Lerman et al., 1997). Tailoring risk information has been found helpful in encouraging accurate knowledge and screening behaviors in both the

general public and those with heightened risk (Bowen & Powers, 2010; Skinner et al., 2002). Overall, the few studies that look at educating the general population show promise that informational material can increase knowledge and lead to more accurate risk perceptions and testing intentions. However, these studies have not incorporated this information into narrative formats which may be uniquely suited to increasing knowledge about BRCA mutations (Shen & Han, 2014)

BRCA Narratives. Within the realm of persuasive narratives surrounding the BRCA gene mutation, effects stemming from Angelina Jolie's disclosure of her own BRCA mutation positive status have been the primary focus of research (e.g., Evans et al., 2014). Studies examining the "Angelina Jolie effect" have found that her story led to more awareness of the BRCA mutation and preventative bilateral mastectomy (Lebo et al., 2015), but did not lead to increases in the public knowledge or understanding of BRCA mutation testing nor did it lead to more accurate risk perceptions (Borzekowski et al., 2014). Additionally, Angelina Jolie's BRCA mutation story led to increased internet traffic to the National Cancer Institute's information pages on breast cancer and other related cancers in both the general public and within healthcare professionals (Juthe et al., 2015). Finally, when comparing referrals to genetic clinics in the UK in the year before and the year following the story, there was an increase in appropriate referrals (e.g., referrals that follow the BRCA mutation testing guidelines) for genetic counseling and testing (Evans et al., 2014).

Narratives in fictional television have rarely been studied, only two such studies have been published (i.e., Hether et al., 2008 and Rosenthal et al., 2018). One study looked at BRCA mutation storylines presented within a month of each other on the

primetime medical dramas *ER* and *Grey's Anatomy* (Hether, et al., 2008). Both episodes dealt with guest characters dealing with BRCA mutation testing. Results show that both stories were equally effective in impacting attitudes towards genetic testing, whereas the *ER* storyline was more effective at impacting behavioral intentions and having reported scheduling a breast cancer screening potentially due to its multiple episode nature. Another study looked at the effects of a storyline on the show *90210* (Rosenthal et al., 2018). Results show that those who frequently watched the show were more likely to seek out family health history. Overall, these two studies show the potential efficacy of using an entertainment narrative to influence audience attitudes, but neither study examined how the effects of these narratives may have been impacted by interpersonal discussion.

As this topic gains mainstream attention, it is important to understand the potential effects these narratives have on genetics attitudes within the general public. It is especially important because the public tends to learn about genetics mainly through media (Lanie et al., 2004). Entertainment narratives that aim to communicate health information have been found to have positive effects on attitudes (Shen & Han, 2014) and that these "soft media" sources (e.g., entertainment) are more accessible to the general population and reach different audiences than hard media sources like news media (Henderson & Kitzinger, 1999). Thus, examining how entertainment media can impact attitudes is an important goal. Taking all of this into consideration, this study will extend past research on the effects of persuasive narratives about BRCA mutation testing by investigating how interpersonal discussion can help increase the attitudinal effects of media messages. Additionally, this dissertation hopes to add to our knowledge of the

effects of BRCA mutation testing interventions aimed at influencing attitudes in the general population.

Chapter 3: Method

Design

To test the proposed hypotheses, a randomized experiment was conducted. Participants first viewed an episode of a television show and then were randomly assigned to one of three conditions: (1) *intra*personal elaboration (2) *inter*personal elaboration or (3) control (no elaboration). Follow-up surveys were completed immediately after participants completed their assigned condition and one-week later.

In the *intra*personal elaboration condition, participants were asked to think carefully and write about three prompts that matched the questions participants in the *inter*personal elaboration condition were asked. In the *inter*personal elaboration condition, participants were directed to enter a chatroom after they watched the episode and asked to discuss the episode with another participant (who was actually a confederate) for approximately five minutes. Due to the potential influence of conversational content, the use of a confederate using a prewritten script (Appendix A) kept the conversations as uniform as possible. Additionally, to increase the likelihood that participants would view the feedback provided by the confederate as valid, they were told that their chat partner was either an undergraduate student at the institution where the research was conducted, or another person participating in the study who was the same gender as them. Two different explanations about the discussion partner were used because halfway through data collection, due to COVID-19 research restrictions

(described below), the study sample changed from an exclusively student sample to a student and non-student sample. Thus, the language describing the discussion partner was changed to reflect this change in study sample. To justify the use of the online chatroom, participants were told that the chatroom would allow them to remain anonymous to the discussion partner. In the chatroom, the confederate sent the first message asking participants, "So I guess they want us to talk about BRACA [sic] testing? Like what did you think?" From there, the confederate gave positive feedback (e.g., "That makes sense") to the participants on their responses.

The specific content of the conversation was based on a script designed to guide the conversation and to keep discussion content and valence uniform (see Appendix A). For example, participants were initially asked what they thought about BRCA mutation testing, to gauge their general attitudes towards the topic. Once they responded to this question, they were told "I feel that", expressing agreement to their response. The script then guided the confederate through the rest of the conversation in a similar fashion, designating what questions to ask next and how to respond to participant responses. The questions included in the script were asked to allow participants to think about the various aspects of BRCA mutation testing discussed in the episode (i.e., attitudes towards BRCA mutation testing, women in their 20s being tested, and the importance of knowing family health history). So that the confederate did not influence participant attitudes, no opinions were expressed by the confederate in the script. If the confederate was directly asked about their opinion, they were told to try and reiterate the opinion of the participant. The script also included potential responses to various turns that the conversation could have taken, such as a participant talking about something off topic,

bringing up false information, talking about the show and not the topic of BRCA mutation testing, indicating that a family member had cancer, giving a response that was too short or did not indicate an opinion, or if the participant was being difficult and not following directions. Additionally, if the participant touched on something from a future question (e.g., bringing up young women being tested when asked about BRCA in general), the corresponding question was skipped to avoid unnatural repetition and to preserve the verisimilitude of the conversation. The script was written using more colloquial language, following trial runs with an undergraduate research assistant, and included missed capitalizations and texting lingo (e.g., lol and emoticons) to make the confederate's responses seem more like they were coming from another participant.

In the final condition, the control, participants simply watched the episode and then filled out the post-test survey. They were not asked to write about BRCA mutation testing or participate in an online chat. A control was used to determine whether the test conditions did indeed show greater persuasive effects than just simply watching the episode.

Participants

Participants in this study were (a) female, (b) had not previously seen the television show from which the stimulus episode was taken, c) between the ages of 18 and 29, and d) expressed that they were either native English speakers or very fluent in English. Females were specifically recruited because they are the target audience for the television show used as the stimulus and are more likely to be a BRCA gene mutation carrier (CDC, 2018b). Since the episode tested dealt primarily with the question of whether young women, particularly those in their 20s, should being tested for a BRCA

mutation, the age range of participants was limited to 18 to 29 years. Additionally, since the *inter*personal elaboration condition required discussing the episode with another person in English, only those who spoke English as their native language or expressed fluency were recruited.

Participants were recruited in one of two ways; through an undergraduate student participant pool (i.e., "Communication Research Experience Pool" known as CREP) and through Research Match. Undergraduate communication students who met the inclusion criteria and were enrolled in courses included in CREP (i.e., courses whose instructors chose to allow their students to earn course credit through the system) were recruited. There were no exclusion criteria. Due to the setup of CREP, only those who met the inclusion criteria (i.e., female, age 18-29, fluent in English and had never seen the television shown "The Bold Type") were able to see and sign up for the study. Those who participated through CREP were given course credit for their participation in both parts of the study.

Participants also were recruited through Research Match, a national participant pool run by the National Institutes of Health. Research Match is an online recruitment tool created through a grant from the Clinical & Translational Science Awards Consortium in 2009 and is hosted at Vanderbilt University. It is a free study recruitment tool available to research institutions nationwide. Individuals who had previously registered for Research Match were sent an initial message through the Research Match system if they met the study inclusion criteria. The initial message included information about the study and reinforced the inclusion criteria. If individuals were interested in participating in the study, they could click a button saying "Yes, I am interested!". Once

they expressed interest in the study, their contact information was passed along to the researchers through the system, who then reached out via email to the participant with further information about signing up for the study. Of the initial 32,108 people initially contacted, 861 expressed interest (2.68%) and were contacted with further information. Furthermore, of these 861 people, 285 (33.10%) signed up to participate in the study, of whom 98 (34.39%) people participated. Those who signed up through Research Match were not offered compensation for their participation, which in addition to the length of time participation required, may help explain the attrition rates.

Two hundred and ten participants completed the first part of the study. Of these participants, 46 (22%) were deleted from the data set. Of those 46, twelve were deleted for failing at least one of the three attention checks that were included. The three attention checks were embedded in the survey portion of the study, all taking place after the video and elaboration manipulations, and asked participants to select a specific number or option on the used scale (e.g. “Please select ‘Not at all’ for this question.”). If a participant selected a response other than the one that was requested, they were considered to have failed the check and were deleted from the data set. Additionally, one attention check was included in the follow-up survey, however no participants failed the T2 attention check. Of the three attention checks at T1, 3 failed the first attention check, 1 failed the second, 6 failed the third, and 2 failed more than one attention check. In regards to who failed attention checks, 7 participants from the *inter*personal elaboration condition failed attention checks, 1 from the *intra*personal elaboration condition, and 4 from the control condition. Three of the twelve participants who failed attention checks were recruited from Research Match, while 9 were recruited through CREP.

In addition to failing attention checks, participants were also deleted due to technical issues related to the chat platform (n = 6), not participating in the chat (n = 2), having large amounts of missing data (i.e., did not respond to any questions following the video; n = 20), and for not meeting the inclusion criteria (n = 6). Thus, the effective sample size at time 1 was 164. Of these 164 participants, 50 were in the *inter*personal elaboration condition, 58 were in the *intra*personal elaboration condition, and 56 were in the control condition. One hundred and twenty-eight people completed the delayed follow-up survey (78%).

Procedure

The entire study was conducted using Qualtrics, which is a web-based survey tool. Interested participants signed up through the CREP system or directly through the researcher (in the case of Research Match). Some participants (i.e., those who participated before the COVID-19 pandemic) who were recruited through CREP came to the lab during the time slot that they had signed up for to complete the first part of the study and then completed a follow-up survey online. However, due to COVID-19, in-person data collection was suspended halfway through and the study was converted to an online only study, which allowed for remote participation. Participants at time 1, who participated online (recruited through both CREP and Research Match), signed-up for the study through the researcher directly and were asked to select a specific time to participate. This was done to make sure that the chat confederate would be available if they were asked to participate in the discussion. The online only participants were emailed a link to complete the first part of the study online. All other study procedures, as outlined below, were the same across recruitment methods.

Participants were first presented with an informed consent statement. If they consented to participate, they first watched part of an episode of *The Bold Type* (summarized below), which was embedded into the Qualtrics survey, and then were randomly assigned to one of the three study conditions. Those in the control condition were presented with the post-test questionnaire following viewing of the episode.

Participants in both the *intra*- and *inter*personal conditions were presented with similar instructions: "You are being asked to have a discussion with another student [write about your thoughts] on testing for the BRCA genetic mutation." This was followed by technical instructions for completing the task (see Appendix B for text of these instructions). Those in the *intra*personal elaboration condition then clicked to the next page where the first prompt "What do you think about BRCA mutation testing?" was presented with a text box where they could write their thoughts. After they finished writing, they continued to separate pages that asked "How do you feel about women in their 20s getting tested?" and "How important is knowing/knowledge of your family health history to your health?". In total, they answered three open-ended question prompts. After they answered each prompt, they were asked to complete the post-test questionnaire.

