DEVELOPING AND TESTING CULTURAL NARRATIVE MESSAGES WITHIN THE CONTEXT OF FAMILY HEALTH HISTORY COMMUNICATION

A Dissertation in
Communication Arts and Sciences

by

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Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy
May 2016
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ABSTRACT

The research in this dissertation advocate for the uses of cultural narrative messages as evidence in persuasive health communication. In this dissertation, within the context of family health history communication, I developed three types of cultural narrative message (Korean social-embeddedness narrative, Chinese social-embeddedness narrative, & Euro-American autonomy control narrative) and tested the processing and outcomes of the cultural narrative messages in different identity conditions by employing newly developed models named TPB-EELM integration model and EELM for narrative evidence processing. In addition, I empirically tested the role of attitude, subjective norm, perceived behavioral control, and other cultural norms and individual characteristics on the processing and outcomes of the cultural narrative messages and participants’ behavioral intention to communicate family health history. Although the interaction effect between identity condition and cultural narrative type was not significant, the findings from my research suggest that the uses of cultural narrative message in health communication intervention may influence target audience’s counter-arguing. This finding aligns with previous research on narrative effect in the context of entertainment education. Furthermore, the findings effectively present the relationships among the three variable of TPB, subjective norms regarding family and family health history, individual characteristics, message processing, outcomes and behavioral intention, which suggest both theoretical and practical implications in the context of family health history communication. Most significantly, the findings of pairwise comparison tests, which were conducted based on TPB-EELM integration model, indicate that participants’ processing of cultural narrative messages may vary according to the interaction between the participants’ cultural identity and the type of cultural narrative message. Thus, in conclusion, this research offers several theoretical as well as practical implications for communication and persuasion scholarship and practice.
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ACKNOWLEDGEMENT

I would like to express my deepest thanks to my advisor, Dr. Roxanne Parrott. Without your insightful guidance and inspiration, I would not have been able to finish this dissertation. In the past five years, you have provided me with invaluable guidance, and I have learned important lessons to be an independent researcher by working with you. You are truly my role model for a researcher and mentor. I would also like to thank my dissertation committee members, Drs. Jon Nussbaum, Rachel Smith, and Collins Airhihenbuwa for your guidance on various aspects as well as every important stage of my dissertation process.

I dedicate this dissertation to my loving family. I want to give speechless thanks to my parents who have supported and trusted me for my entire life. In addition, I would like to thank my lovely sisters who always make me happy. I can't express in words how much I love you all and how thankful I am for your love and support.

Last but not least, I give my best thanks to God. I know you have been always with me everywhere in all circumstances. I also know I wouldn’t be here without your providence. I will keep following the plan you’ve prepared for me, and this makes me feel overwhelmed with hope and joy.
CHAPTER ONE
INTRODUCTION

Cultural Narrative as Evidence in Health Communication

Pollock (2006) states that a story is not a story until it changes, and until it changes someone else. This reveals the power of narratives that produce and reproduce social reality. This characteristic of narrative is directly related to the role of narrative in health messages that function as evidence by adding credibility and legitimacy (Reynolds & Reynolds, 2002) and help audiences adopt a specific behavior. According to the Toulmin (1958) model, evidence is used as data to support a claim in the structure of argument. In the same vein, McCroskey (1969) defined evidence as “factual statements originating from a source other than speaker, objects not created by the speaker, and opinions of persons other than the speaker that are offered in support of the speaker’s claims” (p. 171).

In communication more broadly and health communication specifically, narrative has generated a voluminous amount of research, largely relating to the use of narrative inquiry as a methodology to reveal individual life stories (see Charmaz, 1987; 1991; 1999; 2001; Charon, 2006; 2009; Sharf, 2009; Harter, 2009; Langellier, 2009; Bochner, 2009). Less research has focused on the message features associated with the use of narrative as a form of evidence that contributes to positive or negative outcomes. In the previous research that has been conducted to examine characteristics and outcomes of narrative evidence, Volkman and Parrott (2012) investigated the use of different forms and types of narrative evidence to predict behavioral intentions toward osteoporosis prevention. Especially, they focused on the effects of expressed emotions (positive vs. negative) and different narrator perspectives (firsthand, secondhand, official, and attention control) on the processing and the outcomes of
narratives as evidence. While the authors did not find significant differences due to the type of narrative, especially in terms of narrator perspectives, negative or positive emotions expressed in narrative evidence were related to emotions experienced as well as message outcomes. Furthermore, the emotions experienced were associated with cognitive responses. Specifically, ‘hope’ led to more supportive thoughts while ‘anger’ led to more non-supportive thoughts.

Based on qualitative research that investigated public views about health causation, attributions of responsibility, and inequality (Lundell, Niederdeppe, & Clarke, 2013), Niederdeppe, Shapiro, Kim, Bartolo, and Porticella (2014) considered whether narratives were uniquely positioned to influence people’s causal attributions relating to causes of social problems. For this goal, they examined participants’ responses to three stories about the multifaceted causes and solutions of the obesity problem, varying the extent to which the character in the story acknowledged personal responsibility (high, moderate, and none) for controlling her weight. They found that the stories featuring no acknowledgment and moderate acknowledgment of personal responsibility were successful in increasing societal cause attributions (Niederdeppe et al., 2014). The study’s results suggest that the structure or features of narrative evidence based on lay public’s existing beliefs and thoughts can be effective in persuading people.

As in Niederdeppe et al.’s (2014) study, this dissertation also extends the line of inquiry associated with narrative features and evidence relating to a target audience’s beliefs and thoughts by focusing on cultural narratives in the context of family health history. Family health history is defined as, “a collection of information about diseases that run in a family, as well as the eating habits, activities, and environments that a family shares” (Genetic Alliance, 2006). Family health history
can be understood as medical stories influenced by diverse socio-cultural factors as well as family values.

Schank and Berman (2002) defined a story as “a structured, coherent retelling of an experience or a fictional account of an experience” (p.288). Schank (1990) identified five types of stories that people remember as stories: (a) official; (b) invented; (c) firsthand experiential; (d) secondhand; and (e) culturally common. According to Schank (1990) and Schank and Berman (2002), the five types of stories are defined as follows. Schank (1990) states, “official stories are often the position of a group that has a message to sell and treats that message independently of the facts” (p. 32). Invented stories are constructed from scratch by people. Therefore, although invented stories include narrator’s past experiences or stories he or she heard, the stories are still fictional. Firsthand stories are the types of stories that people shape and retell with some imagination after they personally experience something. Secondhand stories are those stories people retell based on other’s stories, which are less imaginative and complex than the processes of shaping firsthand stories. Lastly, culturally common stories are those stories that are pervasive in particular cultural environment, and thus are generalized due to its exceptional salience in the specific culture (e.g., Jewish people who use Yiddish phrases) (Schank, 1990; Schank & Berman, 2002).

With regard to the culturally common story, this project continues a line of research inquiry associated with narrative as a form of evidence, focusing on cultural narratives. Gordon and Paci (1997) define cultural narratives as “usually taken for granted and invisible, operating in the background of attention” (p.1434). The challenge associated with this approach to cultural narratives is that strategic health communication cannot make use of the cultural knowledge to guide culturally-
centered conversations about health. This is particularly salient in an era of genomic medicine and an increased reliance on family health histories to guide diagnosis and treatment.

Narrative communication can contain the targeted audience’s detailed understanding of a specific health issue based on their cultural characteristics (Larkey & Hecht, 2009) and reach resistant audiences (Green, 2006; Kreuter et al., 2007; Moyer-Guse, 2008; Slater & Rouner, 2002). Family health history stories cannot be free from cultural influences but rather will reflect social interactions, taking into account societal level factors such as age, gender, race, ethnicity, and socioeconomic differences, which directly and indirectly affect the life course of individuals, families, and communities, and their health risks and resources (Institute of Medicine, 2000). From the perspective of the ecological model which is defined as a multi-level model focusing on five dimensions of influences (i.e., intrapersonal, interpersonal, organizational, community, and public policy) affecting and being affected by human behavior (McLeroy, Bibeau, Steckler, & Glanz, 1988), it is also important to examine the effects of socio-cultural characteristics in a narrative message on message processing and its effects.

**Family Health History Communication**

Most diseases are the result of the interactions of multiple genes and environmental factors (Guttmacher, Collins, & Carmona, 2004; Rich et al. 2004; Scheuner et al., 1997). Knowing familial disease risk may be one of the essential components of proactive health care, since the information is helpful for an accurate risk assessment, cost-effective prevention, and risk-reducing management strategies (Koehly et al., 2009; Yoediono & Snyderman, 2008; Ramsey et al., 2005; Ramsey et al, 2001). As a result, family-based cooperation is necessary for each family to collect
and disseminate accurate family health history and genetic risk information (Kelly et al., 2006; Hinton et al., 2005; Valente et al., 2003; Valente et al., 2007)

Several campaigns (e.g., Native American Family Health History Project, 2012; Talk Health History Campaign Washington DC, 2008; Appalachian communities, 2006) have been developed and conducted in the US to encourage people to know their family health history to reduce the risk of diseases and contribute to public good. These family health history campaigns suggest that cultural characteristics and tools may help engagement and identification with the narrative message and promote cognitive processing. However, the processing of narrative messages has not been theoretically investigated in the previous examples in relation to socio-cultural influences; nor has the linguistic aspect of message structure been considered. This dissertation evaluates these issues, placing narrative evidence within the theoretical framework of the theory of planned behavior (Ajzen, 1991) and the extended elaboration likelihood model (Slater, 2002b; Slater & Rouner, 2002) to advance knowledge about the processing of culturally common stories as narrative evidence. In addition, this study investigates the effects of individual and cultural characteristics on the processing and the outcomes of cultural narrative messages, and the relationships among the variables. The Asian cultural context has been chosen for this research with specific attention given to Korean and Chinese population in the United States.

The Growth of Korean and Chinese American Immigrants in the US

The Asian population in the United States had grown by 46% between the 2000 and 2010 censuses, which was the largest growth of any major ethnic group (US Census Bureau, 2010). Asian Americans as a diverse group of Asian immigrants originally came from many parts of Asia. Therefore, their life styles, languages, and
ethnicities are diverse according to their cultural heritage.

In the US, East Asian immigration especially from Korea and China has drastically increased for several decades. Between 1980s and 2000s, Chinese American population rapidly grew from 0.4% to 0.9%, and Korean American population also doubled from 0.2% to 0.4% while Japanese Americans maintained 0.3% for three decades (Barnes & Bennett, 2002). According to the US Census Bureau (2011), the Chinese population was the largest Asian group, and Koreans were the fifth.

The growth of East Asian American population in the US suggests that public health campaigns need to consider their cultural experiences to better communicate public health messages. Especially, according to US Census Bureau (2012), the population of foreign-born Chinese and Korean Americans in the US was doubled between 1990 and 2010. Furthermore, more than half of Chinese living in the US were born in China and over 1 in 3 foreign born came from either Mexico or China in 2010. This suggests that many Chinese Americans have been influenced by their traditional culture.

In addition, thanks to the contemporary media culture and technology, it became easier for immigrants to maintain dual identities. While in the 70s or 80s, new immigrants should have fully adapted to a new host culture, recent immigrants can be easily exposed to their original culture. Therefore, it is important for health communicators to consider these cultural groups’ experiences for effective health communication in the future.

**Overview of Research Study**

This research was developed according to the assumption that culture influences the effectiveness of narrative. Although narrative is an effective strategy to
include cultural values in message features, few studies have investigated the
discursive or socio-linguistic aspects of narrative messages and their roles in health
communication. Therefore, this study investigates the role of culture embedded in
culturally-common stories on persuading audiences with different cultural
backgrounds. This research explores the potential strengths of cultural narrative for
message processing related to narrative outcomes and behavioral intentions in the
context of family health history communication via employing three cultural narrative
messages (South Korean Social-embeddedness, Chinese Social-embeddedness, and
European American Autonomy control) with three cultural/ethnic groups (Chinese,
South Korean, & European American).
CHAPTER TWO
LITERATURE REVIEW AND RATIONALE

Kreuter et al. (2007) define narrative as “a representation of connected events and characters that has an identifiable structure, is bounded in space and time, and contains implicit or explicit messages about the topic being addressed” (p.222). Alexander and Smith (1993) explain narratives as stories and plots having “beginnings, middles and ends, heroes and antiheroes, epiphanies and denouements, dramatic, comic, and tragic forms” (p.156) that help individuals, groups, and communities understand their progress through time in them. On the other hand, Fludernik (1996) defines narrative as a description of the inner landscape of a human being including the individual’s views, perspectives, goals, and motivations. Fludernik’s (1996) definition can be understood as an alternative to the plot-focused definition of narrative, especially in light of persuasion (Bilandzic & Busselle, 2012).

As a form of evidence, a narrative may not include a plot while it presents a narrator’s inner portrayal revealing his or her view, perspectives, and goals to support a claim.

At the individual level, narratives provide a frame through which individuals make sense of their life experiences and generate a coherent whole (Trees, Koenig-Kellas & Roche, 2010). In addition, at the societal level narratives connect self with society by constituting a crucial resource for socializing emotions, attitudes, and identities, developing interpersonal relationships, and constituting membership in a community (Ochs & Capps, 1996). Therefore, it can be said that narratives exert a significant influence on individual identities, as well as the maintenance of collective social identity because individuals express their sense of self by depending on shared stories or collective narratives (Alexander & Smith, 1993).
Kreuter et al. (2007) emphasize the familiarity of narrative that can influence because it has been used as a basic mode of human interaction to exchange information in a nonthreatening way. According to Graesser, Olde, and Klettke (2002), audiences realize and make sense of stories based on their cognitive and affective understanding of events in relation to their own pre-existing and relevant knowledge. In the same vein, with regard to health campaign narratives, Larkey and Hecht (2009) assert that the narratives should contain the targeted audience’s detailed understanding of the specific health issue based on their cultural characteristics to make the narrative messages effective. While scholars and health practitioners intentionally take advantage of the power of narrative to create effective messages, at the same time narratives including a wide variety of values already exist in people’s daily lives as a form of familiar stories embedded within their culture and social structure. Although this is the reality that health communicators must take into consideration when designing strategic health messages, few studies explored the outcomes of the narrative evidence based on the familiar stories in health communication.