For the *inter*personal elaboration condition, on the page where the instructions appeared, there was a small black box in the bottom right hand corner that read "Study Chat" (see Figure 2). In the instructions, participants were given a random number generated by Qualtrics that they were instructed to copy and paste into a username field. They were told that the other participant (i.e., the confederate) had been asked to start the conversation and keep track of time. Once the participant clicked the box, a new window

opened where they were presented with a field where they could paste their random number. Participants then clicked a button that said, “Send Chat Request”. Once they did this, the chatroom opened in that same window (see Figure 3). A prompt read “Please wait for the other participant to begin the discussion.” This prompt was included to allow the confederate to begin the conversation with the appropriate question. The chat then proceeded according to the prewritten script (Appendix A). There was one slight difference in the script for those recruited through Research Match versus CREP. To end the conversation, research match [?] participants were told, “So I think we talked for as long as they wanted. Guess we should do the survey now lol”. For those recruited through CREP, this phrase was followed by an emoticon (“XD”). The emoticon was dropped in the chats with participants recruited through Research Match, as it was felt that it could indicate that the chat partner was not taking the task seriously. The chatroom was powered by the Pure Chat widget. After the conversation, participants went back to Qualtrics to complete the post-test questionnaire.

Figure 2.

View of Instruction Page with "Study Chat" box in lower right corner for those in the interpersonal elaboration condition.

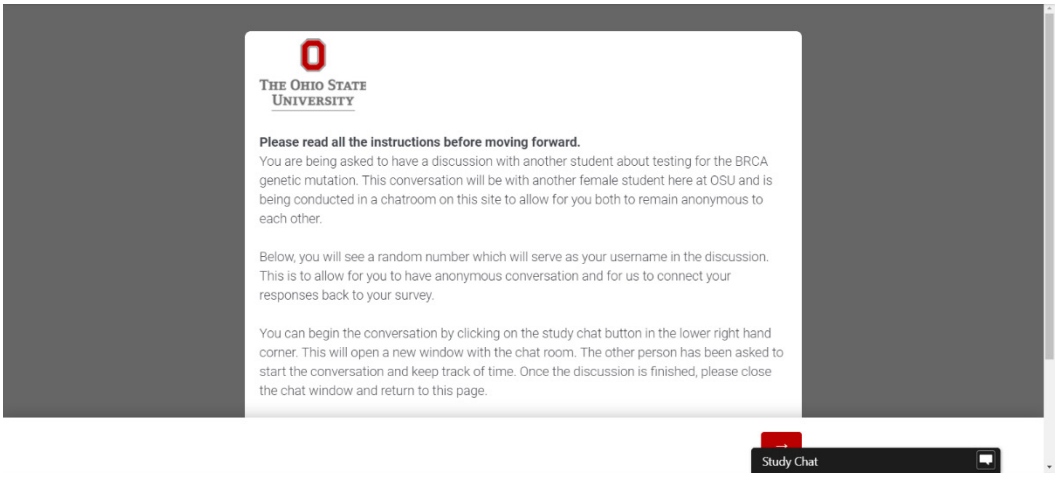
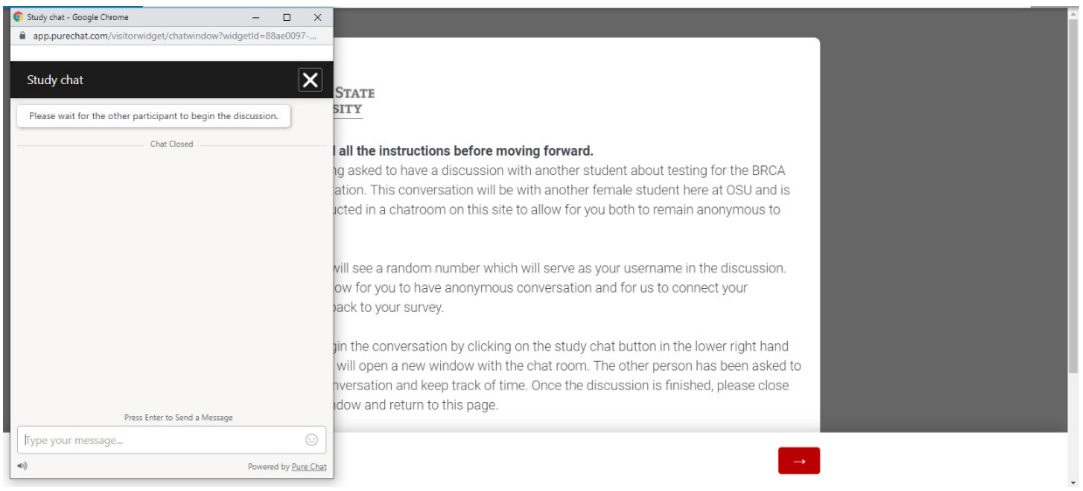


Figure 3.

Screen view once the chatroom is open for those in the interpersonal elaboration condition.



After they completed the T1 follow-up survey, participants were presented with information that explained that they would be sent a link to complete an additional follow-up survey in one week, discussed the granting of course credit for CREP participants, and provided participants with a list of mental health resources. One week later, all participants (regardless of condition and recruitment method) were sent a follow-up survey through the Qualtrics system wherein they answered questions about their attitudes towards BRCA mutation testing and information seeking and whether they had talked about the episode after the lab session with anyone. Finally, they were presented with a debriefing statement in the Qualtrics survey informing them of potential deception and giving them resource information about the BRCA gene mutation and genetic testing.

Stimulus

The stimulus for this study was an edited episode of the television show *The Bold Type*, which aired during its first season (2017). The episode tells the story of Jane, a 25-year-old writer for the women's magazine Scarlet. She is assigned to write an article about women in their 20s undergoing BRCA mutation testing. During the episode, it is revealed that Jane's mother died at a young age of breast cancer, making Jane a prime candidate for the BRCA gene mutation test. While writing the story she struggles with her own feelings towards the test and her uncertainty towards the outcome if she were to undergo the test. She is supported by her friends and editor as she decides to undergo testing and is tested positive for a BRCA gene mutation. A "B-storyline" was included to preserve some external validity which follows Jane's friend and fellow Scarlet co-worker searching for a lost necklace that she procured for her demanding boss. The episode was

edited by the researcher to contain just the A and B storylines to reduce the amount of time participants spent participating in the study to reduce fatigue effects. The edited episode lasted twenty-six minutes and seven seconds (compared to the full episode at forty-two minutes and four seconds).

Measures

The following measures assessed study model variables and were measured on a 1-7 scale unless otherwise noted. Means and standard deviations are reported below and correlations between model variables are included in Table 1. Confirmatory factor analysis and Cronbach's alphas were used to assess item dimensionality, as reported below.

Confirmatory factor analysis. While previously validated scales were generally used in this study, a confirmatory factor analysis (CFA) was conducted to assess the dimensionality of items comprising each scale. A measurement model was tested in MPLUS that included 7 factors (elaboration, validation, thought confidence, T1 BRCA mutation testing attitudes, T2 BRCA mutation testing attitudes, T1 information seeking attitudes, T2 information seeking attitudes) and 48 indicators. Chi-square, root mean square error approximation (RMSEA; values at or lower than .08), comparative fit index (CFI; values approaching .95), and standardized root mean residual (SRMR; values lower than .08) were used as model fit indicators (Brown & Cudeck, 1993; Hu & Bentler, 1999). The initial model tested met recommended fit criteria for RMSEA (= .07., CI [.07, .08], $p < .001$), but not SRMR (= .09) or CFI (= .81). An examination of the item factor loadings showed three items loaded on their respective factors at .502 or lower (described below). These three items were dropped from their respective factors, and the model

retested. The model fit indicators showed an acceptable (although not outstanding) fit to the data, RMSEA = .07, CI [.06, .08], $p < .001$; $\chi^2(990) = 4940.15$, $p < .0001$; SRMR = .08; CFI = .82. Factor loadings ranged from .52 to .89.

Background variables. Demographic information such as age and race/ethnicity was collected. Additionally, questions assessing personal and family history of cancer were asked (i.e., "Have you [any of your family members] ever been diagnosed as having cancer?"). Participants were also asked if they or any family members had undergone genetic testing. Cancer history and testing history questions were combined into single variable indicating any personal or familial history of cancer or testing (1 = yes, 0 = no).

Elaboration. Elaboration was measured using an established scale (Reynolds, 1997). Twelve items were included using a 7-point Likert scale (1 = Strongly Disagree to 7 = Strongly Agree). Items included "I was..." "Attempting to analyze the issues in the episode", "Deep in thought about the episode", and "Distracted by other thoughts not related to the episode." Of the 12 items, six were reverse coded.

After the initial CFA, three items ("Not very attentive to the ideas in the episode", "Resting my mind", both reverse coded and "Attempting to analyze the issues in the episode") were dropped due to low factor loadings (.49, .50, and .49 respectively). Cronbach's alpha for the original scale ($M = 5.35$; $SD = 0.86$) was $\alpha = .87$. After the two items were dropped, Cronbach's alpha ($M = 5.327$; $SD = 0.94$) was $\alpha = .86$, and factor loadings ranged from .52 to .76.

Perceived Validation. Perceived validation of thoughts was measured for those in the *intra*- and *inter*personal elaboration conditions using a scale by Singh et al. (2017). Participants were asked whether they felt their thoughts were confirmed, assured,

validated, and approved during the discussion/writing task on a 1 (Strongly Disagree) to 7 (Strongly Agree) scale. The Cronbach's alpha for the scale (M = 5.43; SD = 0.96) was α = .93 and the factor loadings ranged from .86 to .89.

Thought confidence. Thought confidence was measured using 6 items adapted from Petty and colleagues (2002) and Smith and Postmes (2011). Items were measured on a 7-point Likert scale (1 = Not at all to 7 = Extremely). Items included: "How confident are you in your thoughts?", "How valid are your thoughts?", and "How well-founded are your thoughts?". The Cronbach's alpha for the scale (M = 5.57; SD = 0.81) was α = .88 and factor loadings ranged from .52 to .85.

Attitudes towards BRCA mutation testing. Attitudes towards BRCA mutation testing were adapted from a 7-item established scale (Morren et al., 2007), on a 7-point Likert scale (1 = Strongly Disagree to 7 = Strongly Agree) and measured at T1 and T2. Items included "I approve of using the BRCA test for detection of breast cancer risk" and "Even if there is no known prevention, treatment, or cure for the cancers associated with the BRCA mutation, women in their 20s should still be offered BRCA mutation testing." Cronbach's alpha for the scale at T1 (M = 5.87; SD = 0.86) was α = .86 and was α = .86 for T2 (M = 5.74; SD = 0.80). Factor loadings ranged from .56 to .86.

Attitudes towards information seeking about BRCA mutation testing from a health care provider were measured at both T1 and T2 using items from Kahlor (2010), which were adapted from Ajzen (2002) for the information seeking context, which is relevant to the current investigation given the focus on information seeking attitudes. Participants were asked to rate "Having a thoughtful conversation about BRCA with a health care provider" on 7 semantic differential scales with anchors including "worthless-

valuable", 'good-bad", and "helpful-not helpful". Of the 7 items, 3 were reverse coded. The Cronbach's alpha for the scale (M = 6.38; SD = 0.76) was α = .94 at T1 and was α = .93 for T2 (M = 6.31; SD = 0.89). The factor loadings ranged from .72 to 89.