Gordon and Paci (1997) explain that cultural narratives, as “usually taken for granted and invisible, operating in the background of attention” (p.1434), and are increasingly contested with other multiple co-existing narratives creating possible conflicting views (Gordon & Paci, 1997). They focused on the Italian context to investigate the cultural narratives related to medical power and paternalism, which influence open and closed medical disclosure. Gordon and Paci’s (1997) study reveals the significant role of master narratives in a society, with a master narrative related to the traditional practices of silence around cancer that were pervasive in Tuscany, Italy.

The implication of cultural narrative becomes evident in the context of family health history communication. A family’s health history includes medical information
and is often used as a diagnostic tool that reveals potential genetic risks and helps health practitioners determine further medical screening needs (Gaff, Galvin, & Bylund, 2010; Bennett, 1999). Also, Trees, Koenig-Kellas, and Roche (2010) state that societal discourses about genetics contain diverse master narratives including deterministic beliefs and lay beliefs related to stigmas and value-judgments. Therefore, lay understanding of genetics can be influenced by contested messages about the role of genes for health, which can be understood in the vein of the ecological model of health communication (Parrott et al., 2004a). This suggests that human decisions include multiple levels of communication and values integrated in a lay person’s experience, and thus, the influence of genetic discourses cannot be ignored in investigating the effect of narrative messages including socio-cultural values. In terms of family health history communication, lay understanding of genetic causes may affect people’s privacy management and stigma-related communication because subjective norms meaning “perceived social pressure to perform or not to perform the behavior” (Ajzen, 1991, p.188), and beliefs toward communicating family history can vary across cultures.

**Narrative and Culture in Health Communication**

The power of narratives, which produces and reproduces the socio-cultural reality of individuals, groups, and communities, is directly related to the role of narrative messages in the health communication domain. Since narrative health messages can be reflective of a target audience’s cultural values, they may be more powerful for changing audience’s attitude, intention, and behavior than non-narrative messages. As Judith Butler (1993) pointed out, the performative power of reproduction and resistance narratives can recreate the realities being illuminated by the narratee or narrator’s stance and reveal their challenge to the existing social
structures (Langlilier, 2009).

As evidence, there have been a number of studies with narrative approaches focusing on cultural values. They have revealed positive results in diverse health contexts. These include increasing cervical cancer screening in women living in rural areas (Evans, Edmundson-Drane, Harris, & Campbell-Ray, 2002; Richardson, Owen-Smith, & Howe, 2002), advocating condom use to decrease AIDS (Brinson & Brown, 1997; Kiene & Barta, 2003), decreasing at-risk youth’s alcohol and marijuana use (Nelson & Arthur, 2003), increasing colon cancer screening among a Latino population (Larkey & Gonzalez, 2007), preventing prior opiate addicts from relapsing (Jodlowski, Sharf, Nguyen, Haidet, & Woodard, 2007), and increasing middle school adolescents’ skills to resist drug offers (Hecht & Miller-Day, 2009). To understand the role of culture in these narrative health messages, it is important to examine how socio-cultural characteristics in a narrative message affect message processing.

Cultural Narratives

Schank and Berman (2002) explain that culturally common narrative depends on the contexts of particular environments. Hornikx and Hoeken (2007) suggest that narrative evidence can vary across cultures because of differences between cultural and subjective norms. In other words, the same evidence will be interpreted based on one’s cultural background. Cultural norms are defined as a specific prescription in a given situation that individual actions should follow (Williams, 1960), while subjective norms refer to the perceived social pressure with regard to performing a behavior (Ajzen, 1991). Therefore, narrative evidence in persuasive health communication needs to be developed by considering cultural as well as subjective norms.

The two types of narratives (i.e., autonomy control narrative, and social-
embeddedness narrative) suggested and investigated by Gordon and Paci (1997) are good examples of culturally common narratives that can be used in narratives designed as evidence that includes the factual statements for why a particular belief or practice should be adopted. As already noted, Gordon and Paci (1997) suggest that cultural narratives are increasingly contested with other multiple co-existing narratives from organizations and experiences of self and others causing conflicting views. They also explain the implication of the two constructs, “narrative” and “cultural” as follows; “we use ‘narrative’ in order to capture the types of stories people live in or are trying to construct (Mattingly, 1994), not necessarily a ‘reality’ that exists; the ‘cultural’ refers to societal, meta-narratives of broad or deep cultural influence” (p.1433). To investigate cultural narratives, they focused on the medical power and paternalism, which influenced open and closed disclosure of cancer diagnosis within a local world in Italy.

Specifically, Gordon and Paci (1997) describe a type of cultural narrative that they call “social-embeddedness narrative” within the traditional practices of non-disclosure around cancer diagnosis that were pervasive in Tuscany, Italy. They interpret the silence around cancer as a construction of group protection (Gordon & Paci, 1997) because they view reality, truth, morality and emotions as socially created and defined (Gordon & Paci, 1993). Then, Gordon and Paci (1997) contrast social-embeddedness narrative to what they call “autonomy-control narrative,” which challenges the traditional group protection practices by promoting medical and social practices such as open disclosure, patient self-determination act, and advanced directives in the name of international biomedical protocol (Good et al., 1990).

**Family Health History Communication in Three Countries**

To promote family health history communication within a family, there have
been several campaigns to which the lay public might have been exposed. In the US, several family health history campaigns have been conducted by 2014. Especially, as a media family health history campaign, an episode of the *Dr. Oz show*, which is the Emmy Award-winning, nationally syndicated TV health Show, was aired on December 12, 2011 as the third step of Dr. Oz’s campaign, “Transformation nation: Million dollar you.” In the show, Dr. Oz and Dr. Thomas Frieden, the Director of the Centers for Disease Control and Prevention, and two other guests are talking about significance of knowing family health history and what people should do with the family health history.

Because of its usefulness and effectiveness for health promotion and disease prevention, family health history has been emphasized in South Korea, too. In South Korea, one of the most prestigious university hospitals, Ehwa Womans University Hospital in Seoul held a family health history campaign for preventing gastric cancer and colorectal cancer in 2010. In addition, currently there are a number of on-going studies on family health history about more than 45 kinds of diseases in South Korea (Park & Han, 2011, June 1). Also, the South Korean media has reported family health history as an important topic for Korean people’s health. For example, Educational Broadcasting System (EBS) in South Korea produced and aired (started on November 15, 2012 and finished on February 21, 2013) fifteen documentary series about family health history based on the narratives of fifteen families with fifteen different family diseases. However, there had not been a national campaign designed by the Korean Centers for Disease Control and Prevention in South Korea by 2013. Therefore, it is possible that the South Korean lay public might not be very familiar with the concept of family health history, and thus, not communicate about it within the family.

Although there has not been a formal campaign or TV program relating to
family health history in China until now, it seems that talking about disease history of each family before marriage is an important social norm to Chinese people. In the formative research of this research study, several Chinese interviewees said they started to talk about family health history before they got married in China. It seems that this social practice is related to Chinese marriage law. According to the *Marriage Law of the People's Republic of China* (2001), “if the man or the woman is suffering from any disease, which is regarded by medical science as rendering a person unfit for marriage,” no marriage can be contracted (Article 7). Therefore, the interviewees said, before they “registered in person with the marriage registration office” (Article 8), they started to communicate about their family health history and got a medical checkup.

Based on the current situation of each country, it seems that people’s experiences regarding family health history communication can be different according to their socio-cultural background. Therefore, the following questions were considered in order to develop insights about cultural experiences related to family health history:

RQ1: Do participants have knowledge about their family health history, or differ in their knowledge about family health history?

RQ2: Do participants have experiences with communicating about family health history within their families or differ in their experiences of communicating about family health history within their families?

**The Uses of Narrative in Family Health History Communication**

Empirical research has supported the advantages of positive story framing and reframing based on cognitive processing and relevant effects (Trees, Koenig-Kellas, & Roche, 2010). The benefit of story framing based on culture is not limited to
individuals. Koenig-Kellas (2005) found that families who framed their identity stories in terms of accomplishment were much more satisfied and functional than the families who framed in terms of stress. This suggests that the framing effects of narrative are also important in the family communication context. Stone (1988) says, “The facts of a family past can be selectively fashioned into a story that can mean almost anything, whatever they most need it to mean” (p.294). In terms of this aspect, it seems that framing and reframing of family health history need to be contemplated from the socio-cultural perspective that helps the family members’ engagement and identification through narrative processing and finally generate effective results. In the family health history context, it appears there have been several family health history campaigns that employed the story framing effects.

One example is the Talk health history campaign, a pilot Public Service Announcement (PSA) campaign that was conducted in the Washington D.C. area in 2008. This campaign was developed by two nonprofit organizations, ‘Genetic Alliance’ and ‘The American Society of Human Genetics’ to encourage people to know their family health history. The campaign rationale was developed by ideas that advances in the field of genetic science can help families and individuals make more informed health decisions as health care professionals provide more effective, personalized prevention strategies and treatments to their patients. In this campaign, the verbal/visual metaphors of eye colors, hair colors and tree were used in the Public Service Announcements as the metaphor of genetic influences. Based on the campaign, the team developed several customized PSA campaign footage for distribution in markets across the United States. It seems that the PSAs customized according to the target audience were helpful to promote their engagement in the narrative messages and generate effective results by framing a larger identity that
includes a cross generational emphasis.

Furthermore, the overall goal of the *Native American Family Health History Project* (2012) funded by the American Cancer Society was to develop and disseminate culturally specific Family Health History education and awareness materials designed to engage tribal community members. For this goal, the campaign team focused on the Native American traditions in terms of their communication practice and understanding of future generations, which attempted to narratively reframe or change identities. After a series of focus groups, pilot tests, and interviews were conducted, the campaign team employed Native Americans’ methods of communication such as storytelling, and a tradition of preparing for future generations. They indicate that these methods may be incorporated into cultural tools and materials for educating, collecting and reporting family health history for their target group, Native American families.

These two family health history campaigns potentially suggest that cultural characteristics and tools may help engagement and identification in the narrative message processing. However, the processing of narrative messages was not theoretically investigated in the two examples. Also, it seems that the linguistic aspect of the campaign messages was not clearly addressed in these campaigns in spite of its importance and necessity for the effectiveness of narrative communication.

**Extended Elaboration Likelihood Model and Processing of Cultural Narratives**

This dissertation theoretically evaluates the processing of narrative messages in relation to socio-cultural influences as well as the linguistic aspect of message structure by placing narrative evidence within the theoretical framework of the theory of planned behavior (Ajzen, 1991) and the extended elaboration likelihood model (Slater, 2002b).
Slater’s (2002b) elaboration likelihood model (EELM) extended the conventional elaboration likelihood model (ELM) suggested by Petty and Cacioppo (1986) to explain narrative processing. In the extended model, instead of the clear distinction between central and peripheral processes of the conventional ELM, involvement with the persuasive topic was replaced by engagement in the narrative and identification with characters (Slater & Rouner, 2002). Also, while ELM posits that “engagement with the message is a function of the extent to which the message topic impinges on the recipient’s self-interest” (Slater & Rouner, 2002, p. 176), with the extended ELM, Slater & Rouner (2002) argue that engagement with a narrative message is decided by “how well the narrative serves the needs and goals of the reader or viewer” (p. 176). Slater and Rouner (2002) also discuss the importance of identification that can function as the predictor of engagement (Basil, 1995; Rubin, Perse, & Powell, 1985; 1985; Zillmann & Bryant, 1994) especially when the audiences need vicarious social relationships or experiences from the narrative. Furthermore, they state identification might be partly predicted by major variables of social cognitive theory (Bandura, 1977; 1986) such as homophily between protagonists and audience (Slater & Rouner, 2002). The major variables of social cognitive theory (Bandura, 1986) Slater and Rouner (2002) discussed can be understood within the context of a number of variables previously found to be associated with family health history communication, which may have the ability to explain narrative outcomes. These include attitude, perceived behavioral control, socio-cultural norms, genetic determinism, and individuals’ perception of family boundary, gender and age, which are influenced by the socio-cultural norms within a culture.

According to social cognitive theory (Bandura, 1986), people learn and
maintain a certain behavior by observing a model performing the behavior as well as evaluating the outcomes. Ajzen and Fishbein’s (1980) theory of reasoned action, which was developed based on social cognitive theory (Bandura, 1977; 1986), centers on the individual’s intention to perform a given behavior based on expectations about the outcomes of the behavior or perceptions about subjective norms regarding that behavior (Ajzen & Fishbein, 1980). According to Bandura (1998), attitudes and subjective norms are related to different categories of outcome expectations from the perspective of social cognitive theory. Attitude can be measured in terms of the perceived outcomes of the certain behavior and the values of the outcomes while subjective norms correspond to expected social outcomes for the behavior (Bandura, 1998). In addition, Ajzen’s (1991) theory of planned behavior extends the theory of reasoned action (Ajzen & Fishbein, 1980) by incorporating perceived behavioral control. In this process, perceived self-efficacy was extended, adding the vital component of controllability (Ajzen, 2002; Bandura, 1998). Therefore, the theory of planned behavior posits three conceptually independent determinants of intention that are relevant to social cognitive theory; the attitude toward the behavior, social factor termed subjective norm, and the degree of perceived behavioral control. If identification as the predictor of engagement is partly predicted by major variables of social cognitive theory as Slater and Rouner (2002) propose, it is possible that the three components of theory of planned behavior may exert influence on both identification and engagement.

In addition, Slater and Rouner (2002) state that because of arousal and diversion, engagement with the narrative message may depend on individuals’ interests including both intrinsic interest in the type of story (romantic, heroic, etc.) and the quality of the narrative. Considering this argument, from a broader
perspective it seems that individuals’ narrative tendencies can be understood as an individual characteristic suggesting their intrinsic interest in the type of message. Furthermore, other personal characteristics that may relate to intrinsic interests in family health history communication need to be considered to better investigate the processing of cultural narrative messages regarding family health history. Those characteristics include spirituality, genetic determinism, knowledge and experiences about the issue (family health history).

**Engagement**

Slater and Rouner (2002) argue that although in the traditional issue-related messages, engagement with the message depends on the degree to which an audience’s interest fits with the message topic, it might not be the case in the context of narratives. They assert that a message may fail to persuade audiences if the persuasive intent of the message is so salient that the audiences cannot be immersed into the storyline (Slater & Rouner, 2002). Therefore, Slater (2002a) argues that the extent of engagement with the narrative can be determined by how well the narrative satisfies an audience’s needs and goals such as vicarious social relationships and experiences.

Graesser (1981) termed involvement in a narrative “absorption” to differentiate it from involvement with information-dense messages that need the intense cognitive effort to be processed. Similarly, Green and Brock (2000) and Gerrig (1993) used the term “transportation” to describe psychological immersion into a narrative. Therefore, it can be said that engagement, absorption, and transportation are used to explain the same phenomenon relating to narrative messages. Especially, transportation has been mainly investigated in the context of entertainment education. Several scholars have concluded that narrative transportation can be understood as a
distinct mental process including the feeling of effortless enjoyment (Green & Brock, 2000; Slater & Rouner, 2002). Green, Brock and Kaufman (2004) suggest that enjoyment can be positively influenced by the experience of being immersed in a narrative world, and the experience of being taken into a narrative world is the key aspect of media experience.

Health communication scholars usually have focused on the function of narrative transportation in relation to the adoption of advocated health behaviors, while media scholars have mostly investigated how transportation affects media enjoyment (Green et al., 2006; Hinyard & Kreuter, 2007). In the cancer prevention context, Kreuter et al. (2007) assert that narrative has four distinctive capabilities as the result of transportation or immersion: 1) overcoming resistance, 2) facilitating information processing, 3) providing surrogate social connections, and 4) addressing emotional and existential issues. Therefore, it can be assumed that narrative transportation can be helpful in promoting family health history communication.

Identification

According to Zillmann (1994), identification is a process through which the knowledge of the audience members is understood from the character’s perspective being transformed into empathic emotion. Similarly, Cohen (2001) also defined identification as a process of temporarily adopting an external perspective viewing the world through an alternative social reality.

Rubin, Perse and Powell (1985) and Zillmann and Bryant (1994) posit that predictors of engagement or involvement should cover identification with characters in the narrative. Slater (2002a) also argues that the extent of engagement with the narrative can be determined by narratives’ role of serving recipients’ needs and goals such as vicarious social relationships and experiences. In the same vein, Slater and
Rouner (2002) explain that identification is an additional dimension of transportation that helps audience experience emotion and personality vicariously in the narrative by perceiving similarity. Finally, they conclude identification may function as a partial mediator of transportation effects (Slater & Rouner, 2002). In the cancer communication context, Green (2006) also found that for effective transportation, a narrative should have engaging characters as role models, and evoke mental imagery, which suggests the significant roles of identification in the effective message processing.

Shrank and Engels (1981) argue that identification with characters in the narrative is essential in gaining insight. Connecting with the character in a narrative appears to be an important determinant of behavioral change (Larkey & Hecht, 2009; Slater & Rouner, 2002). Therefore, like transportation, identification with characters may increase target audiences’ acceptance of the values and beliefs represented in a narrative (Slater & Rouner, 2002).

Considering the role of identification in terms of the effectiveness of cultural narrative evidence, if the characters or the narrators in the message share socio-linguistic similarities reflecting cultural aspects, they might be able to establish a stronger and more direct relationship with the target audiences. In addition, the cultural narrative messages might resonate more effectively with the audiences having similar experiences under specific cultural environments.
By discussing and contrasting two types of cultural narratives, Gordon and Paci (1997) explain that the concept of narrative reveals the ideology and the intent embedded in people’s medical and social practice. They state that the cultural narratives that are pervasive in a society construct interpersonal as well as social relationships (Gordon & Paci, 1997). This study suggests the important aspects of using cultural narrative as evidence, including factual statements, as well as cultural/subjective norms relating to medical disclosure in health communication.

In Tuscany, Italy, patients’ autonomy is decided collectively under the influence of society and culture. Within this culture, group protection toward a patient is a more important moral decision than self-control or autonomy to be given to a
patient. Social and medical practices can also be understood as an influence of collectivistic culture that constructs a collective agency that constructs/understands the cultural narrative and makes a decision. In this culture, the dominant agency of decision making can be better characterized as “we,” rather than “I.” In addition, in terms of disclosure and silence around cancer diagnosis, moral or ethical decisions, which are qualitatively different from the biomedical perspective, are made under the specific cultural influences of Tuscany according to Gordon and Paci (1997).

This suggests that ethical principles for managing and understanding uncertainty are determined in each culture, which may also affect family health history communication. Especially, since family health history communication includes the characteristics of medical disclosure, agency of decision-making needs to be investigated in this context as in Gordon and Paci’s (1997) study.

**Agency of Decision-making: Autonomy Control vs. Social-embeddedness**

The theory of planned behavior includes the construct of subjective norm, which emphasizes the importance of effects of others’ beliefs on one’s own behavioral intention and the motivation to comply with those others (Ajzen, 1991; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). Subjective norm refers to “the perceived social pressure to perform or not to perform the behavior” (Ajzen, 1991, p.188). Different cultures shape different values related to subjective norms and the motivation to comply with these is likely to be evident in the agency displayed in a narrative. According to Tyler (1989), narratives of selfhood not only suggest understandings of agency and selfhood but also define the nature of social bonds to provide orienting and acting in the world. Therefore, it can be said that the agency understanding narrative messages exist within the social structure and influence the effectiveness of narrative messages.
Cultural narratives as evidence including linguistic indices. The Sapir-Whorf hypothesis introduces the relationship between discourse and worldview (Johnstone, 2002), which can be applied to the association between master narratives and people’s health decisions. Master narrative or grand narrative is a term developed by a French philosopher, Lyotard in his classic work, *The Postmodern Condition: A Report on Knowledge* (1979). According to Loýtard (1979), narratives function as legitimated knowledge, and especially in our society, the myths in the narrative help legitimize the existing power relations/structure and social practices. For example, societal discourse about genetics includes genetic determinism, which may lead to a narrative in which people with a genetic mutation are viewed as mutants (Trees, Koenig-Kellas, & Roche, 2010). The function of master narrative can be understood within the function of Gordon and Paci’s (1997) cultural narrative. Since cultural narratives are taken for granted in a culture and construct the members’ social interaction, within the vein of cultural narrative, master narrative can be defined as relatively powerful cultural narratives serving the existing social structure.

The relationship between discourse and worldview can be understood within the context of agency as well. The concept of agency indexes which entities are framed as capable of and/or responsible for affecting change and the processes through which such change might occur (Al Zidjaly, 2009; Ahearn, 2001; Wertsch, Tulvist & Hagstrom, 1993). According to Al Zidjaly (2009), agency is a basic concept to explain every type of social interaction. Therefore, social scientists have defined it as “the socio-culturally mediated capacity to act” (Ahearn, 2001, p.133). However, Ahearn (2001) addressed the problems pertaining to the murky definitions of agency and the necessity of re-defining it to better capture its concept. Therefore, Al Zidjaly (2009) finally integrated the considerations of agency suggested by
Wertsch, Tulviste and Hagstrom (1993) with Ahearn’s (2001) basic definition. As a result, Al Zidjaly’s (2009) conceptualization of agency includes mediation by technical and psychological means such as language, which determine social actors linguistically as well as socio-culturally. Therefore, in this study, cultural narratives include an agency component as a linguistic index explaining socio-cultural capacity to act.

**Cultural narratives as evidence including cultural values.** In terms of the worldview that might be revealed through agency, Hofstede’s (2011; 2001; 1984) cultural dimension of collectivism and individualism seems to have significant implications for further investigations. According to Hofstede (2011), collectivism as a societal characteristic is “the degree to which people in a society are integrated into groups” (p.11), and thus individualism is the opposite of collectivism. Hofstede (2011) characterizes that in individualistic cultures, the ties between individuals are loose while people in collectivistic cultures are integrated into strong, cohesive in-groups where they are protected as a result of unquestioning loyalty. Therefore, with regard to decision making, an individualistic culture can be described as a type of culture where members prioritize making their own decisions, while it can be said that in a collectivistic culture members often prioritize collective or their group’s decisions over making an individual decision. A nation or ethnicity is often characterized as reflecting collectivistic or individualistic culture. For example, according to the Hofstede center’s (www.geert-hofstede.com) analysis, individualism (IDV), which addresses the issues relating to the degrees of interdependence a society maintains among its members, for the US, China, and South Korea are 91, 20 and 19 respectively. The higher the degrees are, the more individualistic the nations are. Therefore, according to the IDV degrees, China and South Korea reflect collectivistic
cultures while the United States embodies an individualistic culture. The influence of collectivistic or individualistic cultures may come into play as the form of agency in narrative messages. The Hofstede center describes that the degree has to do with if the people define themselves as “I” or “We.” The dominant agency in a collectivistic culture can be characterized as ‘we,’ whereas in an individualistic culture the agency “I” is usually the subject of decision making. The difference between “we” and “I” as the primary agencies of understanding and acting reveals the cultural orientation a society has, which inversely influences people’s information processing and decision making. Therefore, in this study, by including linguistic index explaining socio-cultural capacity to act, cultural narratives also implicate cultural values embedded within the agency.

In terms of the extended ELM model, understanding regarding the processing of messages reveals the functions and roles of cultural narratives in the health context. Schank and Berman (2002) define culturally common stories as those stories that are pervasive in a particular cultural environment, and thus are generalized due to its exceptional salience in the specific culture. They explain that a familiar scene as a referent comprises a culturally common story in a specific culture (Schank & Berman, 2002). Also, Gordon and Paci (1997) assert that cultural narratives are “usually taken for granted and invisible, operating in the background of attention” (p.1434). Cultural narratives would thus be expected to persuade those for whom the cultural archetypes or referents used in the message have meanings and be less likely to influence others.

Hofstede’s (2011; 2001; 1984) cultural dimension of collectivism and individualism seems to have significant implications for further investigations in relation to cultural narratives. According to the IDV degrees (www.geert-hofstede.com) that has to do with ‘if the people define themselves as “I” or “We,”’
China and South Korea reflect collectivistic cultures while the United States embodies an individualistic culture. The influence of collectivistic or individualistic cultures may come into play as the form of agency in cultural narrative messages. Based on the different definition styles “I” or “We,” it can be assumed that members in an individualistic culture make their own decisions individually while in a collectivistic culture members often follow the results of collective decision making.

With regard to Schank and Berman (2002) and Gordon and Paci (1997)’s definitions of cultural narratives/stories, it can be said that the agencies of “I” and “we” can be viewed as familiar scenes that are taken for granted and pervasive in an individualistic culture and a collectivistic culture respectively because they reveal how people define themselves in each culture. Therefore, a narrative employing “we” as the agency of understanding and acting can be understood as a cultural narrative taken for granted in a collectivistic culture, whereas a narrative using “I” as the major agency is familiar to people in an individualistic culture. In addition, it can be said that “I” narrative and “we” narrative are contested with each other as co-existing narratives within a culture and even within an individual according to Gordon and Paci (1997) as well. Therefore, the following are considered.

H1-1: Asian perceivers experience more engagement and identification with social-embeddedness narratives (Chinese & South Korean) than the Euro-American autonomy-control narrative.

H1-2: American perceivers experience more engagement and identification with a Euro-American autonomy-control narrative than the Chinese or South Korean social-embeddedness narrative.

In addition, as Schank and Berman (2002) and Gordon and Paci (1997) assert, cultural narratives are expected to persuade those for whom the cultural archetypes used in the
message have meanings. Therefore, the following are considered.

H2-1: South Koreans experience greater engagement and identification with a social-embeddedness narrative reflecting South Korean culture as compared to a social-embeddedness narrative reflecting Chinese culture?

H2-2: Chinese perceivers experience greater engagement and identification with a social-embeddedness narrative reflecting Chinese culture as compared to social-embeddedness narrative reflecting South Korean culture?

**Subjective Norms regarding Family Health History Communication**

As discussed previously, subjective norm is defined as perceived social pressures related to performing a certain behavior (Ajzen, 1991), and values related to the specific behavior and subjective norms may vary across cultures. Especially, as in Tuscany, Italy where patients’ autonomy is decided collectively under the influence of society and culture, ethical and/or cultural principles for managing and understanding values related to family health history communication may be determined within each culture or society, which may also affect people’s current communication behavior. In addition, it is possible that participants’ positive subjective norms positively influence their engagement and identification with the cultural narrative messages encouraging family health history communication. Therefore, the following are considered.