Table 1.

Correlations and Descriptive Statistics for Model Variables (N = 164).

	1.	2.	3.	4.	5.	6.	7.	M	SD
1. Testing history									
2. Elaboration	-.02							5.41	0.86
3. Validation†	.10	.32**						5.56	0.97
4. Thought confidence	.19*	.24**	.36**					5.63	0.85
5. BRCA testing attitudes	.19*	.20**	.34**	.36**				5.87	0.84
6. T1 Info Seek attitudes	.14	.18*	.27**	.35**	.59**			6.38	0.80
7. BRCA testing attitudes‡	.20*	.25*	.25*	.41**	.73**	.54**		5.74	0.71
8. T2 Info Seek attitudes‡	.15	.21*	.10	.38**	.36**	.73**	.54**	6.27	0.60

Note: 5. BRCA testing attitudes were measured at T1 and 7. BRCA mutation testing attitudes were measured at T2.

*. Correlation is significant at the 0.05 level (2-tailed).

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

†. N = 108.

‡. N = 126.

Data Analysis

Covariates. Due to a small sample size, covariate controls were used sparingly to maintain adequate power for analyses. To determine which covariates to use, potential covariates were entered into multiple linear regression models to assess individual differences on main study outcome variables (i.e., T1 BRCA mutation testing attitudes, T2 BRCA mutation testing attitudes, T1 information seeking attitudes, and T2 information seeking attitudes); thus, four regression models were tested, including all possible covariates. Investigated covariates included: history of genetic testing (either themselves or their family; 1 = yes, 0 = no), history of cancer (either themselves or their family; 1 = yes, 0 = no), age (continuous variable), genetic literacy (sum of correct answers on 4 true-false knowledge items), whether they completed the study before or after the coronavirus pandemic (1 =after, 0 = before), and how they were recruited (1 = Research Match, 0 = CREP). Of the four models tested, genetic testing history was the only significant predictor in three out of the four regressions (see Table 3 for the results of the conducted regressions). Thus, genetic testing history was used as a covariate in all analyses.

Table 2.

Multiple linear regression analyses exploring potential covariates for attitude outcomes at time 1 (N = 1364) and time 2 (N = 128)

	T1 BRCA Testing Attitudes		T1 Info Seek Attitudes		T2 BRCA Testing Attitudes		T2 Info Seek Attitudes	
	β	*SE*	*β*	*SE*	*β*	*SE*	*β*	*SE*
Testing History	0.35*	0.16	0.26*	0.14	0.34*	0.16	0.27	0.21
Cancer History	0.11	0.17	0.02	0.15	0.06	0.17	-0.01	0.21
Age	-0.02	0.03	-0.001	0.02	-0.03	0.03	-0.003	0.04
Genetic Literacy	0.01	0.10	0.06	0.09	-0.04	0.11	-0.09	0.14
Pandemic Timing[a]	0.10	0.24	-0.16	0.21	0.06	0.22	-0.15	0.27
Recruitment[b]	-0.04	0.27	-0.19	0.24	0.13	0.25	-0.06	0.32
F (df)	1.25 (6, 156)		1.78 (6, 156)		1.07 (6, 104)		0.70 (6, 104)	
R^2	0.05		0.06		0.06		0.04	

[a] 1 = data collected post-pandemic, 0 = data collected pre-pandemic [b]1 = recruitment done through Research Match, 0 = recruitment done through CREP

* Significant at the 0.05 level

Hypothesis testing. To assess hypotheses 1 and 2, analyses were conducted using Analysis of Covariance (ANCOVA). ANCOVA was used instead of an Analysis of Variance (ANOVA) as it allows for the inclusion of covariates. Condition was entered as

the fixed factor, with testing history as a covariate, and elaboration and validation entered as dependent variables (respectively) in separate models.

Hypotheses 3 through 6 were tested using the PROCESS macro for SPSS (model 4; Hayes, 2012). PROCESS conducts multiple regression analyses examining direct relationships between proposed model paths (per Baron & Kenny, 1986), as well as an assessment of indirect effects. To assess indirect effects, PROCESS undergoes a bootstrap sampling procedure to produce a sampling distribution of the indirect effect under investigation, thus creating a confidence interval (Hayes, 2018). If zero does not fall within the confidence interval, the indirect effect is said to be significant (i.e., there is evidence that X influences Y through the mediating variable M; Hayes, 2018). The PROCESS models used here included 10,000 bootstrap samples.

Chapter 4: Results

Sample Demographics

Participant demographic characteristics are shown in Table 2. Participants in the study ranged from age 18 to 29 (M = 21.86; SD = 3.22). Race/ethnicity was measured using a checklist that allowed participants to select more than one race/ethnicity. Of the 164 participants in the study, 7 chose multiple races/ethnicities. The majority of participants identified as white (75.6%; n = 124), with others identifying as Asian/Pacific Islander (11%, n = 18), Black/African American (7.3%, n = 12), Hispanic or Latino (6.7%, n =11), Arab or Middle Eastern (3%, n = 5), Native American (1.2% n = 2), and "some other group" (1.2%, n = 2). Participants recruited through CREP made up 45.7% (n = 75) of the sample, while 54.3% (n = 89) were recruited through Research Match. Additionally, 35.4% (n = 58) of the sample completed the study before the COVID-19 pandemic started (defined as before or after March 13th, 2020 when a national emergency was declared in the U.S.) and 63.9% (n = 106) took part after the pandemic. Of the 164 participants, only one (0.6%) indicated having been personally diagnosed with cancer, but 77.4% (n = 127) indicated that a family member had been previously diagnosed. Only 12.8% (n = 21) of participants indicated that they had undergone some form of genetic testing, while 21.3% (n = 35) indicated that a family member had done so.

Due to use of various recruitment methods, differences in demographics across the samples were examined. An independent samples t-test showed that those recruited

through Research Match were slightly older (M = 25, SD = 2.85) than those recruited through CREP (M = 20, SD = 1.93), $t(161) = -12.35$, $p < .0001$. A chi-square test of independence further showed that there were no differences across recruitment method based on whether participants ($\chi^2(1) = 0.84$, $p = .36$) or a family member ($\chi^2(1) = 0.12$, $p = .73$) had been diagnosed with cancer. More of those recruited through Research Match reported having had a genetic test (n = 19 compared to n = 2 in the CREP sample; $\chi^2(1) = 12.29$, $p < .0001$), whereas there were no differences in participants recruited through CREP or Research Match in whether a family member having had a genetic test ($\chi^2(1) = 3.54$, $p = .06$).

Finally, a chi-squared test of independence was conducted to test for differential attrition rates between conditions. Results indicate that condition was not related to whether or not participants completed the T2 survey, $\chi^2(2) = 0.77$, $p = .68$.

Table 3.

Participant Demographic Characteristics (N=164)

Characteristic		% (Frequency)
Recruitment Method		
	CREP	45.7 (75)
	Research Match	54.3 (89)
COVID-19 Pandemic		
	Before Pandemic	35.4 (58)

	After Pandemic	63.9 (106)
Age		
	18	6.7 (11)
	19	17.7 (29)
	20	12.2 (20)
	21	9.8 (16)
	22	8.5 (14)
	23	6.1 (10)
	24	7.3 (12)
	25	6.7 (11)
	26	6.1 (10)
	27	4.3 (7)
	28	7.9 (13)
	29	6.1 (10)
Race*		
	White	75.6 (124)
	Hispanic or Latino	6.7 (11)
	Black/African American	7.3 (12)
	Asian or Pacific Islander	11.0 (18)
	Arab or Middle Eastern	3.0 (5)
	Native American	1.2 (2)
	Some other group	1.2 (2)
Personal Cancer History		
	Yes	0.6 (1)
	No	99.4 (162)

	No Response	0.6 (1)
Family Cancer History		
	Yes	77.4 (127)
	No	17.7 (29)
	No Response	4.9 (8)
Personal Genetic Testing History		
	Yes	12.8 (21)
	No	84.8 (139)
	No Response	2.4 (4)
Family Genetic Testing History		
	Yes	21.3 (35)
	No	41.5 (68)
	No response	37.2 (61)

*Allowed for participants to select more than one option.

Main Model Tests

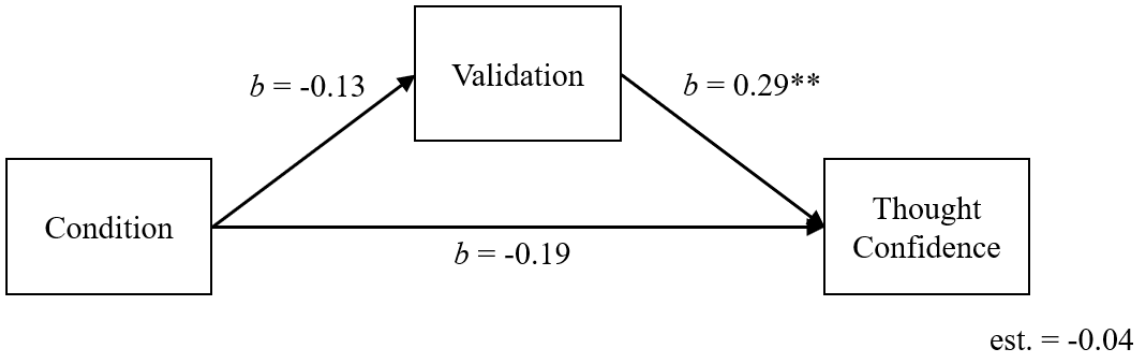
Hypothesis 1 & 2. Hypothesis 1 stated that participants in the *inter*personal elaboration condition would report higher levels of elaboration than those in other conditions. Results of an ANCOVA showed that conditions did not differ on elaboration, $F(3, 160) = 6.10$, $p = .003$. Those with a genetic testing history did not report more elaboration, $F(1, 160) = 0.56$, $p = .46$. Planned contrasts reveal that those in the interpersonal elaboration ($M = 5.49$, $SD = 0.83$) condition significantly differed from those in the control condition ($M = 4.93$, $SD = 1.104$, $p = .002$), but not from those in the intrapersonal elaboration condition ($M = 5.41$, $SD = 0.85$, $p = .65$); thus, H1 was partially

supported. Hypothesis 2 stated that participants in the *inter*personal elaboration condition would report higher levels of perceived validation than those in the *intra*personal condition. *Inter*- and *intra*personal elaboration conditions did not differ on perceived validation ($F(2, 105) = 0.47$, $p = .63$), nor did they differ based on genetic testing history ($F(1, 105) = 0.42$, $p = .52$); thus, H2 was not supported. Taken together, results show those in the *inter*personal condition elaborated significantly more than those in the control condition, but not those in the *intra*personal condition; there were no differences in perceived validation across conditions.