RQ3: Do subjective norms about family health history communication differ between cultures?

H3-1: Participants’ positive subjective norms about family health
history communication are positively associated with their family health history communication.

H3-2: Participants’ positive subjective norms about family health history communication are positively associated with their engagement and identification.

**Norms Related to Power Dynamics: Relative Power and Power Conflict**

Family system theory (White & Klein, 2002) provides a framework for understanding the complexity of familial interactions by describing family as a complex and interactive social system. Therefore, this theory makes it possible to figure out who is performing the active or decisive role in the family social network, and who is the most powerful member in a family. Each family network system reflects the family members’ cultural norms including distance, age, gender, interdependence, wholeness, patterns/rules, interactive complexity, openness/boundaries, etc. And the norms influence decision making regarding family health history and genetic risk communication, which varies across cultures (Galvin & Young, 2010).

Especially, power dynamics in a family can be an important factor affecting family health history communication. Power dynamics or authority in a family is influenced by family norms such as age, gender, interdependence, wholeness, interactive complexity, and openness/boundaries. According to literature, families are inherently unequal because the gender and generational structure of power remain in a family (Jamieson, 1999; Solomon et al., 2002). Power conflict is “a group-level construct that focuses on members’ awareness of struggles for control and dominance within the group” (Keller, 2009, p.9). Therefore, norms related to power dynamics in a family might be assessed by both frequency of family power conflicts and
perceptions about those conflicts.

According to Ajzen’s (1991) theory of planned behavior, a social factor termed subjective norm is one of the important determinants of intention. With regard to family health history communication, subjective norm can be understood as perceived social pressure to talk about family health history with family members (Ajzen, 1991). Especially, since subjective norm is not free from cultural norms, and family members’ cultural norms are related to the family’s wholeness and interactive complexity, subjective norm regarding family health history communication may also include power dynamics based on relative power and power conflicts in a family. In addition, if identification as the predictor of engagement is partly predicted by major variables of social cognitive theory (Bandura, 1986) as Slater and Rouner (2002) assert, it is possible that power dynamics in a family may be associated with both identification and engagement.

RQ4-1: Do power dynamics in family differ between cultures?

RQ4-2: Do power dynamics in family relate to family health history communication?

RQ4-3: Do power dynamics in family relate to engagement and identification?

**Stigma in Family Health History Communication**

Van Dijk (2001) said, “Science, and especially scholarly discourse, are inherently part of and influenced by social structure, and produced in social interaction” (Van Dijk, 2001, p.352). Koenig-Kellas, and Roche (2010) state that societal discourses about genetics include diverse master narratives including genetic determinism and other kinds of lay beliefs concerning stigmatization and value-judgment. Lay beliefs about science are formed within the social structure through
social interactions, which often contain and produce value-related beliefs including social stigma. Stigma beliefs related to family health history may contribute to people’s decision making about sharing the family health information. The beliefs may generate social pressures and norms for disclosure or non-disclosure between family members.

Smith (2007) theorized stigma messages with attributes; “(a) to distinguish people (b) to categorize these distinguished people as a separate social entity, (c) to link this distinguished group to physical and social peril, and (d) to imply a responsibility or blame on the part of the stigmatized for their membership in the stigmatized group and their linked peril” (p.462). Some researchers conclude that stigmas are culturally determined because of their arbitrariness related to a wide variety of different characteristics (Herek, 1999; Herek & Capitanio, 1998). However, Neuberg, Smith and Asher (2000) argue that cultural determinism cannot explain cross-cultural or historical consistencies of stigma; thus, stigmas are determined by both evolutionary-group-fitness functions and culture. In spite of scholars’ diverse perspectives on cultural determinism, it seems that they agree on the point: cultural factors play an important role in deciding stigmas in a society.

In regards to the relationship between narrative health messages and stigma beliefs in the cancer communication context, Kreuter et al. (2007) suggest that since a narrative is usually communicated to the intended audiences, the meanings and disclosures delivered through the narrative can be misunderstood outside the boundary, which may stigmatize individuals. They emphasize the importance of considering a narrator’s intended audience because the disclosure in the narrative can be fatal to people’s actual relationships as an example of narrative describing cancer risks as “poor individual choices and behavior” shows (Kreuter et al., 2007, p. 232).
Therefore, to avoid stigma effects, information regarding family health history also needs to be communicated to the ‘intended’ audiences who are usually family members, and the family boundaries are culturally defined. Therefore, although stigma is a kind of belief describing people’s attitude, their efforts to avoid stigma may construct social norms establishing an appropriate boundary where communicators share family health history information.

In conclusion, since family health history communication can be understood within the influence of subjective and/or cultural norms that constructing a collective or individual agency of control, it is possible that stigma about family health history may vary across cultures influencing people’s communication behavior. In addition, based on Slater and Rouner’s (2002) argument, social-cognitive determinants may exert influence on both identification and engagement, and stigma beliefs about family health history can be considered an environmental factor that influences people’s intention to perform a specific behavior. Therefore, the following are asked.

RQ5-1: Does stigma about family health history differ between cultures?
RQ5-2: Does stigma about family health history relate to family health history communication?
RQ5-3: Does stigma about family health history relate to engagement and identification?

**Cultural Norms Related to Family Boundary, Age and Gender on Family Health History Communication**

From a practical perspective, family history can be understood as the basis of genetic practice. A family’s health history, which is usually provided as a form of family tree, includes the relevant medical information and often used as a diagnostic
tool that reveals potential genetic risks and helps health practitioners determine further medical screening needs (Gaff, Galvin, & Bylund, 2010; Bennett, 1999). In addition, a family’s story must often be restructured by the practitioner because families typically don’t have enough understanding as to which information is important and needs to be considered significantly (Trees, Koenig-Kellas, & Roche, 2010). Considering the private and secretive characteristic of both genetic information and family health history and the necessity of family-based cooperation both need, existing research on genetic communication can be applied to this study to investigate social norms, perceived behavioral control and behavioral intention regarding family health history communication in different cultures. Especially, it appears that the influence of perceived family boundary, age and gender, which are dependent on culture, also needs to be investigated in this study to better understand the effect of cultural narratives as health messages in the context of family health history.

Kenen, Arden-Jones and Eeles (2004) explored how family communication patterns and family scripts (sets of expectations, beliefs, and norms of a family) influenced the sharing of feelings about genetic risks with families having family history of breast and, or ovarian cancer. They identified several communication patterns such as open and supportive, directly blocked, indirectly blocked, self-censored and use of third parties, which were the results of re-negotiating family scripts (Kenen, Arden-Jones & Eeles, 2004). This study suggests that family communication about genetic risk information is greatly influenced by cultural aspects including subjective norms and beliefs, which are two important constructs of theory of planned behaviors.

Socio-cultural norms, which directly influence family scripts, can affect family members’ intention to communicate about family health history. Several
studies investigated the differences in the degree of disclosure and dissemination based on the relationship with or distance from the carrier/informant by focusing on family social network. Finlay et al. (2008) explored disclosure rates of positive BRCA 1/2 test result and found disclosure to first-degree relatives was higher than to second degree relatives and third-degree relatives. In their study about diffusion of information by women with BRCA mutations, Blandy, Chabal, Stoppa-Lyonnet, and Julian-Reynier (2003) also found information about breast/ovarian cancer family risk and test availability was generally well transmitted predominantly to first-degree relatives. In another BRCA mutation risk communication study, McGivern et al. (2004) found that the proportion of informed parents, siblings, and offspring was nearly twice that of more distant relatives including nieces, nephews, aunts, uncles, grandchildren, and cousins. As a cause of this result, they found little contact and emotional distance functioned as the major barrier to communication (McGivern et al., 2004). Claes et al. (2003) also investigated the dissemination of BRCA 1/2 test results and found that the frequency of communication to distant relatives test was significantly low. Julian-Reynier et al. (2000) found that sibship would be the most frequently informed blood relatives, and the emotional disturbance due to cancer in a close relationship was the main determinant of the diffusion patterns. However, like other study results, they also found that communication to distant relatives about the genetic information was problematic.

Petronio and Gaff (2010) suggest that the act of revealing genetic information to a family member transforms the privacy boundary of the information from personal ownership to collective ownership. Therefore, the psychosocial boundary of collectivistic in-group/family, which depends on the influence of collectivistic vs. individualistic culture, may play a key role in terms of the ownership of privacy
information such as family health history. Petronio and Gaff (2010) also indicate that
the rules for information sharing are often implicit because they develop gradually
over time, which family members’ expectation in sharing genetic information is
usually dependent upon. The implicit rules can be understood as expressions of social
norms, which form family’s cultural values.

To apply family boundary and family rules to family health history
communication, it is necessary that communicators deliver the information to an
intended audience in mind to escape stigmatization as Kreuter et al. (2007) suggest.
As the result of previous studies on genetic risk communication indicates, disclosure
or non-disclosure of family health history might also be different according to the
biological and perceived distance between family members. Therefore, as a social
norm, the socio-cultural boundary of family membership, which is usually constructed
by biological distance, may influence family members’ perceived behavioral control
and intention to communicate family health history.

Gregory, Middleton, and Atkinson (2010), however, indicate that although
many published articles of family communication have found that first-degree
relatives are more likely to be informed about genetic risk than second or third degree
relatives, the biomedical conceptualization of relationship does not fully reflect the
emotional and social ties that are the reality of family life. Gender effect in family
social network also cannot be ignored in family communication about genetics and
family health history. Julian-Reynier et al. (2000) found that among sibships, sisters
would be more frequently informed than brothers, and the number of daughters was
also the main determinants of the diffusion patterns. McGivern et al. (2004) also
examined the process of communicating BRCA test result to male and female first,
second, and third degree relatives separately. They found that the method and topics
of communication varied according to the gender of the relative. Koehly et al. (2003) also found that mothers tend to be the most influential persons in the family network in terms of discussing Hereditary Non-polyposis Colorectal Cancer (HNCC) risks and management with family members. But, in a BRCA mutation study, Finlay et al. (2008) found that disclosure rates to male versus female relatives were similar. However, interestingly enough, reported completion of genetic testing was higher among female versus male first degree relatives and among members of maternal versus paternal lineages, which seems to include cultural implications.

In addition to the perceived family boundary and gender, age as a factor reflecting cultural differences needs to be considered. Research has found that age influences the diffusion pattern of genetic risk information in family networks. Ashida et al. (2010) found that involving older individuals in network based interventions increased intention to screen among Mexican American population as the result of older adults’ encouragement toward younger members. They state their finding suggests the important role of social influence on individual motivation (Ashida et al., 2010), and the result is evidence of the roles of subjective norm and motivation to comply in this situation. In another study, Ashida et al. (2011) evaluated the role of older family members as providers of social resources within familial network systems affected by an inherited cancer susceptibility syndrome. They found that compared to younger network members, older members were more likely to be listed as encouragers of colon cancer screening by both younger and older respondents (Ashida et al., 2011).

In conclusion, as seen in the studies on genetic risk communication, like the perception of family boundary, the roles of gender and age on family health history communication may also be culturally determined. Therefore, as social norms and
pressures they might influence people’s perceived behavioral control in communicating with specific family members, which again may affect their intention to disclose or share family health history to other family members.

It seems, however, traditional division between individualistic vs. collectivistic cultures might not be enough to explain these factors in relation to each culture. For example, the distinction between first-degree relatives vs. second/third degree relatives or between close vs. distant relatives might not fit well into contemporary South Korean family culture. Rather, the distinction between (nuclear) families vs. (distant) relatives might better reflect South Korean young adults’ understanding about the social conceptualization of family relationship. Although the Korean society is classified as a collectivistic culture, the narrow boundary of an in-group/family also needs to be considered with regard to understanding the collectivism in the Korean society. Furthermore, it is possible that the boundary of the in-group influences people’s sharing and disseminating of family health history. In South Korea, when people talk about family health history, they mostly consider first-degree relatives’ or their nuclear family members’ history, which doesn’t include distant relatives’ health history. Even in media, medical specialists often show the picture of family tree exclusively based on nuclear family members. This phenomenon can be understood in relation to people’s risk judgment as well as their understanding of “family” in their cultural context, which may influence their current communication behaviors regarding family health history. Therefore, the following questions were asked.

RQ6-1: Does the perceived boundary of “family” differ between cultures?

RQ6-2: Do cultural and/or subjective norms that guide intention to communicate family health history differ between cultures in relation
to perceived family boundary, age and gender?

RQ6-3: Do the cultural and/or subjective norms regarding family boundary, age and gender relate to family health history communication, engagement and identification?

**Individual Characteristics**

**Narrative tendencies.** The narrative tendencies construct is an attempt to “understand individual predisposition to narrative as individual predisposition” (Newman, 2005, p. 147). People with high narrative tendencies are more likely to gather details about their experiences, weave the details into narrative script templates, and compare them with other templates stored in their memories (Newman, 2005). According to Newman (2005), environmental factors play a key role on the degree of ‘narrative ability,’ which is a continuous pattern matching process. Especially, the timing of the environmental triggers is important. As several extreme cases of feral children without ability to speak show, the triggers should be received before a certain age to switch on the ability to speak (Benzaquén, 2001). In addition to the timing of environmental trigger, there might be cultural differences with regard to the environmental factors affecting narrative tendencies. It is possible that people in a specific culture prefer narrative messages to statistical evidence or other types of messages. Also, participants with high narrative tendencies may process narrative message differently than participants with low narrative tendencies. Therefore, the following question was considered in order to develop insights into cultural differences related to narrative tendencies:

RQ7-1: Do narrative tendencies differ between cultures?

As Newman (2005) indicates, narrative tendencies may influence audiences’ abilities to gather more details from a narrative or experience, and to compare the
script with their previous experiences. Therefore, it is possible that narrative
tendencies play an important role for audiences’ engagement and identification. If
narrative tendencies positively influence participants’ narrative processing, the effect
of narrative tendencies on engagement and identification may also differ according to
the function of the type of cultural narrative and participants’ identities. As Schank
and Berman (2002) and Gordon and Paci (1997) indicate, cultural narratives are
expected to persuade those for whom the cultural archetypes used in the message have
meanings. Therefore, the following questions were asked.

H4: Narrative tendencies are positively associated with engagement and
identification.

RQ7-2: Is the association between message processing (engagement &
identification) and narrative tendencies moderated by the types of cultural
narrative and participants’ identity?

**Spirituality.** Spirituality is commonly defined as the experiences individuals
have in relation with God and their existential aspirations toward the meanings and
purposes of life (Egbert, Mickle, & Coeling, 2004; Kirkwood, 2004; Moberg, 2002;
Thoresen, Harris, & Oma, 2001). People’s beliefs in God’s power can be important
especially with regard to genetic beliefs because they can influence or determine
people’s attitudes or evaluations toward the effects of genes, meaning the
deterministic power of genetics. Like genetic beliefs, spirituality or beliefs in God
may vary across cultures or ethnicities. For example, research has shown that African
Americans are more likely to be influenced by religion and thus, more African
Americans believe diseases can be cured by prayers than other ethnic groups
African American participants more often viewed birth defects as God’s punishment
than European American participants did. These religious beliefs also influence African American people’s health decisions and behavior like other factors such as cultural experiences (e.g., taking care of other’s children for months when a home is needed, living in extended families, etc.) (Landrine & Klonoff, 1996; Lozoff, Wolf, & Davis, 1984).

Compared to other ethnicities, however, East Asians’ spirituality or religiosity has been under-investigated in relation with health beliefs. For East Asian people, traditionally the meaning of religion might be qualitatively different from the understanding of Western people and other ethnicities. Although shamanism existed in East Asia as it did in other cultures, it seems that explanations based on God’s power or teleology are historically rare in the major traditional Eastern religions such as Buddhism and Confucianism. Instead, these religions mostly focus on causal relations and materialistic beliefs, which are close to scientific determinism. For example, genetic engineering has been greatly supported by the South Korean Buddhist community.

On the contrary, in Christianity it is normative to explain things based on the teleology of God’s will. Therefore, there might be differences in terms of health beliefs as well as understanding and processing health messages across cultures influenced by different religions. However, at the same time, East Asia has been exposed to the Western culture and religions for a long time and thus, has large Christian populations in each country. Especially, Christianity including both Protestants and Catholics is the largest religion in South Korea. In terms of the context of family health history communication, it appears that beliefs concerning spirituality may have significant roles in constructing people’s attitude toward the intention of communication, which may vary across cultures as well. In addition,
those beliefs may relate to participants’ processing of cultural narrative messages that encourage family health history communication considering that the religious beliefs are often associated with people’s worldviews such as determinism and non-determinism or free-will. Therefore, the followings were asked.

RQ8-1: Do spirituality, religiosity and paranormal beliefs differ between cultures?

RQ8-2: Do spirituality, religiosity and paranormal beliefs relate to family health history communication?

RQ8-3: Do spirituality, religiosity and paranormal beliefs relate to engagement and identification?

**Genetic determinism and relativism.** Patients’ beliefs concerning genes often function as the strategies they use to cope with uncertain situations (Parrott, Silk & Condit, 2003). Discourses concerning genetics, which might influence patients’ actual health behaviors, are already very rampant in this society as diverse forms such as genetic determinism and genetic relativism. Genetic determinism identifies genes as “the sole relevant causal feature of an individual’s characteristic and life courses” (Condit, Parrott, & O’Grady, 2000. P.558). On the contrary, genetic relativism is usually understood as the opposite, a belief in the partial contribution of genes to human conditions (Parrott, Silk, & Condit, 2003).

Although genetic discourses cannot be an exact truth, inducing threats or genetic risks is one of the most important goals from the perspective of intervention. Therefore, macro-frameworks used for public communications about illness causations “have mostly neglected the interaction between genes and environments or personal behaviors” (Parrott, et al., 2004a, p. 106). These discourses usually focus on how to transform the ambiguity or uncertainty of genetic inheritance to a truth by
employing several types of strategies such as causal statements and verbal/visual metaphors, which form master narratives relating to genetics within a culture. As a result, lay audience may not understand that personal behaviors and/or environments may cause the expressions of genes, which may also decrease the effects of health promotion communication (Parrott et al., 2004a). Therefore, people’s communication about family health history, which is partially determined by genetic factors, can be also affected by lay beliefs about genetics. In addition, although there has been no study investigating cross-cultural difference in genetic beliefs, considering other cultural differences such as religious and/or philosophical backgrounds among the three cultures, genetic beliefs may also vary. Furthermore, considering that family health history is partially influenced by genetic factors, participants’ genetic belief may be associated with participants’ processing of cultural narrative messages encouraging family health history communication. Therefore, the followings were asked.

RQ9-1: Do genetic beliefs differ between cultures?

RQ9-2: Do genetic beliefs relate to family health history communication?

RQ9-3: Do genetic beliefs relate to engagement and identification?

Attitude toward Family Health History Communication

The attitude toward the behavior refers to “the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question” (Ajzen, 1991, p. 188). In the fields of health communication and health education, a significant body of behavioral science research has been conducted based on specific health beliefs to underline the significance of audience segmentation (Parrott, Silk, & Condit, 2003; Maibach & Parrott, 1995). As a result, health researchers found that the general descriptions of the attitudes are not precise enough because of the differences
in cultural values that affect individual or familial beliefs as well as their decision
making processes (Parrott, Silk, & Condit, 2003). For example, Parrott, Silk, and
Condit, (2003) discuss the differences in beliefs about causes of birth defects between
European Americans and African Americans; European Americans were more likely
to believe that alcohol, drugs, or exposure to chemicals, and chromosomes could be
the causes of birth defects or genetic disorders than African Americans (Cohen, Fine,
& Pergament, 1998). As in other contexts, it appears people’s attitude may vary
according to their cultural background in the context of family health history
communication.

Furthermore, since attitude toward a certain behavior usually predicts
behavioral intention according to the theory of planned behavior (Ajzen, 1991), it is
also possible that participants’ attitude about family health history communication
positively affect their current communication. In addition, as Extended ELM posits, as
a variable reflecting socio-psychological determinants, attitude may influence
participants’ processing of cultural narrative messages. Therefore, the followings were
considered.

RQ10: Do attitudes about family health history communication differ between
cultures?

H5-1: Participants’ positive attitudes about family health history
communication are positively associated with their family health history
communication.

H5-2: Participants’ positive attitudes about family health history
communication are positively associated with their engagement and
identification.
Perceived Behavioral Control for Communicating Family Health History

Perceived behavioral control refers to “the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experience as well as anticipated impediments and obstacles” (Ajzen, 1991, p.188), reflecting one’s judgment that a behavior is within one’s control. Supposing that the strong and cohesive in-groups in the collectivistic cultures promote collective decision makings, perceived behavioral control about sharing family health history as a collective decision cannot be free from cultural influences. In addition, people’s genetic beliefs and spirituality, which are often culturally determined, may also affect lay public’s perception toward behavioral control about communicating family health history.

Parrott, Silk, and Condit (2003) argue that beliefs in genetic causes of illness may negatively affect people’s perception toward their behavioral control over the disease. In the same vein, Parrott et al. (2004a) indicate that research has supported that overestimation toward genetic effects on health make people decrease their controlling effort about manageable disease factors. In terms of religious beliefs, although the role of religious faith has not been systematically investigated in relation to self-efficacy, Parrott et al. (2004b) suggest that verbal persuasions are often constructed by religious faith “contributing to the availability and accessibility of vicarious and actual experiences as well as physiological and affective status” (p.31). Therefore, they argue that religious faith, which often functions as the source of persuasive verbal messages, may have a direct effect on people’s perception toward their behavioral control (Parrott et al., 2004b). Therefore, as a result, people’s perception toward their behavioral control may vary across cultures in that their deterministic beliefs and religious faith are culturally constructed and reflect the societies’ value systems where they were born and raised. In addition, the differing
perception may affect people’s current communication about family health history.

People’s perceptions toward the behavioral control can also influence their identification with the situation and characters as well as their transportation or engagement into the narrative. Although the uses of cultural archetype and familiar agency may decrease audience’s psychological barrier toward the effective message processing, the low level of perceived behavioral control may disturb the process of identification and the engagement that are essential for the effectiveness of narrative messages. Thus, the followings were considered.

RQ11: Does perceived behavioral control about family health history communication differ between cultures?

H6-1: Participants’ perceived behavioral control is positively associated with their family health history communication.

H6-2: Participants’ perceived behavioral control is positively associated with their engagement and identification.

Outcomes of Processing Narrative Message

The outcomes associated with engagement and identification with cultural narratives varying the narrator’s perspective and cultural archetypes includes several cognitive responses related to the perceiver. This includes resistance to counter-arguing and comprehension. There are also important perceptions related to the narrative message, which include perceived evidence quality and perceived message effectiveness. Lastly, behavioral intention as the final outcome can be positively influenced by the contributions of these outcomes in relation to engagement and identification.

Resistance to counter-arguing. Theoretically and actually, generating thoughts against a persuasive message is central to resisting it (Petty & Cacioppo,
Counter-arguing usually increases the degree of discrepancy between the message and the audience’s attitudes (Slater, 2002a). Therefore, decreases in counter-arguing or cognitive resistance should enhance persuasive effects (Slater, 1999 & 2002a; Wheeler, Green, & Brook., 1999; Prentice, Gerrig, & Bailis, 1997).

The use of narratives is a great strategy to preclude counterarguing caused by predisposed beliefs disagreeing with the position supported in the persuasive message (Slater, 2002a; Slater & Rouner, 2002). Therefore, entertainment-education scholars (Green, 2006; Kreuter, Green, Cappella, Slater et al., 2007; Moyer-Guse, 2008; Slater & Rouner, 2002) have concluded that narrative communication can reach resistant audiences better. Especially, in the cancer prevention context, Kreuter et al. (2007) state that overcoming resistance is one of the four distinctive capabilities, which can be created by transportation or immersion into a narrative message. This suggests narrative messages can be effective even for audiences having initial beliefs and attitudes that are discrepant with the position espoused in the message (Slater & Rouner, 2002).

Although the entertainment-education scholars investigated the effect of narrative processing, they didn’t focus on the effect of narrative evidences that differ in both cultural archetype and socio-linguistic aspects. Therefore, it is necessary to understand if resistance to counter-arguing after reading different cultural narrative evidence that varies the cultural archetype and agency type may differ. It is possible that familiarity or unfamiliarity people may feel from each type of narrative based on their cultural and language use experiences can influence the resistance to counter-arguing.

**Comprehension.** Comprehension is another important cognitive outcome to
be tested to understand the effectiveness of culturally tailored narrative messages. According to Parrott, Silk, Dorgan, Condit and Harris (2005), comprehension is an essential outcome relating to the risks and understanding of diseases among the evidence outcomes in the health communication domain. Therefore, when it comes to the effectiveness of cultural narrative messages, it is important to test comprehension differences based on the types of cultural factors included in the messages.

Scientific discourses concerning family health history essentially include genetic discourses existing on the continuum between genetic determinism and genetic relativism. These genetic discourses and audiences' predisposition affected by the discourses may influence their comprehension of health messages concerning genetics and family health history because both can affect the audiences’ socio-cultural norms and attitude relating to genetics or family health history. Therefore, it can be assumed that the three components of Theory of Planned Behavior (Ajzen, 1991) might be associated with audiences’ comprehension of family health history messages. Furthermore, the degree of beliefs in genetic determinism may affect the audiences’ cognitive outcomes including comprehension because genetic determinism may help audience understand the genetic risk and find the effectiveness of the information included in the messages.

In the same vein, when it comes to the processing of cultural narrative messages concerning genetics or family health history, audiences’ genetic beliefs should be considered as well. Since audiences’ genetic beliefs can influence their perceived risk or involvement with the issues being discussed in the message, engagement in the narrative message and identification with the characters can be also affected by the belief. As several narrative scholars have found, since the benefit of cultural narrative messages is to make the target group audiences feel more involved
with the situation in the narrative and create their reality by identifying with the characters in the narrative, this process may help prompt higher levels of comprehension.

**Perceived evidence quality.** Reynolds and Reynolds (2002) say that after evidence was manipulated, it is important for audience to perceive the high quality of the evidence. Research has found that the target audiences’ comprehension may positively affect their perceptions of evidence quality (Parrott et al., 2005). In case of statistical evidence, Parrott et al. (2005) also found that perceived evidence quality moderated the impressions of message persuasiveness. With regard to extended ELM, Slater and Rouner (2002) state that plot and narrative quality may affect engagement into the narrative.

**Perceived message effectiveness.** Previous research has shown a positive relationship between perceived evidence quality and perceived message effectiveness (Parrott et al., 2005). According to Dillard, Shen, and Vrail (2007), it has been argued that perceived message effectiveness might be a predictor of persuasion. Perceived message effectiveness has been mainly investigated to find the factors that can increase the convincing and compelling nature of a message (Reynolds & Reynolds, 2002). Perceived message effectiveness depends on many important elements; how much the message is effective, plausible, reasonable, convincing, compelling, sound and so on (Dillard et al., 2007).