Hypothesis 3. Hypothesis 3 predicted that those in the *inter*personal elaboration condition would report higher levels of thought confidence via perceived validation than those in the *intra*personal elaboration condition. Results of model testing (see Figure 4) showed no differences between the *inter*- and *intra*personal elaboration conditions on thought confidence ($b = -0.19$, $p = .20$) or perceived validation ($b = -0.13$, $p = .50$). Those with higher levels of perceived validation reported more thought confidence, $b = 0.29$, $p = .0002$. No differences in perceived validation were detected based on genetic testing history ($b = 0.13$, $p = .52$), nor were there differences in thought confidence based on genetic testing history ($b = 0.25$, $p = .12$). The test of indirect effects also failed to show evidence of a mediation, est. = -0.04, CI [-.16, .07]. Thus, H3 was not supported. This finding illustrates that condition was not indirectly related to thought confidence via perceived validation.

Figure 4.

Graphic representation of H3 findings.



*. Coefficient is significant at the 0.05 level

**. Coefficient is significant at the 0.01 level

†. Indirect effect estimate significant.

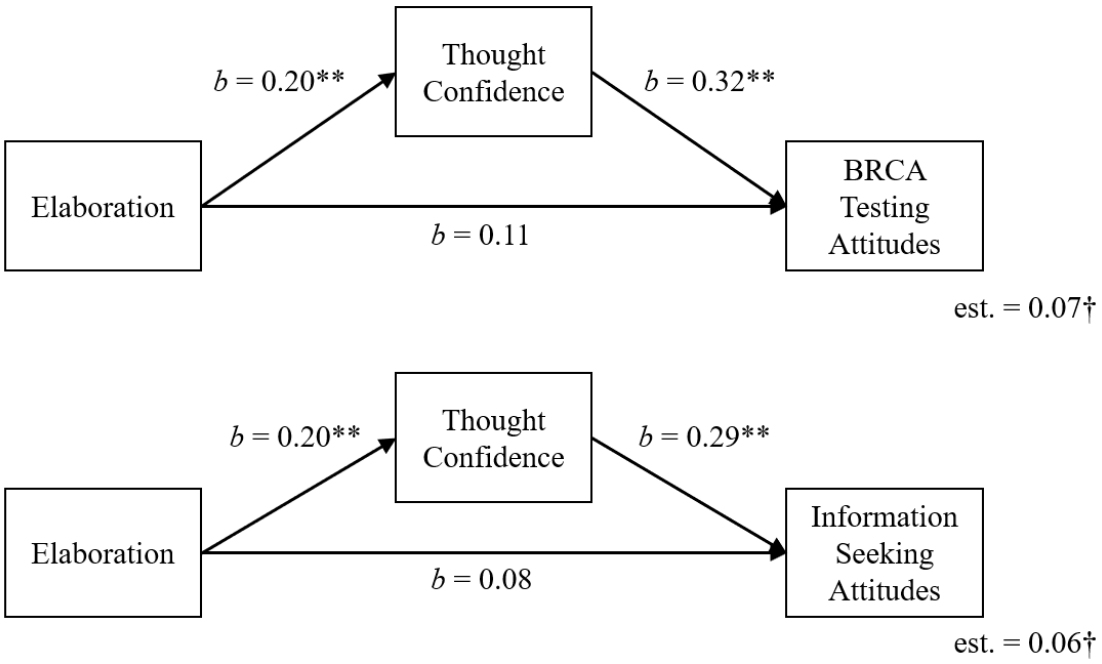
Hypothesis 4. Hypothesis 4 stated that elaboration would be indirectly related to BRCA mutation testing attitudes (at T1) via thought confidence. To test this hypothesis, two separate models were run, each using a different attitude measure as the dependent variable. Specifically, attitudes towards BRCA mutation testing (i.e., BRCA mutation testing attitudes) and attitudes towards information seeking from a healthcare provider about BRCA mutation testing (i.e., information seeking attitudes) were examined. For each model, genetic testing history was entered as a covariate, as well as condition. A direct effect of elaboration on BRCA mutation testing attitudes was not found, $b = 0.21$, $p = .13$. Additionally, those who reported higher levels of elaboration reported greater thought confidence ($b = 0.22$, $p = .002$), higher levels of thought confidence were related to more positive BRCA mutation testing attitudes ($b = 0.32$, $p = .0001$). Those with a

history of genetic testing reported higher levels of thought confidence (b = 0.36, p = .0098), but no differences were detected on thought confidence across conditions (b = 0.01, p = .87). Genetic testing history was not predictive of BRCA mutation testing attitudes (b = 0.24, p = .09) and neither was condition (b = 0.09, p = .23). Furthermore, an indirect effect of elaboration on BRCA mutation testing attitudes was detected via thought confidence, est. = 0.07, CI [.02, .13].

Looking next at information seeking attitudes, results showed that those who elaborated more on the episode did not report more positive attitudes towards information seeking, b = 0.08, p = .21. However, those who elaborated more on the episode did report greater thought confidence (b = 0.20, p = .002), and those with higher levels of thought confidence had more positive information seeking attitudes (b = 0.29, p = .0001). Those with a history of genetic testing also had more thought confidence (b = 0.36, p = .0098), but thought confidence did not differ by condition (b = 0.01, p = .87). Genetic testing history was not predictive of information seeking attitudes (b = 0.14, p = .29), nor was condition (b = 0.04, p = .56). The test of indirect effects showed evidence of an indirect effect, est. = 0.06, CI [.02, .12]. Thus, H4 was supported (Figure 5). Taken together, results illustrate an indirect effect of elaboration on attitudes, via thought confidence.

Figure 5.

Graphic representation of H4 findings.



*. Coefficient is significant at the 0.05 level

**. Coefficient is significant at the 0.01 level

†. Indirect effect estimate significant.

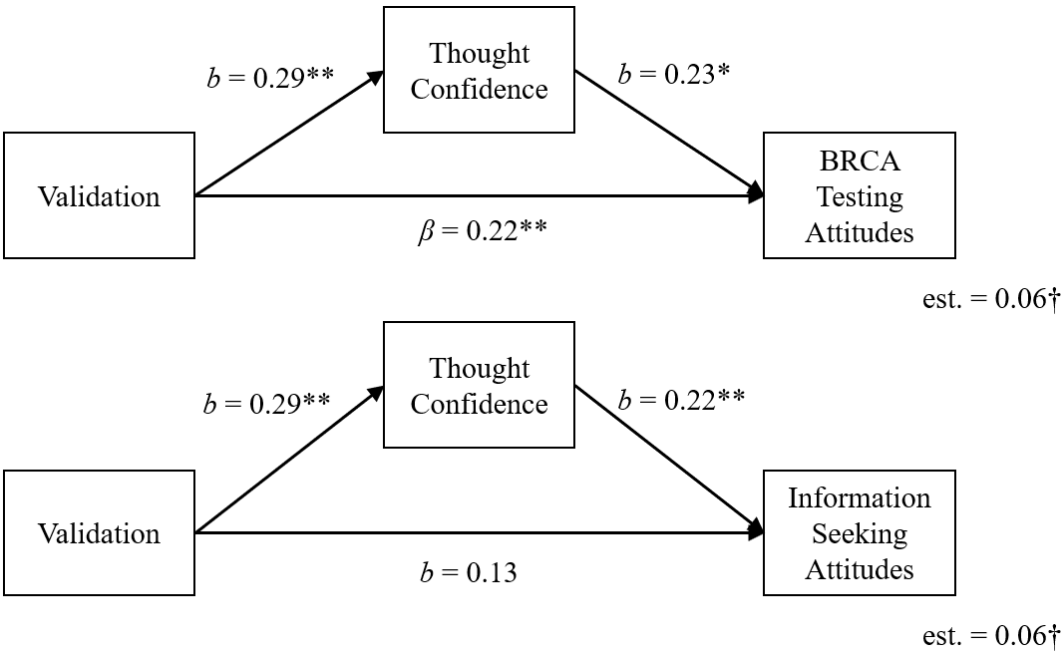
Hypothesis 5. H5 predicted that perceived validation would be indirectly associated with attitudes via thought confidence. Similar to H4, this hypothesis was tested using two separate models, each with a different measure of attitudes (i.e., BRCA mutation testing attitudes and information seeking attitudes) as the dependent variable. Genetic testing history and condition were entered as covariates. A positive direct effect of perceived validation on BRCA mutation testing attitudes was detected such that those who perceived greater validation reported more positive BRCA mutation testing

attitudes, $b = 0.22$, $p = .008$. Those who perceived greater validation also reported greater thought confidence ($b = 0.29$, $p = .0002$) and thought confidence was positively related to BRCA mutation testing attitudes ($b = 0.23$, $p = .024$). Neither testing history ($b = 0.25$, $p = .12$) nor condition ($b = -0.19$, $p = .20$) were predictive of thought confidence. Testing history also was not predictive of BRCA testing attitudes ($\beta = 0.14$, $p = .40$), nor was condition ($\beta = 0.12$, $p = .42$). The test of indirect effects showed an indirect effect of perceived validation on BRCA testing attitudes via thought confidence, est. = 0.06, CI [.009, .13].

Looking next at the model including information seeking attitudes, no direct effect was detected, so those who perceived greater levels of validation did not report more positive attitudes towards information seeking, $b = 0.13$, $p = .07$. However, those who reported higher levels of perceived validation had more thought confidence ($b = 0.29$, $p = .0002$), and those with higher levels of thought confidence reported more positive information seeking attitudes ($b = 0.22$, $p = .01$). The test of indirect effects further showed an indirect effect of validation on information seeking attitudes via thought confidence, est. = 0.06, CI [.01, .13]. Thus, H5 was supported (Figure 6). Again, neither testing history ($b = 0.25$, $p = .12$) nor condition ($b = -0.19$, $p = .20$) were predictive of thought confidence, nor were they predictive of information seeking attitudes (testing history, $b = -0.03$, $p = .83$; condition, $b = 0.13$, $p = .31$).

Figure 6.

Graphic representation of H5 findings.



*. Coefficient is significant at the 0.05 level

**. Coefficient is significant at the 0.001 level

†. Indirect effect estimate significant.