**Behavioral intentions.** Murray-Johnson and Witte (2003) defines behavioral intentions as “the plans individuals have about whether or not they intent to perform the recommended behavior (from adoption to discontinuance)” (p. 487). According to Reinard (1988), behavioral intentions and behavior are the possible outcomes that can be investigated in terms of the use of evidence in a message. With regard to the use of
narrative evidence, the existing narrative literature suggests that transportation or engagement (Slater & Rouner, 2002) and identification with the media characters (Kreuter et al., 2007; Larkey & Hecht, 2009) can directly increase behavioral intention.

Narrative evidence is a specific form of evidence, and studies regarding narrative evidence have investigated the persuasiveness and effectiveness of health messages varying several message features such as emotion and character (see Volkman & Parrott, 2012; Niederdeppe et al., 2014). On the other hand, in the context of entertainment education and media health campaign, literature on narrative processing has mostly focused on transportation, identification, realism, and enjoyment (Green, 2004; Green & Brock, 2002; Green et al., 2004). Therefore, narrative evidence as a strategy for health communication campaigns needs to be investigated from the perspective reflecting both the effectiveness/persuasiveness of evidence and the distinct mental process of narrative processing. The effectiveness and persuasiveness of evidence can be evaluated by message outcomes and goal achievement, while the distinctive mental process of narrative processing can be assessed through participants’ identification and engagement.

As discussed previously, with regard to Schank and Berman (2002) and Gordon and Paci (1997)’s definitions of cultural narratives/stories, it can be expected that a cultural narrative employing a familiar agency and cultural archetypes better persuade those for whom the cultural archetypes or referents used in the message have meanings. Although extended ELM only considers audiences’ message processing related to behavioral intention, cultural narratives as evidence may contribute to the positive or negative outcomes of narrative processing as well. Therefore, the followings were considered.
H7-1: Asian perceivers experience more positive message outcomes
(perceived message effectiveness, comprehension, perceived message quality, resistance to counter-arguing) and behavioral intention with social-embeddedness narratives (Chinese & South Korean) than the Euro-American autonomy-control narrative.

H7-2: American perceivers experience more positive message outcomes (perceived message effectiveness, comprehension, perceived message quality, resistance to counter-arguing) and behavioral intention with a Euro-American autonomy-control narrative than the Chinese or South Korean social-embeddedness narrative.

H7-3: Korean perceivers experience more positive message outcomes (perceived message effectiveness, comprehension, perceived message quality, resistance to counter-arguing) and behavioral intention with Korean social-embeddedness narrative than Chinese social-embeddedness narrative.

H7-4: Chinese perceivers experience more positive message outcomes (perceived message effectiveness, comprehension, perceived message quality, resistance to counter-arguing) and behavioral intention with Chinese social-embeddedness narrative than Korean social-embeddedness narrative.

According to Ajzen (1991), as the attitude and the subjective norm toward a behavior becomes the more favorable, the perceived behavioral control also becomes greater, and the intention to adopt the certain behavior should be stronger. Ajzen (1991) also highlights that in regards to the prediction of behavioral intention, the relative importance of the three components might vary across behaviors and
situations. Yet, in reality, people are often exposed to a wide variety of contents that may intervene in the relationship between the three constructs of TPB (Ajzen, 1991) and their behavioral intention. Therefore, it is necessary to investigate how the processing and the effects of relevant messages influence those relationships.

To investigate ecological factors that influence the message processing as considered in EELM (Slater & Rouner, 2002), this study included the three components of TPB (Ajzen, 1991) in the proposed mediation model (Figure 2.2). In the next chapters, this hypothetical model will be tested with three cultural/ethnic groups (Chinese, South Korean, & European American).

![Proposed Conceptual Mediation Model](image)

**Figure 2.2 Proposed Conceptual Mediation Model**

In addition, individual characteristic may influence not only audiences’ identification and engagement, but also the outcomes of message processing because message processing and outcomes are related to each other. Furthermore, since engagement in the narrative message may depend on individuals’ interests (Slater &
Rouner, 2002), it is also possible that individual characteristics that may contribute to intrinsic interest in cultural narrative messages positively affect the message outcomes while other characteristics may influence them negatively or exert no effect. Therefore, the following research questions and hypotheses are posited:

RQ12: How do three major constructs in TPB (attitude, subjective norms, and perceived behavioral control) relate to the processing (identification and engagement) of family health history narrative evidence predicting behavioral intention to communicate family health history? What are the differences between cultures? And what are the differences between message conditions?

H8: Major variables in the TPB (attitude, subjective norms, and perceived behavioral control) are positively associated with the outcomes (perceived message quality, perceived message effectiveness, comprehension, and resistance to counter-arguing) of family health history narrative processing, and behavioral intentions.

RQ13: Are participants’ individual characteristics (narrative tendencies, spirituality, intrinsic/extrinsic religiosity, paranormal belief, and genetic essentialism) associated with the outcomes (perceived message quality, perceived message effectiveness, comprehension, and resistance to counter-arguing) of family health history narrative processing, and behavioral intentions?

According to Slater (2002b), a person’s processing goals decide the type of processing, and there may be multiple goals in the message processing (e.g., protecting or affirming previously held values or beliefs, outcome-based processing, information-scanning, etc.), which can lead to more than one
processing mechanism. Although Slater (2002b) proposed the possibility of recipients’ multiple goals causing multiple processing mechanisms, in his extended ELM (Slater & Rouner, 2002), ironically he excluded the processing route caused by participants’ self-interest or involvement by replacing them with transportation or absorption. According to Slater’s (2002b) examination of differences in value-protective and value-affirmative types of processing among individuals exposed to alcohol-education messages, his decision of removing involvement slightly makes sense. Slater (2002b) assumed that individuals with value-affirmative goals engaged in central processing of the traditional ELM generating more positive response to statistical evidence than narrative evidence, while individuals with value-protective goals were more engaged in the narrative evidence inhibiting counter-arguing and leading to more peripheral processing. Therefore, it appears that extended ELM was developed to better theorize the peripheral processing that narrative messages may cause. However, the relative importance of peripheral mechanism in processing a narrative message doesn’t necessarily mean that the central process can be excluded from mental mechanism. At the same time, Slater (2002b) himself said that recipients’ multiple goals may cause more than one processing mechanisms, which is consistent with Chaiken’s (1987) argument that heuristic processing and systematic processing can occur simultaneously.

Since the existing narrative research mostly focuses on the processing of messages, message outcomes such as comprehension, perceived message effectiveness and quality have been under-evaluated in terms of the goal achievement of narrative message. However, individuals with high involvement or interest in a narrative message may be more engaged in the
message and better identified with the character serving their goals effectively. At the same time, participants’ successful message processing may positively influence the outcomes of message processing, and the message outcomes can also be the predictors of participants’ behavioral intention to communicate family health history, the goal of the cultural narrative messages.

In addition, it is possible that the relationship between participants’ message processing and the outcomes of processing can be influenced by the effect of cultural narrative messages designed according to the target audiences’ familiar agency and cultural archetypes. That is, three-way interactions among the type of cultural narrative messages, audiences’ cultural identity, and their message processing on the message outcomes may happen. Especially, the effect of identification on each message outcome may be reinforced by the function of more familiar cultural narrative message because the degree of identification with the cultural narrative message may vary according to the participants’ perception of familiarity. Furthermore, the association between each message outcome and participants’ behavioral intention can be also influenced by the function of cultural narrative message because the effect of message outcome may be stronger when the message is perceived as more familiar to the participants. Therefore, the following were considered

H9: Engagement and identification will be positively associated with perceivers’ counter-arguing, comprehension, perceived evidence quality, perceived message effectiveness, and behavioral intentions.

RQ14: Are the associations between message processing (engagement & identification) and message outcomes (perceived message quality,
perceived message effectiveness, comprehension, and resistance to counter-arguing) moderated by the type of cultural narrative and participants’ identity?

H10: The outcomes (perceived message effectiveness, comprehension, perceived message quality, resistance to counter-arguing) of family health history narrative processing will be positively associated with behavioral intentions to communicate family health history.

RQ 15: Are the associations between message outcomes (perceived message quality, perceived message effectiveness, comprehension, and resistance to counter-arguing) and participants’ behavioral intention to communicate family health history moderated by the type of cultural narrative and participants’ identity?

In sum, the literature reviewed regarding family health history communication conveys the significance of cultural norms regarding with whom to communicate about such matters. Moreover, intentions to communicate about family health history likely relate to perceptions of behavioral control, subjective norms, and attitudes linked to FHH communication. Strategic efforts to motivate individuals to communicate about FHH must include insights regarding these relationships, together with better understanding regarding the processing of these messages. This dissertation addresses these issues through the development of narrative evidence that includes factual statements about family health history interwoven with culturally common stories, those stories that are pervasive in a particular cultural environment (Schank, 1990; Schank & Berman, 2002). The next chapter addresses the methodology used to achieve these aims.
Research Questions and Hypotheses

RQ1: Do participants have knowledge about their family health history, or differ in their knowledge about family health history?

RQ2: Do participants have experiences with communicating about family health history within their families or differ in their experiences of communicating about family health history within their families?

H1-1: Asian perceivers experience more engagement and identification with social-embeddedness narratives (Chinese & South Korean) than the Euro-American autonomy-control narrative.

H1-2: American perceivers experience more engagement and identification with a Euro-American autonomy-control narrative than the Chinese or South Korean social-embeddedness narrative.

H2-1: South Koreans experience greater engagement and identification with a social-embeddedness narrative reflecting South Korean culture as compared to a social-embeddedness narrative reflecting Chinese culture?

H2-2: Chinese perceivers experience greater engagement and identification with a social-embeddedness narrative reflecting Chinese culture as compared to social-embeddedness narrative reflecting South Korean culture?

RQ3: Do subjective norms about family health history communication differ between cultures?

H3-1: Participants’ positive subjective norms about family health history communication are positively associated with their family health history communication.

H3-2: Participants’ positive subjective norms about family health history communication are positively associated with their engagement and identification.
RQ4-1: Do power dynamics in family differ between cultures?
RQ4-2: Do power dynamics in family relate to family health history communication?
RQ4-3: Do power dynamics in family relate to engagement and identification?
RQ5-1: Does stigma about family health history differ between cultures?
RQ5-2: Does stigma about family health history relate to family health history communication?
RQ5-3: Does stigma about family health history relate to engagement and identification?
RQ6-1: Does the perceived boundary of “family” differ between cultures?
RQ6-2: Do cultural and/or subjective norms that guide intention to communicate family health history differ between cultures in relation to perceived family boundary, age and gender?
RQ6-3: Do the cultural and/or subjective norms regarding family boundary, age and gender relate to family health history communication, engagement and identification?
RQ7-1: Do narrative tendencies differ between cultures?
H4: Narrative tendencies are positively associated with engagement and identification.
RQ7-2: Is the association between message processing (engagement & identification) and narrative tendencies moderated by the types of cultural narrative and participants’ identity?
RQ8-1: Do spirituality, religiosity and paranormal beliefs differ between cultures?
RQ8-2: Do spirituality, religiosity and paranormal beliefs relate to family health history communication?
RQ8-3: Do spirituality, religiosity and paranormal beliefs relate to engagement and identification?
RQ9-1: Do genetic beliefs differ between cultures?

RQ9-2: Do genetic beliefs relate to family health history communication?

RQ9-3: Do genetic beliefs relate to engagement and identification?

RQ10: Do attitudes about family health history communication differ between cultures?

H5-1: Participants’ positive attitudes about family health history communication are positively associated with their family health history communication.

H5-2: Participants’ positive attitudes about family health history communication are positively associated with their engagement and identification.

RQ11: Does perceived behavioral control about family health history communication differ between cultures?

H6-1: Participants’ perceived behavioral control is positively associated with their family health history communication.

H6-2: Participants’ perceived behavioral control is positively associated with their engagement and identification.

H7-1: Asian perceivers experience more positive message outcomes (perceived message effectiveness, comprehension, perceived message quality, resistance to counter-arguing) and behavioral intention with social-embeddedness narratives (Chinese & South Korean) than the Euro-American autonomy-control narrative.

H7-2: American perceivers experience more positive message outcomes (perceived message effectiveness, comprehension, perceived message quality, resistance to counter-arguing) and behavioral intention with a Euro-American autonomy-control narrative than the Chinese or South Korean social-embeddedness narrative.

H7-3: Korean perceivers experience more positive message outcomes (perceived message effectiveness, comprehension, perceived message quality, resistance to
counter-arguing) and behavioral intention with Korean social-embeddedness narrative than Chinese social-embeddedness narrative.

H7-4: Chinese perceivers experience more positive message outcomes (perceived message effectiveness, comprehension, perceived message quality, resistance to counter-arguing) and behavioral intention with Chinese social-embeddedness narrative than Korean social-embeddedness narrative.

RQ12: How do three major constructs in TPB (attitude, subjective norms, and perceived behavioral control) relate to the processing (identification and engagement) of family health history narrative evidence predicting behavioral intention to communicate family health history? What are the differences between cultures? And what are the differences between message conditions?

H8: Major variables in the TPB (attitude, subjective norms, and perceived behavioral control) are positively associated with the outcomes (perceived message quality, perceived message effectiveness, comprehension, and resistance to counter-arguing) of family health history narrative processing, and behavioral intentions.

RQ13: Are participants’ individual characteristics (narrative tendencies, spirituality, intrinsic/extrinsic religiosity, paranormal belief, and genetic essentialism) associated with the outcomes (perceived message quality, perceived message effectiveness, comprehension, and resistance to counter-arguing) of family health history narrative processing, and behavioral intentions?

H9: Engagement and identification will be positively associated with perceivers’ counter-arguing, comprehension, perceived evidence quality, perceived message effectiveness, and behavioral intentions.

RQ14: Are the associations between message processing (engagement & identification) and message outcomes (perceived message quality, perceived message
effectiveness, comprehension, and resistance to counter-arguing) moderated by the type of cultural narrative and participants’ identity?

H10: The outcomes (perceived message effectiveness, comprehension, perceived message quality, resistance to counter-arguing) of family health history narrative processing will be positively associated with behavioral intentions to communicate family health history.

RQ 15: Are the associations between message outcomes (perceived message quality, perceived message effectiveness, comprehension, and resistance to counter-arguing) and participants’ behavioral intention to communication family health history moderated by the type of cultural narrative and participants’ identity?
CHAPTER THREE

METHOD

The purpose of this dissertation project is to understand how narrative evidence and culturally common stories may be utilized in the design of a cultural narrative to be used as a health communication strategy. The aims are to gain theoretical insights regarding the outcomes and the processing of family health communication messages. Therefore, three major components of Ajzen’s (1991) Theory of Planned Behavior, individual/cultural characteristics, and the extended Elaboration Likelihood Model suggested by Slater and Rouner (2002) afford a framework to guide this research. Moreover, this study varies the cultural narratives based on different linguistic indicators representing social-embeddedness and autonomy control ("We" vs. "I"), and the cultural archetypes or referents (Chinese, South Korean, or European American) found to reflect culturally common stories, those stories that are pervasive in a particular cultural environment (Schank, 1990; Schank & Berman, 2002). In addition, this dissertation project also seeks to identify the roles of perceived family boundary, age and gender that are associated with social norms within a culture regarding family health history communication with specific family members. The present research has three phases, including formative research reported in this chapter, the development and pilot-testing of family health history narratives and a randomized trial of family health history narratives.

Phase 1: Formative Research and Messages

The purpose of Phase 1 was to answer the following question: what are cultural archetypes relating to family health history communication in the South Korean culture and the Chinese culture? Interviews were used to develop cultural narrative messages for the experimental treatment message study to test the
processing (engagement and identification) and the outcomes (resistance to counter-
arguing, narrative quality, comprehension, perceived evidence quality, perceived
message effectiveness and behavioral intention) of family health history narrative
processing.

Procedures and Recruitment

A total of 12 interviews were conducted among South Korean or Chinese
graduate students aged 25-36 years ($M = 29.92; SD = 3.45$) between June and
September 2012 to understand stories being told about family health history. Since
graduate students are generally more concerned about their health and their families’
health history compared to college students, graduate students were recruited for the
interviews to gain insights from an involved audience.

Although undergraduate students were recruited for the second and third
phases, there wasn’t a critical difference in terms of cognitive growth because
reflective judgment, which is an important adult cognitive development, comes into
play from the developmental stage six (age 19-21). According to Fischer, Yan, and
Stewart (2003), developing reflective thinking is not only an important task but also
an intellectual challenge in adult cognitive growth. Reflective judgment can be
defined as the “active, persistent, and careful consideration of any belief or supposed
form of knowledge in the light of the grounds that support it, and the further
conclusions to which it tends” (Dewey, 1910, p. 6). The key elements of reflective
c judgment include, “the use of evidence and reasoning, the frameworks for knowledge
and belief, and justifications for conclusions” (Fischer, Yan, & Stewart, 2003).
Therefore, reflective judgment can be a very important cognitive skill in evaluating
narrative health messages.
Table 3-1

Selected demographic information about interviewees

<table>
<thead>
<tr>
<th>No.</th>
<th>Country of citizenship</th>
<th>Gender</th>
<th>Age</th>
<th>Years in the US</th>
<th>Years in the country of citizenship</th>
<th>Religion</th>
</tr>
</thead>
<tbody>
<tr>
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<td>32</td>
<td>3-5</td>
<td>25</td>
<td>Catholic</td>
</tr>
<tr>
<td>2.</td>
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<td>5-7</td>
<td>27</td>
<td>Christian</td>
</tr>
<tr>
<td>3.</td>
<td>South Korea</td>
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<td>27</td>
<td>1-3</td>
<td>24</td>
<td>Christian</td>
</tr>
<tr>
<td>4.</td>
<td>South Korea</td>
<td>M</td>
<td>36</td>
<td>3-5</td>
<td>32</td>
<td>Buddhist</td>
</tr>
<tr>
<td>5.</td>
<td>South Korea</td>
<td>M</td>
<td>30</td>
<td>5-7</td>
<td>25</td>
<td>Christian</td>
</tr>
<tr>
<td>6.</td>
<td>South Korea</td>
<td>M</td>
<td>35</td>
<td>3-5</td>
<td>32</td>
<td>None</td>
</tr>
<tr>
<td>7.</td>
<td>China</td>
<td>F</td>
<td>30</td>
<td>1-3</td>
<td>27</td>
<td>Christian</td>
</tr>
<tr>
<td>8.</td>
<td>China</td>
<td>F</td>
<td>25</td>
<td>Less than 1</td>
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<td>Christian</td>
</tr>
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</tr>
<tr>
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<td>3-5</td>
<td>24</td>
<td>Dao</td>
</tr>
<tr>
<td>12.</td>
<td>China</td>
<td>M</td>
<td>25</td>
<td>1-3</td>
<td>23</td>
<td>None</td>
</tr>
</tbody>
</table>

As comparing South Korean and Chinese people in the US with European Americans was the focus of this research, it was important to utilize South Korean and Chinese student samples experiencing two different cultures for this phase towards developing culturally tailored narrative message contents. Participants reported themselves to be South Korean-female (n = 3; 25%), South Korean-male (n = 3; 25%), Chinese-female (n = 3; 25%), and Chinese-male (n = 3; 25%).

South Korean participants were recruited by the researcher by using a
convenience and snowball sampling (friends, church, & alumni association). Chinese participants were recruited through an announcement on the Penn State Chinese graduate student Listserv. Interested volunteers contacted the researcher to schedule an interview in the Paterno library. To investigate the general understanding and communication about family health history and genetics regardless of the participants’ gender, three female interviewees and three male interviewees were recruited from each nationality (China and Korea) for this study. One researcher, whose gender identity is female, interviewed 6 female interviewees, and a male interviewer, a Ph.D. student, was hired for this study and interviewed 6 male interviewees. On the interview day, before conducting each interview the interviewers briefly explained the research purpose and the overall contents of the interview questions/topics to the participant.

Participants were paid $25 for their time and offered small refreshment for a comfortable interview. They also read and signed the informed consent documents and the procedures were approved by the Institutional Review Board (IRB). Then, the participants completed a one-page, anonymous questionnaire in order for the researcher to later include their demographic data in analysis. All interviews were audio-recorded with a digital audio recorder, and lasted approximately 55-65 minutes. Interviews were transcribed by one researcher and in the transcription each participant was assigned a pseudonym. Transcription resulted in 148 pages of single-spaced data ranging in 3,712 to 7,325 words (M = 5,273) per interview.

The interviewers started the interview by asking if the participants knew the definition or meaning of family health history and how the interviewees thought about family health history. A semi-structured interview containing several open-ended questions was conducted with each participant. Each Interview was conducted in
English. Since the interviewees were graduate students at Penn State, their English speaking/communication skills were generally enough for participating in this study although their native languages were not English. However, if they could not understand the interview questions or when there were any difficulties in communication, the interviewers tried to explain the question several times with different paraphrased/rephrased expressions for the participant to understand questions clearly and feel comfortable in answering the questions.

Participants were asked general 15 open-ended questions for a semi-structured interview to learn about the participants’ knowledge, thoughts and communication experiences concerning family health history, purposes and meanings of family health history communication, beliefs concerning the roles of genetics and environmental factors on their health, thoughts concerning the relationship between family health and genetics, differences in terms of beliefs about genetics and family health history between the participants’ culture and the US culture, and changes in the participants’ beliefs about genetics and family health history.

Analysis of Interviews

All of the interview audio files were transcribed, and each transcript was read several times. Grounded theory was used for the development of research themes (Glaser & Strauss, 1967; Strauss & Corbin, 1990, 1994). Grounded theory methods provide the strategies for collecting and analyzing data (Charmaz, 1995). The methods help researchers see qualitative data in fresh ways and explore novel ideas about the data. This research assumes that there might be cultural differences in the understanding and communication of family health history between families from different cultural backgrounds. Therefore, by interviewing South Korean and Chinese graduate students, this study sought to identify the cultural differences in their
understanding and communication experiences, which can be differentiated from the results of the existing research on family health history and genetics conducted in the Western cultures. To answer the research question - what the cultural differences in the understanding and communication of family health history are between families from different cultural backgrounds - attention was paid to find cultural referents and archetypes that represent each culture with regard to the participants’ understanding and communication about family health history.

Interviews were initially read to find themes or cultural archetypes/referents relating to family health history communication/understanding. At first, the themes were coded based on the participant’s’ perspectives on family health history communication and their understanding about it, which allowed the researcher to be immersed into their stories and investigate how the narratives are reflecting this specific topic well from their perspective. Then, the data was read several times again to determine the most effective archetypes/referents to be captured for the uses of cultural narratives based on Gordon and Paci (1997), and Schank and Berman (2002)’s definition of culturally common stories. In the process of analyzing the interviewees’ stories concerning family health history communication and other relevant experiences, themes concerning 1-2 specific family disease(s) were found in each interview data. Therefore, among the themes representing several family diseases, the themes including cultural implications were chosen to be included in the different types of cultural narrative messages. In terms of this process, it was very important to pull statements that represented the clear content of cultural differences in terms of communicating and understanding family health history to use for developing cultural narrative messages.

Results
Four themes for South Korean cultural archetypes and four themes for Chinese cultural archetypes were found as the results of interview data analysis. The similarities between the two groups in terms of cultural archetypes regarding family health history, as well as differences were observed.

**South Korean cultural archetypes.** The four themes found as the South Korean cultural archetypes are 1) optimistic ‘health’ communication as a social norm, 2) health issues that are not appropriate for open discussion, 3) patriarchic/hierarchic family culture, and 4) communicating family health history only when a risk is found.

**Optimistic ‘health’ communication as a social norm.** According to the analysis, it seems that South Korean people usually talk more about good health than risks. Therefore, exercise and healthy food were more emphasized in the interviewees’ families than genetic risks or previous disease history. For example, a female interviewee Kyoung noted, “we do talk about health issues about you know exercising regularly or like eating a balanced meal, things like that, (…) It’s not about that oh it’s because you know your uncle had the… you should be careful.” Another female interviewee Mi-Rae also said, “we are just talking about… not really talking seriously, but something like what is good to eat, not good to eat, and something like we need to do some exercise to be healthier. Also to my father, my mom always encourages him to do some exercise because she is worried about him, and just… not really serious talk about health.” Although both Kyoung’s family and Mi-Rae’s family have family health history, their family often talked about what they should do generally to be healthier regardless of specific disease risks.

**Health is not an appropriate issue for open discussion.** In the South Korean society, it seems that health related issues are not openly discussed. Based on the interviewees’ testimonies, this phenomenon can be understood as a social norm, or a
defensive reaction to the potential risks regarding social stigma. Kyoung noted, “I don’t really talk about health issues with my friends in Korea, but here I feel like people talk more about like health concerns, (...) but they at least feel more comfortable, or more sophisticated if they talk about health issues.” Sometimes, people have difficulties in sharing family health history even between family members. Sung-Woo said, “I don’t think people want to share their disease with others, like in my case, I should discuss with my wife because I’m married. Even wife, I don’t really know. (...) I was really hesitating to start over this problem with my wife.” Regarding sharing family health history with others, Min-Jae indicated, “If you have a specific disease that is not very common, it is tough. Because in the South Korean society if you are different from the group, people might think you are a very strange person.” He also mentioned the importance of family boundary in his interview; “It’s better to talk to their direct family. But (...) it may be important not to talk to other people, (...) like distant relatives and friends. (...) they might see it very differently; I think that is a kind of (...) setting up a kind of a boundary.”

**Patriarchic/hierarchic family culture.** According to the interviews with the South Korean participants, it seemed that patriarchic and hierarchic family structure could be another reason relating to the difficulty in communicating family health history in South Korean families. It seems that most South Korean people know about their family health history as well as its importance, but parents usually don’t want to communicate about it with their children because of several reasons. First of all, as parents, they think their children are too young to know about the risks. In addition, it seems that parents, especially fathers want to be viewed as a powerful person in the family because of their authority and sense of responsibility. Mi-Rae said, “Maybe I think my parents talk about their health, but they are not really talking about health in
front of me or my sister. And… yeah, we just know how my grandfather died, but it’s just like that… we don’t really talk about that.” Ji-Hoon noted, “You know, in Asia usually parents see their children as children (as kids) who do not have good understanding about their parents’ health condition something like that.” Jin-ho (male interviewer) also said, “My father, he doesn’t talk anything about his disease (diabetes). I mean, he is kind a… my mother, my brother and I, we all know what kind of disease he has, but my father never discusses about his problem.” Sung-Woo noted, “father, we had like a leader or dictator (laughter together), in this kind of not-open system, that’ why we have some hierarchy, which might not be familiar with American culture. Because of that, maybe people want to hide that first, and hesitate to share or not, even with their family or friends.”