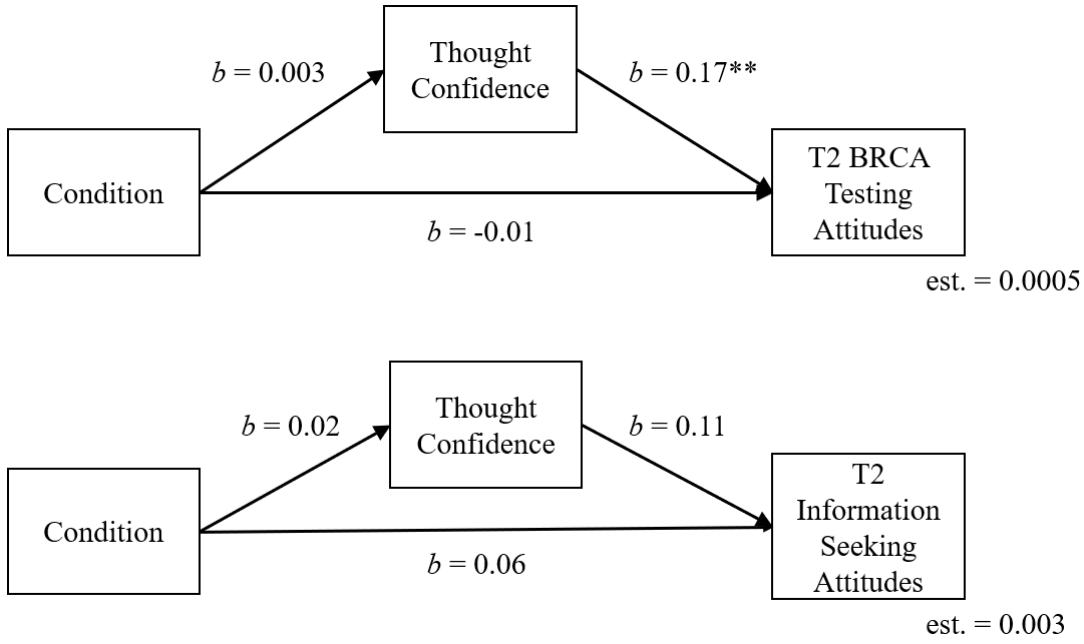
Hypothesis 6. Finally, H6 predicted that condition would be indirectly related to positive BRCA mutation testing attitudes at T2, via thought confidence, such that those in the *inter*personal elaboration condition would report higher levels of thought confidence, which would be related to more positive attitudes at T2. Genetic testing history was used as a covariate along with condition and T1 attitudes. No differences were detected across conditions on BRCA mutation testing attitudes at T2 (b = -0.02, p = .78), or thought confidence (b = 0.003, p = .97); however, thought confidence was positively predictive of

T2 BRCA mutation testing attitudes (b = 0.17, p = .007). Those with a history of genetic testing did not report greater thought confidence (b = 0.20, p = .23), but those with more positive T1 BRCA mutation testing attitudes reported greater thought confidence (b = 0.29, p = .0006). Similarly, those with a history of genetic testing did not report more positive T2 BRCA mutation testing attitudes (b = 0.07, p = .55), but those with more positive T1 BRCA mutation testing attitudes reported more positive T2 BRCA mutation testing attitudes (b = 0.60, p < .0001). The test of indirect effects showed no evidence of an indirect effect of condition on attitudes via thought confidence, est. = .0005, CI [-.04, .03].

Testing H6 using T2 measures of information seeking attitudes, we found no differences across conditions on information seeking attitudes (b = 0.06, p = .38) or thought confidence (b = 0.02, p = .78), nor were differences in T2 information seeking attitudes found across levels of thought confidence (b = 0.11, p = .11). Those with a history of genetic testing did not report greater thought confidence (b = 0.23, p = .14), but those with more positive T1 information seeking attitudes did (b = 0.39, p < .0001). Furthermore, those with a history of genetic testing did not report more positive T2 information seeking attitudes (b = 0.10, p = .42), but those with more positive T1 information seeking attitudes did (b = 0.77, p < .0001). Again, there was no evidence of an indirect effect, est. = .003, CI [-.02, .03]. Thus, H6 was not supported (Figure 7), meaning thought confidence did not mediate the effects of condition on T2 attitudes

Figure 7.

Graphic representation of H6 findings.



*. Coefficient is significant at the 0.05 level

**. Coefficient is significant at the 0.001 level

†. Indirect effect estimate significant.

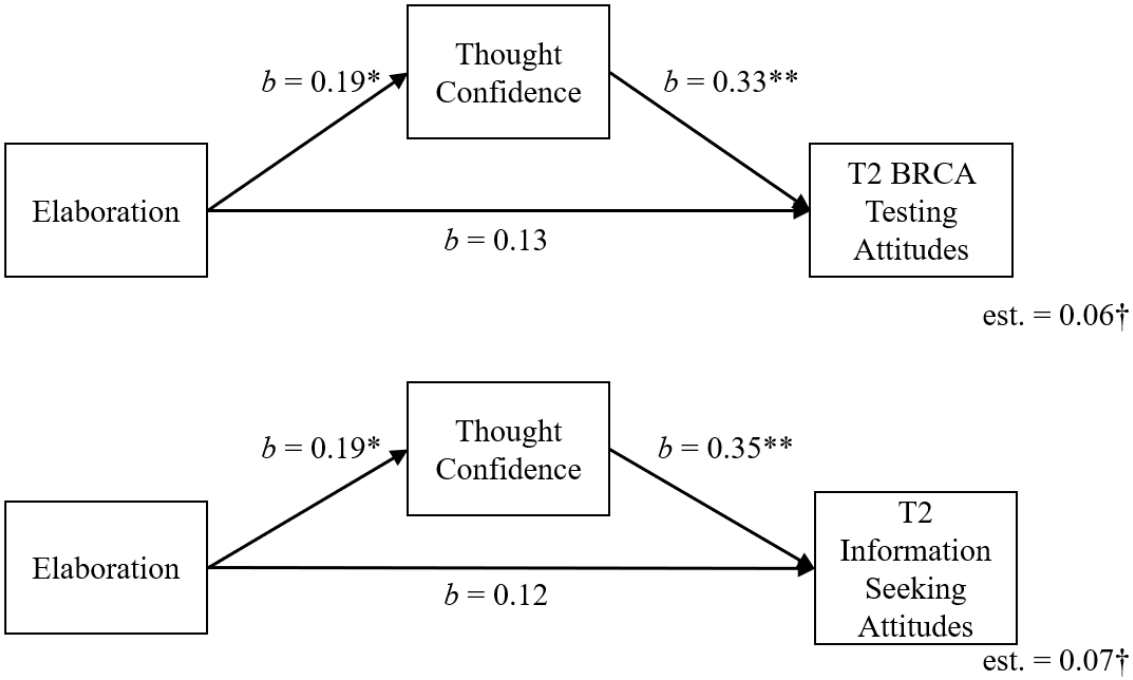
Post-Hoc Tests. Because an indirect effect of elaboration on T1 attitudes via thought confidence was found, the question of whether elaboration would be indirectly related to T2 attitudes via thought confidence arose. This post-hoc hypothesis was tested using two separate models (PROCESS model 4) for each attitude. Condition and testing history were entered as covariates. There was no evidence of a direct effect of elaboration on T2 BRCA mutation testing attitudes, $b = 0.13$, $p = .08$. But those who elaborated more reported greater thought confidence, $b = 0.19$, $p = .02$, and those who reported higher

levels of thought confidence reported more positive T2 BRCA mutation testing attitudes (b = 0.33, p = .0001). Those with a history of genetic testing history reported more thought confidence (b = 0.34, p = .04), but no differences were detected across conditions (b = 0.02, p = .82). No differences in T2 BRCA mutation testing attitudes were detected based on genetic testing history (b = 0.7, p = .07), nor condition (b = 0.07, p = .41). Furthermore, an indirect effect of elaboration on T2 BRCA mutation testing attitudes was detected via thought confidence, est. = 0.06, CI [.01, .14].

Looking next at information seeking attitudes, results showed no direct effect of elaboration on T2 information seeking attitudes, b = 0.12, p = .15. However, those who elaborated more on the episode reported higher levels of thought confidence (b = 0.19, p = .02) and those with more thought confidence reported more positive T2 information seeking attitudes (b = 0.35, p = .0002). Those with a history of genetic testing reported more thought confidence (b = 0.34, p = .04), but no differences in thought confidence were detected across condition (b = 0.02, p = .82). No differences in information seeking attitudes were detected across testing history (b = 0.21, p = .23), nor condition (b = 0.09, p = .31). The test of indirect effects showed evidence of an indirect effect, est. = 0.07, CI [.01, .15]. Taken together (Figure 8), the results illustrate that there was an indirect effect of elaboration on T2 attitudes, via thought confidence.

Figure 8.

Graphic representation of post-hoc findings.



*. Coefficient is significant at the 0.05 level.

**. Coefficient is significant at the 0.01 level

†. Indirect effect estimate significant.

Chapter 5: Discussion

This dissertation set out to test potential causal mechanisms of interpersonal communication on persuasive media effects, specifically in the context of a persuasive narrative featuring a young woman undergoing BRCA mutation testing. By conducting an experiment designed to test two potential processes (i.e., the *intra*- and *inter*personal hypotheses) regarding the effects of discussion of a health narrative on BRCA mutation testing and information seeking attitudes. Overall, the findings provide some support for the influence of elaboration on the message and perceived validation, via thought confidence, on attitudes both immediately following and one week after message exposure. However, results failed to provide evidence that discussion increases the impact of the health message on resulting attitudes.

Past studies have shown that when audiences discuss health messages with others, they are generally more persuaded by the message than if they did not discuss it (Jeong & Bae, 2018). When the discussion is about the target health topic and is positive in nature, there is more likely to be a positive, additive effect of conversation on persuasion (Jeong & Bae, 2018). Still, the process of how discussion of a health message impacts attitudes has been understudied, with few studies using experimental methods (Robbins & Niederdeppe, 2017). To extend past research, this dissertation considered the explanations provided by the *intra*- and *inter*personal hypotheses as explanations for how discussion influences persuasive media outcomes (Eveland, 2004; Southwell & Yzer,

2007). These hypotheses were tested within the context of genetic testing for a mutation in the BRCA gene among young adults at higher risk of cancer, showing that the resulting cognitive processes of elaboration, perceived validation, and thought confidence were related to more positive attitudes towards BRCA mutation testing and information seeking about genetic testing from a healthcare provider.

Elaboration

In particular, this dissertation attempted to test whether those who engaged in an interpersonal discussion elaborated more on a narrative health message than they might in other situations, by manipulating whether the participants were asked to discuss a health narrative (the *inter*personal elaboration condition) or think carefully about the message (the *intra*personal elaboration condition), or they were not directly asked to elaborate (control condition). Additionally, by providing exclusively positive feedback to those in the *inter*personal elaboration condition, it was expected that participants would perceive more validation of their thoughts. Results showed that while elaboration did differ across conditions, perceived validation did not. Those who were asked to discuss the health topic and those who were asked to think carefully and write about the health topic elaborated more than those not given explicit instructions to elaborate, while perceived validation levels were similar whether people were prompted to elaborate or not.

There are several possibilities for why people in the *inter*personal elaboration condition did not elaborate on the message more than those in the *intra*personal elaboration condition. First, the *inter*personal elaboration manipulation may not have been strong enough to trigger people in that condition to elaborate more on the content than being asked to think and write about the content as done in the *intra*personal

elaboration prompt. The literature (Eveland, 2004; Southwell & Yzer, 2007) suggests that the act of discussing a health message with others allows individuals a further opportunity to elaborate on the message (Brinol & Petty, 2015). As both elaboration conditions engaged in more elaboration than those in the control condition, results support the proposition that discussion simply allows for more time to elaborate on the message. Additionally, discussions have been thought to lead to more elaboration because they allow participants to hear additional arguments about the persuasive message (Harkins & Petty, 1981). Because, the discussions held in this study did not involve the confederate making additional arguments or adding additional information to the conversation (i.e., they stuck mostly to a script that guided them to simply agree with participants), the discussion may not have included an important elements (e.g., additional information or arguments) to encourage more elaboration than simply being instructed to think and write about the message (Southwell & Yzer, 2007). Furthermore, it is possible that discussion may just allow the process of elaboration to happen out loud, either literally in a face-to-face or voice conversation or metaphorically in writing out one's thoughts in a text-based conversation. That is, people do not engage in any more elaboration during a discussion than they would have when simply writing about their thoughts.

One additional explanation why the interpersonal discussion did not lead to more elaboration than those in the *intra*personal elaboration condition, is that the interpersonal discussion was with a stranger versus someone participants were familiar with. An unfamiliar conversational partner was used to allow for perceived anonymity on the part of the participant and to allow for the use of a confederate to control conversational

content. However, participants may have put less thought and effort into the discussion than they would have if they were talking with someone they were familiar with, leading to the similar levels of elaboration in both the *inter*personal and *intra*personal elaboration conditions. If the discussions in this study had been with a familiar partner, there may have been certain pressures to maintain a level of intimacy that is normal for that relationship (Tong & Walther, 2011), which could have required more information sharing and discussion of emotions than a conversation with a stranger might have. Additionally, because the unfamiliar partner (i.e., the confederate) in the conversations did not reciprocate self-disclosure, the participant may have felt less pressure to express and give details on their thoughts, balancing out the perceived lack of effort from the confederate with the amount of effort they put into their own responses (Uehara, 1995).

As Jeong and Bae (2018) found that the nature of the relationship between conversational partners has an impact on the outcomes of studies looking at discussions of health messages, varying the relationship (e.g., friends, family, romantic partners) between discussion partners should be a goal in future research. As has been discussed, the use of an unfamiliar discussion partner could have impacted study results. If people have similar discussions between romantic partners, family, or friends, then the lack of findings here regarding interpersonal discussion could be attributed to the fact that this process does not happen or is different for unfamiliar discussion partners. Continuing this line of thought, it might be that the causal mechanisms driving the influence of these health discussions, differs across discussion partners. In discussions with unfamiliar partners, elaboration may be a driving causal variable, however when a conversation

about a health message happens with a familiar partner, perceived validation or some other variable may be driving the effects of such a conversation on attitudinal outcomes.

Future research could also vary the level of expertise of discussion partners, such that the discussion (whether it be online or face-to-face) could be with either an expert in the specific health topic under investigation or is just a peer with no additional knowledge of the topic. Some research into source cues shows that people view information given by experts as more credible (Thon & Jucks,, 2016) and that when information comes from more credible sources, people placed more trust in it (Tormala et al., 2007). Furthermore, evidence also suggests that when sources are more credible, people engage in more elaboration than when they are less credible (Heesacker et al., 1983). All of this suggests that having a similar conversation to the one used in this study, but only with someone presented as an expert, may amplify the results found in this study as information from experts is elaborated on more as compared to information from someone with lower credibility (Heesacker et al., 1983).

Additionally, this study looked only at general elaboration and not valanced elaboration (i.e., positive or negative towards the health topic). Thus, future research should look at other forms of elaboration, such as counterarguing and positive-issue related elaborations. This is especially important as past research has shown that the valence of elaboration is important for predicting attitudinal outcomes (Petty & Cacioppo, 1986). In this study, condition may have been related to either positive or negative elaboration and not the other, and potentially either positive or negative elaboration may be related to thought confidence and not the other. As this study was not

able to capture the potential differences in elaboration valence, future research should investigate these specific forms of elaboration in related to discussion of health messages.

Perceived Validation

Participants in the *inter*personal condition were provided with exclusively positive feedback (e.g., "That makes sense"); therefore, it was expected that those in this condition would experience higher levels of perceived thought validation than those in the *intra*personal and control conditions. However, similar to elaboration, results showed that perceived validation did not differ across conditions. Furthermore, there was no evidence of a mediation effect occurring wherein condition was indirectly related to thought confidence via perceived validation. There are several explanations for this finding.

First, the attempt to provide validation by simply saying "I agree" may not have been enough to impact participants' perceptions that their thoughts were shared with others. While most past studies that have manipulated perceived validation did so by providing participants consensus information about others' thoughts (e.g., "87% of your thoughts were similar to those of other students"; Petty et al., 2002, p. 734), one study did manipulate attitude similarity by telling participants if one other person rated their thoughts as similar or dissimilar to their own (Tormala et al., 2009). In the Tormala et al. study, being told one's response was rated as similar to another participant was enough to induce some feeling of validation and thus increased thought confidence (Tormala et al., 2009). So simply stating "that makes sense" may not have been enough to indicate similarity in thoughts and consequently was not enough to influence perceived validation. Future research should be more explicit in discussion partners' agreement and, as

discussed below, use more active listening techniques like paraphrasing. Additionally, as most studies used information about the thoughts of multiple other people (e.g., Petty et al., 2002), future studies may try to include similar normative information or information about descriptive norms (i.e., what other people do, Fishbein, 2009) or injunctive norms (i.e., what other people feel about a topic or behavior, Fishbein, 2009). Simply adding a phrase about the behavior or thoughts of a friend of the confederate (e.g., "I was just talking about this with a friend and she...") may have helped give the impression of a larger consensus while still having a discussion with only one other person. However, as this normative information could be communicated in a form other than interpersonal discussion, the causal mechanism of increased perceived validation would not be same. If the effects of interpersonal discussion on persuasion are in fact driven by the communication of normative information, then the additional effects of interpersonal discussion could be achieved by simply including either more normative information in the message itself or through an additional message, such as a PSA following a narrative message (Moyer-Guse et al., 2012). Future research should aim to investigate whether the inclusion of normative information in a discussion is different than communicating the same information in another form.

Second, the reason that interpersonal discussion did not increase perceived validation could be that participants had already validated their own thoughts on the health message before the discussion even began, providing less of an opportunity to positively impact perceived validation and thought confidence during the discussion. According to self-validation theory, people can validate their own thoughts without any outside input (Petty et al., 2002). The process of validating one's own thoughts works by

people engaging in a metacognitive process, wherein they evaluate how much elaboration they engaged in concerning a topic. When people feel that they gave the topic a high amount of attention and thought, they evaluate their thoughts and reactions as more valid than if they gave it less thought (Petty et al., 2002). Evidence of this process has been found in other studies (see Brinol & Petty, 2015 for an overview of findings). However, it has been noted that the process of validating one's own thoughts takes both ability and motivation (Petty et al., 2002). If one is not motivated to engage in this validation process or does not have the ability to do so (because of physical or psychological obstacles), then they are much less likely to validate their own thoughts. Because of the larger amount of motivation and effort that this metacognitive process requires, it was theorized in the present study that by having another person validate participants' thoughts, participants would require less motivation and effort to engage in the validation process. By lowering the cognitive effort and necessary motivation needed to engage in validation, it was expected that participants would experience an increase in perceived validation. However, data failed to support this proposition suggesting that receiving outside positive validation may not make the process of validation less cognitively demanding, although more research is needed. It should also be noted that this study did not differentiate between self-validation (Petty et al., 2002) and social validation (Hardin & Higgins, 1996). That is, study measures simply looked at how validated participants felt and did not differentiate between perceived validation through social processes (e.g. comparing one's thoughts to another's) or through intrapersonal processes (e.g., undergoing the metacognitive process previously described). Thus, any potential differences in how self- or social-validation differentially impacted the investigated

process were not captured here. Future research should look into more clearly defining the two different process and attempting to separately operationalize them to investigate the potential differences in influence they may exert, as past research has not investigated them as separate processes, which they may well be.

It is also possible that by having the confederate simply agree with participants, instead of also giving their own opinions, the discussion felt one-sided to participants, lessening the chance that they felt validated. In very few interactions were the confederate's opinions expressed, and if they were, the confederate simply indicated agreement with the participant. Literature examining reciprocal disclosure can help explain this situation (Sprecher et al. 2013). When self-disclosure is reciprocal, meaning both interaction partners ask and answer questions, participants are more likely to rate their conversation partner positively (e.g., likability, closeness, similarity) as compared to self-disclosure that is one-sided (Sprecher et al., 2013). Following this line of thought, hypothetically, if participants felt neutral or negatively towards their conversation partner, then the likelihood they would feel validated was lower. However in this study, participants rated their partner above the scale midpoint (1-7) on measures of trustworthiness ($M = 4.67$, $SD = 1.51$), similarity ($M = 4.83$, $SD = 1.53$), and credibility ($M = 4.64$, $SD = 1.50$). These data suggest (as the means are above the scale midpoint) that participants felt somewhat positively towards their conversational partner, meaning that some other variable could be driving the lack of effects of interpersonal discussion on perceived validation. Future research should have conversational partners engaging in more self-disclosure so that the discussion is more reciprocal in nature and measure variables relating to the perceptions of the conversational partner. Additionally, future

research should measure participant feelings of satisfaction and emotional reactions to the discussion (e.g., did they feel heard/understood), to understand how perceptions of the conversation as a whole can impact the process of interpersonal discussion of a persuasive media message.

Having a more one-sided conversation could have also impacted perceived validation because the confederate may not have seemed to be actively listening to the participant. Active listening is thought to have three components, interest expression (e.g., nodding), paraphrasing, and asking questions to allow for elaboration on points (Werger et al., 2014). In this dissertation, the "listener" (i.e., the confederate), only used short phrases of agreement (e.g., "that makes sense") and asked questions about different topics (i.e., BRCA mutation testing in general and BRCA mutation testing for women in their twenties) and not clarification questions (e.g., "you said that you think people should get tested, why do you think that"). By examining the three components of active listening (i.e., interest expression, paraphrasing, and clarification questions) the confederate did not use active listening due to the lack of paraphrasing and asking clarification questions. By the confederate simply acknowledging participant responses, participants may not have felt like they were actually understood (Werger et al., 2014), which would have negated any attempt to validate their opinions. Future research should use more active listening techniques, like paraphrasing conversational partners' points and asking clarification questions (Werger et al., 2014). By using these techniques, participants may feel more validated because they feel more understood and more satisfied with the interaction, in addition to feeling more positively towards the discussion partner (e.g., liking, similarity, Werger et al., 2014). Future research should

also incorporate measures assessing participant perceptions of the discussion partner (e.g., likability, closeness) to gauge a fuller picture of what perceptions may matter in these interactions.

Finally, attitudes towards BRCA mutation testing are generally positive (Henneman et al., 2013) and were also high in this study (5.87 on a 7-point scale) following exposure to the narrative. Future research examining interpersonal discussion effects on perceived validation should consider incorporating health contexts (other than BRCA mutation testing) that people have more differing opinions on. It is possible that when participants do not have a sense of opinion consensus going into the study, attempts to validate attitudes may be more successful. Additionally, future studies should also measure attitudes and perceived consensus in regard to the health topic at baseline, before narrative exposure, which would allow researchers to control for these perceptions and to test for changes in attitudes across time.

Thought Confidence

Although differences were not found across conditions on elaboration or perceived validation, these variables were indirectly related to attitudes at time 1 and time 2 via thought confidence. These findings support the proposition that elaboration and perceived validation are important predictors of thought confidence in self-validation theory (Petty et al., 2002). Findings also support that both perceived validation and thought confidence are important causal mechanisms in the persuasive process that have, thus far, not been incorporated into media effects research (Brinol & Petty, 2015). The findings of this dissertation support the propositions of self-validation theory (Petty et al., 2002), as higher levels of both elaboration and perceived validation are related to more

positive attitudes via thought confidence. Future research should aim to include thought confidence as a variable in their research so that we can understand more about its role in persuasive media effects (Brinol & Petty, 2015). Additionally, future research should try to manipulate thought confidence (perhaps following the confidence induction used in Petty et al., 2002) in a persuasive media context to further tease apart its relationship with elaboration, such as if it follows elaboration or proceeds it. Furthermore, future research should look at thought confidence over time, specifically looking at any changes in thought confidence over time and how those changes may impact attitudes over time. Past research has suggested that thought confidence may increase over time which can impact the stability of attitudes over time (Petty et al., 2002).

Longer Term Effects

Finally, while this dissertation failed to find evidence that the condition led to attitude persistence regarding BRCA mutation testing, it was found that higher levels of elaboration were related to more positive attitudes at T2 via thought confidence. The *inter*personal elaboration condition was expected to exhibit more thought confidence because participants were expected to elaborate more on the health message leading to more thought confidence. Additionally, thought confidence has been shown to lead to stronger and more persistent attitudes (Brinol & Petty, 2015). The data did not support this. Examining the individual paths, condition was not directly related to thought confidence, nor was it indirectly related to thought confidence via perceived validation. Again, the manipulation used here failed. Simply by having participants either write about their thoughts or discuss their thoughts was not enough to impact thought confidence, either directly or indirectly.

Post-hoc analyses showed that elaboration, not condition, was indirectly related to T2 attitudes via thought confidence, such that higher levels of elaboration lead to more confidence in thoughts which was predictive of more persistent positive attitudes, which directly supports the propositions of self-validation theory (Petty et al., 2002). Encouraging elaboration is extremely important for a health message to be successful. When elaboration levels are high, participants are more confident in their thoughts, leading to more positive attitudes, an effect that is found when looking at immediate follow-up measures of attitudes and measures taken one week later. Not only can elaboration have a direct, positive, effect on attitudes, but it can also impact other, mediating, variables (e.g., thought confidence) that can help increase the effectiveness of health messages.

Limitations

As with any study, this dissertation has limitations that should be discussed. First, the sample size was small relative to similar studies. While similar experimental studies had drastically different sample sizes ($N = 63$ in Hendriks et al., 2012 to $N = 354$ in Robbins & Niederdeppe, 2017), this study's sample size was closer to the lower end of the spectrum. Because of the smaller sample size, there may not have been enough power to find significant effects that do exist. Post-hoc power analyses support this proposition that we had inadequate power needed to detect effects. This study had achieved power levels ranging from 0.12 to 0.24, whereas a power level of 0.8 or greater is generally suggested to find effects (Cohen, 1990).

A large portion of our sample was comprised of college students, who may be fundamentally different from the general population in ways that may have impacted key

study variables. As Petty and Cacioppo (1986) note, the level of elaboration one engages in after receiving a persuasive message can depend on ability and motivation. Those who enter college not only are motivated to continue their education, which can be seen as an indicator for high need for cognition (a predictor of elaboration, Cacioppo et al., 1984), but are also receiving training in critical thinking, which could increase their ability to elaborate. Using a largely college student sample could have also impacted results because those with higher levels of education tend to experience more attitude change when presented with non-narrative information as compared to comparable narrative information (Moran et al., 2013). It should be noted, however, that a portion of the sample was recruited through Research Match, a participant pool that is open to anyone living in the U.S., which may have helped even out the influence that higher education levels could have had on our results. Results of an ANOVA examining differences in elaboration level across recruitment methods (i.e., CREP and Research Match) suggest that idea that students differ on elaboration has some merit. The ANOVA was approaching significance ($F(1, 129) = 3.83$, $p = 0.053$), and examination of the means shows that the student sample did trend toward engaging in slightly higher levels of elaboration ($M = 5.51$, $SD = 0.85$) than those recruited through Research Match ($M = 5.20$, $SD = 0.93$), though this did not reach statistical significance. However, as education level information was not collected, it cannot be stated for certain how much of our sample had higher than average education.

Another major limitation of this dissertation was the establishment of causality. Elaboration and perceived validation were not successfully manipulated, thus it cannot be said for certain whether higher levels of elaboration and perceived validation cause

increases in thought confidence, as theory would suggest (Petty et al., 2002). Furthermore, it cannot be established if these cognitive processes happened at the same time, or even after thought confidence was established. It could also be argued that a reciprocal relationship exists. For example, the more elaboration the one engages in, the more confident one is in their thoughts. Consequently, that increase in thought confidence could then encourage further elaboration. However, as the establishment of causality is a large and common concern in research similar to this dissertation, the variables in question were measured in their theoretical order (i.e., elaboration was measured first, followed by perceived validation, followed by thought confidence).

Additionally, a potential confound was that those the *inter*personal elaboration condition were asked during the discussion "how did you feel about Jane's point about women in their twenties getting tested?", whereas those in the *intra*personal elaboration condition were asked "How do you feel about women in their 20s getting tested?". Thus, those in the *inter*personal elaboration condition were asked a more show-centered question, as compared to those in the *intra*personal elaboration condition being asked a more topic-centered question. As past research has found that when discussions were centered around the message in general (e.g., about how the message was delivered) there were not positive attitudinal outcomes when compared to when the discussion was centered around the health topic (Jeong et al., 2015). Thus, this difference in question framing may have inadvertently negatively impacted study results. Additionally, as the *inter*personal prompt was more show centered, the difference in prompt framing may have inadvertently encouraged identification with the character Jane, which could have led to differential elaboration effects, though the fact that those in the *inter*personal

condition did not differ from those in the *intra*personal condition suggests that this may not have been the case here.

Implications for Health Communication

The results of this study have implications for health communication practitioners. The biggest takeaway is that when designing health messages practitioners should encourage cognitive elaboration on those messages. Elaboration is an important variable to the persuasion process, both in terms of its effects on attitudes but also its effects on mediating variables like thought confidence. One main way that health messages can encourage elaboration is through increasing the perceived relevance of the message. As noted in the elaboration likelihood model (Petty & Cacioppo, 1986), perceived relevance of information can impact elaboration by increasing the audience's motivation to process the information (Dinolff & Kowalski, 1999). This process has been met with some empirical support in the narrative persuasion literature (Hamby, et al., 2017). Another way to increase the relevance of information was to motivate high levels of thinking by portraying the issue as one that would happen in the near future (e.g., in one year) as compared to the distant future (e.g., in 10 years, Petty et al., 1981). Other past studies have successfully manipulated elaboration using various methods, such as using credible sources and participant centered language. Past research has found that positively framed information about exercise that came from credible sources led to more elaboration on exercise and led to more intentions to engage in exercise (Jones et al., 2003). Fear appeals that use second-person wording (e.g., smoking is bad for your health) as compared to third-person worded fear appeals (e.g., smoking is dangerous to those around you) lead to more elaboration (Keller & Block, 1996). Within the narrative

context, factors like transportation, identification, and parasocial interaction have been shown to be related to elaboration (Shen & Seung, 2018), thus manipulating any of these variables may have a positive influence on elaboration (Hamby et al., 2017).

Since this study did not measure baseline attitudes, it cannot be stated whether the narrative led to attitude change or whether those who engaged in more elaboration experienced more attitude change. This study only shows that higher levels of elaboration were predictive of positive attitudes. It could potentially be that those who came into the study with already positive attitudes elaborated more on the message, leading to the effects that were found in this study. Thus, as previously mentioned, future research should measure attitudes before message exposure.

Conclusion

Overall, data from this study provide support for the proposed model (Figure 1). Other than the hypotheses concerning the impact of condition on study variables, the study hypotheses were affirmed. Elaboration and perceived validation were both indirectly related to more positive BRCA mutation testing and information seeking attitudes via their relationship with thought confidence. Furthermore, post-hoc analyses showed that elaboration was also indirectly related to positive attitudes at time two, via thought confidence. Overall, while this study did not find support for discussion increasing the persuasive effects of the narrative, this dissertation did find support for the propositions of self-validation theory (Petty et al., 2002).

This dissertation adds to the extant research illustrating the importance of elaboration in persuasion; however, it also illustrates that perceived validation and thought confidence are mechanisms of persuasion and should be considered more often in

communication research. The fact that those who discussed the health message did not report more positive attitudes than those in the other conditions was surprising, especially when examined in context with other findings concerning the role of discussion in persuasive media effects (Jeong & Bae, 2018). While past research has shown that discussions about health messages can have an additive impact on persuasive outcomes, contextual factors can impact whether such an effect is found (e.g., relationship of conversational partner, Hendriks et al., 2016; or valence of the conversation, Dunlop et al., 2010). Thus, while it disappointing that this study did not find evidence of an additive effect of discussion on attitudes towards BRCA mutation testing, the lack of results speaks to the overall extremely complex nature of this process.

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Appendix A

Interpersonal Elaboration Discussion Script

Planned flow: BRCA general → BRCA in 20s → Family health history → End

If they bring up a topic without being prompted, respond and skip to next step in flow.

If they bring up a topic earlier in the sequence, skip the topic when it is supposed to be brought up.

If a response is off topic, contains false information, asks a question, or they are only giving one-word answers, see "Emergency Responses" section below for guidance. If a usable response is not found below, try and stay as neutral towards BRCA testing as possible while giving positive feedback.

Main questions:

> BRCA general: So I guess they want us to talk about BRACA testing? Like what did you think?
>
> BRCA in 20s: how did you feel about Jane's point about women in their twenties getting tested?
>
> FHH: I know how her mom had breast cancer, but why didn't her friends get tested too?

TO START CONVERSATION:

> Confed: So I guess they want us to talk about BRACA testing? Like what did you think?

Participant: RESPONSE

> [If response doesn't bring up testing young women]
>
> Confed: I feel that. how did you feel about Jane's point about women in their twenties getting tested?
>
> [If response does bring up testing young women]
>
> Confed: that makes sense. I know how her mom had breast cancer, but why didn't her friends get tested too?

Participant: RESPONSE

[If they were asked about BRCA testing in 20s]

Confed: That makes sense. I know how her mom had breast cancer, but why didn't her friends get tested too?

[If they asked about the importance of family history and answer correctly (i.e., they may not have had a family history of it]

Confed: True. i hadn't thought of that. [End conversation]

[If they asked about the importance of family history and answer with anything other than FHH]

Confed: yeah. it could be important knowing whether someone in your family had it. [End conversation]

Participant: RESPONSE

[If they asked about the importance of family history and answer correctly (i.e., they may not have had a family history of it]

Confed: True. i hadn't thought of that. Like knowing whether someone in your family had it could be important. [End conversation]

[If they asked about the importance of family history and answer with anything other than FHH]

Confed: yeah. it could be important knowing whether someone in your family had it. [End conversation]

TO END CONVERSATION

Confed: So I think we talked for as long as they wanted. Guess we should do the survey now lol XD

EMERGENCY RESPONSES

[If response indicates a family member having cancer]

Confed: I'm so sorry. it could be important knowing whether someone in your family had it.

[If response is not on topic and not about the show or the study]

Confed: maybe we should talk about BRACA testing since that was in the instructions. [re-ask last question but phrase it slightly differently.]

[If response is on topic, but contains false information]

Confed: I don't think that's right. Anyways, [ask next question in sequence]

[If response is not on topic but about the show]

Confed: I agree. I thought the show was [not] super interesting. But [ask next question in sequence]

[If response is on topic and explicitly asks a question]

Confed: [Try to reiterate whatever response the Participant gave-depending on response] [ask next question in sequence]

[If there was not an opinion in the response, and explicitly asks a question]

Confed: I'm not sure [rephrase the question to a statement]. [ask next question in sequence]

[If response isn't on topic]

Confed: That makes sense, but maybe we should talk about BRACA testing since that was in the instructions. [re-ask last question but phrase it slightly differently.]

[If response was only one word or not detailed enough to give response]

Confed: I'm not sure I understand…can you explain a bit more?

[If they continue to be difficult and not discuss as per directions]

Confed: Like, if you're not going to take this seriously, we might as well just stop this chat and do the survey.

Appendix B

Instructions for the Intra- and Interpersonal Elaboration Conditions

[Intrapersonal elaboration condition]

Please read all the instructions before moving forward.

You are being asked to write about your thoughts on testing for the BRCA genetic mutation. On the next pages, you will be presented with questions to think and write about.

On each of the next three pages, you will be presented with a prompt for you to think about. There will be a text box for you to write as much as you want about your reactions. Once you have finished with each question, you can click the "→" button in the lower right corner to move on to the next prompt. Once you are finished writing, please move to the next page.

Please spend the next 5 minutes thoughtfully writing about BRCA testing.

What do you think about BRCA testing?

[text box]

How do you feel about women in their 20s getting tested?

[text box]

How important is knowing/knowledge of your family health history to your health?

[text box]

[Interpersonal elaboration condition-CREP]

Please read all the instructions before moving forward.

You are being asked to have a discussion with another student about testing for the BRCA genetic mutation. This conversation will be with another female student here at [university] and is being conducted in a chatroom on this site to allow for you both to remain anonymous to each other.

Below, you will see a random number which will serve as your username in the discussion. Please copy this number and paste it when prompted.

You can begin the conversation by clicking on the study chat button in the lower right-hand corner. This will open a new window with the chat room. The other person has been asked to start the conversation and keep track of time. Once the discussion is finished, please close the chat window and return to this page.

Please spend the next 5 minutes having a thoughtful conversation about BRCA testing.

[Interpersonal elaboration condition-Research Match]

Please read all the instructions before moving forward.

You are being asked to have a discussion with another study participant about testing for the BRCA genetic mutation. This conversation will be with another woman who is between 18-29 years of age and is also participating in this study and is being conducted in a chatroom on this site to allow for you both to remain anonymous to each other.

Below, you will see a random number which will serve as your username in the discussion. Please copy this number and paste it when prompted.

You can begin the conversation by clicking on the study chat button in the lower right hand corner. This will open a new window with the chat room. The other person has been asked to start the conversation and keep track of time. Once the discussion is finished, please close the chat window and return to this page.

Please spend the next 5 minutes having a thoughtful conversation about BRCA testing.

Appendix C

List of Measures

Time 1 Measures

The following questions will ask you about your experience watching the video. Please remember your responses are confidential. [All]

How was the technical quality of the video playback while you were watching?

____Very Poor

____Poor

____Fair

____Good

____Very Good

Did you have any issues (e.g., technical issues like buffering or things like distractions around the room) while watching the video? If so, please describe here. [Open ended]

Thinking about the episode you just watched/the writing task you completed/the discussion you had, please rate your agreement on each of the statements below. [All]

While watching the episode/writing about thoughts/discussing the episode, I was...

	Strongly Disagree Neither Agree Nor Disagree Strongly Agree
Attempting to analyze the issues in the episode	1.....2.....3.....4.....5.....6.....7
Not very attentive to the ideas in the episode	1.....2.....3.....4.....5.....6.....7
Deep in thought about the episode	1.....2.....3.....4.....5.....6.....7
Unconcerned with the ideas in the episode	1.....2.....3.....4.....5.....6.....7
Extending a good deal of cognitive effort	1.....2.....3.....4.....5.....6.....7
Distracted by other thoughts not related to the episode	1.....2.....3.....4.....5.....6.....7
Not really exerting my mind	1.....2.....3.....4.....5.....6.....7
Doing your best to think about what you watched	1.....2.....3.....4.....5.....6.....7
Reflecting on the implications of the arguments in the episode	1.....2.....3.....4.....5.....6.....7
Resting my mind	1.....2.....3.....4.....5.....6.....7
Searching my mind in response to the ideas in the episode	1.....2.....3.....4.....5.....6.....7
Taking it easy	1.....2.....3.....4.....5.....6.....7

Thinking about the other person in the discussion you had, please answer the following questions. [*Inter*- and *intra*personal elaboration conditions]

While having the discussion with the other student/writing about the episode, I felt my thoughts were...

	Strongly Disagree Neither Agree Nor Disagree Strongly Agree
Confirmed	1.....2.....3.....4.....5.....6.....7

Assured	1.....2.....3.....4.....5.....6.....7
Validated	1.....2.....3.....4.....5.....6.....7
Approved	1.....2.....3.....4.....5.....6.....7

Thinking about the thoughts you had about episode you just, please answer each question below. [All]

How confident are you in your thoughts?

Not at all	1.....2.....3.....4.....5.....6.....7	Extremely

How certain are you of your thoughts?

Not at all	1.....2.....3.....4.....5.....6.....7	Extremely

How valid are your thoughts?

Not at all	1.....2.....3.....4.....5.....6.....7	Extremely

How well-founded are your thoughts?

Not at all	1.....2.....3.....4.....5.....6.....7	Extremely

How convincing are your thoughts?

Not at all	1.....2.....3.....4.....5.....6.....7	Extremely

How similar are your thoughts compared to others?

Not at all similar	1.....2.....3.....4.....5.....6.....7	Extremely similar

To what extent do you agree with the following statements? [All]

	Strongly Disagree Neither Agree Nor Disagree Strongly Agree
I think the development of the BRCA test is hopeful for the treatment of diseases.	1.....2.....3.....4.....5.....6.....7
I approve of using the BRCA test for detection of breast cancer risk.	1.....2.....3.....4.....5.....6.....7
I would want a BRCA test to tell me that I am at risk for a certain disease.	1.....2.....3.....4.....5.....6.....7
The idea of the BRCA test frightens me.	1.....2.....3.....4.....5.....6.....7

Even though the cancers associated with the BRCA mutations do not affect women until they reach adulthood, women in their 20s should still be offered BRCA testing.	1.....2.....3.....4.....5.....6.....7
I am in favor of BRCA testing for women in their 20s.	1.....2.....3.....4.....5.....6.....7
Even if there is no known prevention, treatment, or cure for the cancers associated with the BRCA mutation, women in their 20s should still be offered BRCA testing.	1.....2.....3.....4.....5.....6.....7

Having a thoughtful conversation about BRCA TESTING with a healthcare provider is... [All]

Worthless	1.....2.....3.....4.....5.....6.....7	Valuable
Good	1.....2.....3.....4.....5.....6.....7	Bad
Harmful	1.....2.....3.....4.....5.....6.....7	Beneficial
Helpful	1.....2.....3.....4.....5.....6.....7	Not Helpful
Unproductive	1.....2.....3.....4.....5.....6.....7	Productive
Wise	1.....2.....3.....4.....5.....6.....7	Foolish
Not Useful	1.....2.....3.....4.....5.....6.....7	Useful

The following questions ask you about various aspects of your life. Please answer each question honestly and remember that your answers are confidential. In other words, no one will be able to connect your identity with your responses. You can skip any question that you would prefer not to answer. [All]

What is your age?

_____years

How would you describe your racial/ethnic identity?

__ White/Caucasian

__ Hispanic or Latino

__ African American

__ Asian or Pacific Islander

__ Arab or Middle-Eastern

__ Native American

__ Other: _____

Have you ever been diagnosed as having cancer?

____Yes

____No

____Don't know

[if yes to the previous question] What type of cancer were you diagnosed with?

____Breast Cancer

____Colorectal Cancer

____Cervical Cancer

____Prostate Cancer

____Lung Cancer

____Melanoma

____Other

____Don’t know

Have any of your family members ever had cancer?

____Yes

____No

____Don't know

Have you ever had a genetic test?

____Yes

____No

____Don't know

[If yes] Which one(s)? _____

Have any of your family members ever had a genetic test?

____Yes

____No

____Don't know

[If yes] Which one(s)? _____

[if no to both] Had you ever heard or read about genetic testing before receiving this questionnaire?

____Yes

____No

____Don't know

Please indicate whether each of the following statements are true or false. [All]

1 in 10 women has an altered breast cancer gene. [False]

A woman who does not have an altered breast cancer gene can still get breast or ovarian cancer. [True]

A woman who has an altered breast cancer gene has a higher ovarian cancer risk. [True]

All women who have an altered breast cancer gene get cancer. [False]

T2 Measures

To what extent do you agree with the following statements? [All]

	Strongly Disagree Neither Agree Nor Disagree Strongly Agree
I think the development of the BRCA test is hopeful for the treatment of diseases.	1.....2.....3.....4.....5.....6.....7
I approve of using the BRCA test for detection of breast cancer risk.	1.....2.....3.....4.....5.....6.....7
I would want a BRCA test to tell me that I am at risk for a certain disease.	1.....2.....3.....4.....5.....6.....7
The idea of the BRCA test frightens me.	1.....2.....3.....4.....5.....6.....7
Even though the cancers associated with the BRCA mutations do not affect women until they reach adulthood, women in their 20s should still be offered BRCA testing.	1.....2.....3.....4.....5.....6.....7

I am in favor of BRCA testing for women in their 20s.	1.....2.....3.....4.....5.....6.....7
Even if there is no known prevention, treatment, or cure for the cancers associated with the BRCA mutation, women in their 20s should still be offered BRCA testing.	1.....2.....3.....4.....5.....6.....7

Having a thoughtful conversation about BRCA with a healthcare provider is... [All]

Worthless	1.....2.....3.....4.....5.....6.....7	Valuable
Good	1.....2.....3.....4.....5.....6.....7	Bad
Harmful	1.....2.....3.....4.....5.....6.....7	Beneficial
Helpful	1.....2.....3.....4.....5.....6.....7	Not Helpful
Unproductive	1.....2.....3.....4.....5.....6.....7	Productive
Wise	1.....2.....3.....4.....5.....6.....7	Foolish
Not Useful	1.....2.....3.....4.....5.....6.....7	Useful

Appendix D

Debrief Form

IMPORTANT INFORMATION ABOUT THIS STUDY:

Thank you for your participation in this study. It is important for you to know that if you were asked to have a discussion as part of this study, the conversation you had was not with another participant, but with a researcher on this study; this was done to make sure that everyone talked about the same topics and recevied similar feedback on their responses. Your responses and any information we collected is confidential.

The purpose of this study is to investigate how discussing and thinking about a health message impacts attitudes. Here, we focused on attitudes towards BRCA mutation testing.

According the to the CDC, within the U.S., breast cancer is the most common form of cancer affecting women. Women who carry one a BRCA1 or BRCA2 gene mutation are seven times more likely to be diagnosed with breast cancer and 30 times more likely to be diagnosed with ovarian cancer. Those who are positive for a BRCA mutation before a breast cancer diagnosis have treatment options that will lower their risk for developing cancer.

If you would like more information about the BRCA gene mutation or BRCA testing, please visit this website: https://www.cdc.gov/genomics/disease/breast_ovarian_cancer/testing.htm

If you are interested in talking to a genetic counselor, please visit this website for more information: https://cancer.osu.edu/cancer-specialties/genetic-counseling

If you have experienced any emotional distress participating in this study, please find resource information below.

Student Wellness Center: 614-292-4527

Counseling and Consultation Service: 614-292-5766

Psychology Services Center: 614-292-2345

Stress Trauma & Resilience: 614-293-STAR

As a participant in this study, the true purpose of the study was hidden from you and deception was employed in this experiment. You were deceived in no other way. If, because of this deception, you would like to withdraw your participation from the study that is your right. You can contact the researcher and have your data removed from the study should you wish to do so. You will not be penalized for doing this and you will still receive credit for participating in this study. Moreover, if you feel you have been harmed as a result of taking part in this study or for questions about study-related harm, you may contact: Dr. Shelly Hovick at hovick.1@osu.edu.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.