*Communicating family health history only when a risk is salient.* Although South Korean family didn’t discuss their family health history often, it seemed that they talk about their disease risks based on specific issues or reasons. For example, Kyoung’s story contains potential cultural implications concerning family health history communication; “my mother went to get a regular medical check-up, which she does like on a yearly basis, if something you know like her blood sugar is not in a risky range, (…) then she might talk about it and try to control the meal plan, and she would manage her meal. It’s very salient.” A female interviewee Yoo-Jin also said, “Actually my mom has high blood pressure. So, she seriously considers about her eating, so you know, (…) my mom and I are trying to make food less greasy and in a healthy way. We usually have that kind of discussions. (…) my brother is also concerned about high blood pressure.” Another female interviewee Mi-Rae noted, “My grandfather died from a liver cancer. And my mom said that my great grandfather also died from a liver cancer. So my mom and I are worried about my
father, the liver disease.” Kyoung, Yoo-Jin and Mi-Rae’s stories suggest that it might be natural for South Korean families to discuss family health history issues based on specific or salient risks.

**Chinese cultural archetypes.** The four themes found as the Chinese cultural archetypes are 1) communicating family health history just before marriage, 2) health issues that are not appropriate for open discussion, 3) patriarchic/hierarchic family culture, and 4) culture specific medical contexts such as the influence of traditional medicine on people’s medical beliefs and avoiding medical care/treatments due to lack of insurance.

**Communicating family health history just before marriage.** According to the interviews with Chinese interviewees, it seems communicating family health history before marriage or pregnancy is a kind of social norm in China. A female interviewee Bo noted, “Just before I got married, I talked to my husband about my family’s health history. And before I got pregnant, I also got a medical exam. And I also talked about my husband’s family health history.” Another female interviewee Chow also noted, “When I started to prepare for my marriage, I started to talk about this issue with my parents. We wanted to make sure that our baby will not have a genetic disease.” She also explained why Chinese people communicate family health history before their marriage. According to her interview, because of cousin marriage tradition in China, it was very easy for Chinese people to have a baby with a genetic disease. But after the People’s Republic of China had established, the Chinese government stopped this tradition. She also explained meeting with a doctor is a kind of mandatory procedure before marriage in China. People talk with a doctor if their family members and ancestors had any diseases and get health check-ups. Chinese male interviewees also discussed going for testing. A male interviewee Boqin noted, “When we got married,
we just went through the mandatory procedures of physical check-up to see if we had a risk of heart attack, something like that.” Xiang also said, “In China, the marriage has to include the genetic test. (…) It’s voluntary (now). It was very powerful in the past. But, nowadays young guys probably don’t wanna get marriage test…” Considering Chinese patriarchy, it seems also necessary to consider who gets the blame when testing/screening results are not positive.

**Health is not an appropriate issue for open discussion.** As in South Korea, it seems that health related issues are not openly discussed in the Chinese society. According to the interviews with Chinese participants, Chinese people don’t want to discuss medical history or information with others outside their close family, which can be also interpreted as a defensive reaction to the potential risks regarding social stigma or family boundary. Boqin said, “In China, a lot of people try to hide their medical information. Let’s say I have some kind of disease, I don’t want a lot of people to know. (…) people not in their close family, just outsiders like neighbors or not very close friends (…) probably may discriminate him or her.” Sometimes, people have difficulties in sharing family health history even between family members.

Boqin again noted, “Within the family settings, we don’t really discuss like the diseases or health related things.” Xiang also said, “In my family, we never talk about family health history. And I have never heard of any of my family members or relatives having some genetic diseases. This doesn’t mean all of my family members are healthy. Maybe they want to keep secrets. (…) I don’t think they should keep secrets. I mean, at least before their marriage.”

**Patriarchic/hierarchic family culture.** According to the interviews with the Chinese participants, it seemed that patriarchic and hierarchic family structure could be another reason relating to the difficulty in communicating family health history in
Chinese families as well. It seems that although Chinese fathers or husbands know about their family health history, they usually don’t want to communicate about it because of several reasons. First of all, like South Korean fathers, Chinese fathers want to be viewed as a powerful person in the family because of their authority and sense of responsibility. Xiang says that Chinese men want to keep health issues secret even in their family. He noted, “Even though they have this kind of disease and it’s severe enough, it feels they maybe keep it secret for a while even to their wives. (…) and their husbands will keep it secret to their child too because children don’t ask that.” He added, “If you are my wife or my mother, then I have a severe disease, I will make them sad.” Another reason for the difficulty in communicating family health history in Chinese families is Chinese fathers’ lack of communication. Jie said her grandmother had lung cancer and her mom had some problems in her breast, so they communicate about that issue. However, usually she doesn’t talk with her father about health issues. She noted, “No (…) I just talk more with my mom about those things, health stuffs. I talk less with my father.” Boqin says if he finds some problems regarding his health, he is willing to discuss that with his wife and children because it’s very important for him and his family. He noted, “Yeah, for me, I will for sure discuss with them either way. I can discuss with them in a formal setting or just casually… conversation.” But, he also admitted that in China and in other Asian countries, his attitude might not be common. Also, he said, “Even different part of China, they have different culture (…) I would say because of my knowledge structure (caused by my cultural background), to fight with this kind of problem is more… (important) so I can easily get through this kind of difficulty.”

**Culture-specific medical context: avoiding medical care/treatments due to lack of insurance.** Before discussing family health history communication in Chinese
families, it is necessary to know the Chinese medical system, which influences Chinese medical culture. According to the interviews with Chinese participants, because many Chinese people don’t have a medical insurance, they are reluctant to visit the hospital until they have an unbearable pain. A male interviewee Chao said, “I don’t think Chinese people are very careful about health until they find something wrong in their body. For example, in China, cancers are very common these days. A lot of people die from cancers. When they discover, they die within 3-5 years. But, they go to the doctors only when they feel uncomfortable.” He also added, “In China, we usually think I’m healthy enough, I don’t feel anything uncomfortable, and so I don’t need to go. It’s different.” Boqin also said, “people like younger than 50, they don’t take any kind of disease seriously. (...) So, instead of going to the hospital, they try to endure. (...) But after they get older beyond 50 or 60 even 70s, they don’t care (...) because they know maybe next year I will die... why I should spend a lot of money on this kind of useless things. (...) Most people don’t use insurance. They just pay.” Xiang, another male interviewee, however, said that the situation might be slightly different in cities. He noted, “For most people, we don’t pay insurance. But for.. maybe for the city people, they probably they just buy some insurances, health insurance, which functions like banking. They can get some interests. Or even they can get some extra pension after they retire.”

_Culture-specific medical context: the influence of traditional medicine on people’s medical beliefs._ According to several Chinese interviewees, Chinese people’s beliefs in traditional medicine might be significant in understanding the lack of family health history communication in Chinese families. Jie said, “I suppose many Chinese families are not aware of it, like not paying much attention to genetics yet. (...) Most Chinese believe it’s about the balance of your body or balance of energy, so genetics
was not something in the system.” Chow noted, “In his early fifties my father had hyper pressure. And he went to the hospital and a retired doctor (…) an expert in traditional Chinese medicine gave him a recipe, so he went to the country side, he went up on the mountain, found that and cooked. It is very interesting that this problem has been weakened.” Xiang discussed the genetic differences between Eastern and Western people to support his opinion about the effectiveness of traditional medicine; “I guess sometimes because Eastern and Western people have a little bit difference in their genes, traditional medicine will be much better for our people because they have studied it for thousands of years, so it fits our people much better.”

In sum, as summarized in Table 3.2, there were important similarities in cultural archetypes when comparing the two groups, as well as significant differences. Thus, the design of cultural narratives in terms of the culturally common stories for each group should reflect these realities.

Table 3-2

Results of the Qualitative Study

<table>
<thead>
<tr>
<th>South Korean cultural archetypes</th>
<th>Chinese cultural archetypes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Optimistic ‘health’ communication as a social norm</td>
<td>Communicating family health history just before marriage</td>
</tr>
<tr>
<td>2. Health is not an appropriate issue for open discussion</td>
<td>Health is not an appropriate issue for open discussion</td>
</tr>
<tr>
<td>3. Patriarchic/hierarchic family culture</td>
<td>Patriarchic/hierarchic family culture</td>
</tr>
<tr>
<td>4. Communicating family health history only when a risk is salient</td>
<td>Culture-specific medical contexts</td>
</tr>
<tr>
<td></td>
<td>a. Avoiding medical care/treatments due to lack of insurance</td>
</tr>
<tr>
<td></td>
<td>b. The influence of traditional medicine on people’s medical beliefs</td>
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</table>
Phase 2: Piloting Cultural Narrative Messages

The purpose of the second phase was to assess whether the constructed narratives were perceived as intended by the participants with regard to types of agency (social-embeddedness vs. autonomy) and cultural archetype manipulation (South Korean, Chinese, & Euro-American control), participants' understanding of the questionnaire and the narratives, level of engagement, comprehension, and identification with the narrative.

Fifteen South Korean undergraduate students and fifteen Chinese undergraduate students attending this university participated in this phase. Participants were recruited by the researcher by using convenience and snowball sampling.

Cultural Narrative Messages Types

The first phase of this dissertation project was conducted to find cultural archetypes to be tested in the phase 2 and 3. In phase 2, based on the findings of phase 1, 3 different types of cultural narratives, holding constant the factual statements included as evidence about FHH and varying the culturally common stories embedded with the information, as well as varying the agency for acting, were constructed and piloted. The European-American comparison narratives were constructed via employing FAQs and basic information used for the Talk Health History campaign (http://www.talkhealthhistory.org/family/faq.shtml). In the South Korean social-embeddedness narrative and the Chinese social-embeddedness narrative, four South Korean cultural archetypes and four Chinese cultural archetypes were inserted respectively to construct cultural narratives based on cultural archetypes and linguistic indicators or type of culture.

Development of Cultural Narratives

Agency types. To present cultural differences by manipulating socio-linguistic
aspects in the narrative, the narrative messages differed in the types of agency used in
the piloted messages. The linguistic indicator or agency of “your family” in the social
embedded narrative represented the values of collectivistic cultures; the linguistic
indicator or agency of “you” implied the values of individualistic cultures. To embody
the linguistic indicator of “We” in the social-embeddedness health history narratives,
“your family” as an agency was emphasized while in the autonomy control narrative
“you” was described as the agency of action to emphasize the individual’s control.

*Cultural archetypes.* To present each culture’s culturally common stories in
the cultural narratives, the cultural archetypes found in the analysis process of
interview data from phase 1 were inserted to the Korean and Chinese cultural
narratives. The archetypes represented in existing U.S. campaigns comprised the
content for the Euro-American comparison narrative; these archetypes included: being
healthy is a priority, health equals a good life, scientific information is valued, and
knowledge is power and control. Messages illustrating differences in content appear
in Tables 3-3 through 3-6, i.e., South Korean social-embeddedness, Chinese social-
embeddedness, & Euro-American autonomy control. In sum, based on the agency
types and cultural archetypes, three types of cultural narratives were piloted for this
research: South Korean cultural narrative with “your family,” Chinese cultural
narrative with “your family,” and European-American cultural narrative with “you.”
Table 3-3

*Examples of Culturally Common Stories/Archetypes Included as Statements in Cultural Narratives*

<table>
<thead>
<tr>
<th>Type of cultural narrative</th>
<th>Excerpts</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korean social-embeddedness</td>
<td>“Your family may think there is no specific reason to talk about family health history.”</td>
</tr>
<tr>
<td>Chinese social-embeddedness</td>
<td>“Your family may think body balance is more important for your health.”</td>
</tr>
<tr>
<td>Euro-American autonomy control</td>
<td>“Knowing family health history can help you prevent the disease if you adopt behaviors to lower your risk.”</td>
</tr>
</tbody>
</table>

*Message Consistencies*

**Narrative length, Flesh-Kincaid, and content.** Following Parrott et al. (2005), several items were controlled for message consistencies. The titles and the subtitles [questions appearing in the texts] were held constant across all messages. All narratives were titled as “Talk about Your Family Health History,” and included a note about source information (*Talk Health History* campaign). Narratives range from 604 to 605 (M = 604.7) words in length and Flesh-Kincaid for all the narratives range from 8.4 to 8.5 (8-9th grader). The narrator also shares the same information regarding the definition of family health history communication, the reasons of family health history communication, and when/how to collect it and what kind of information should be collected. The use of bold face type was consistent as well.

**Disease conditions in narratives.** It is important to consider each country’s situation concerning the diseases to be mentioned in the three cultural narrative
messages. China Statistical Yearbook (2011) reports that malignant neoplasms (1st), heart disease (2nd), cerebrovascular disease (3rd) are the top three leading causes of death in China. According to National Vital Statics Reports (2011), the three diseases are also significant causes of death in the US as well; heart disease (1st), malignant neoplasms (2nd), and cerebrovascular disease (4th). Lastly, statistics Korea (2012) also reports that malignant neoplasms (1st), heart disease (2nd), and cerebrovascular disease (3rd) are the top leading causes of death in South Korea. Based on the current situation of each country, in all piloted narratives, the narrator shared the same information regarding three disease conditions (cancer, stroke and heart diseases).

Tables 3-4 through 3-6 include sample messages. The message content that is held constant across all messages, comprising factual statements or evidence regarding FHH, has been underlined here for purposes of demonstrating the message manipulations; use of “you” and “your family” has been italicized for the same purpose; each appears eight times in the standardized content included in all messages. In the Korean cultural narrative, eight additional uses of “you” appear, together with 15 more uses of “your family” in the content. In the Chinese cultural narrative, nine additional uses of “you” appear, together with 13 more uses of “your family” in the content. In the Euro-American cultural narrative, 19 additional uses of “you” appear, together with seven more uses of “your family” in the content. Also, the content in the paragraph beginning with “You may feel uncomfortable” is held constant in the Korean and Chinese messages, reflecting the cultural archetype patriarchic/hierarchic family culture in both groups.
Do you know your family health history? You want to live a healthy life. Your family always talks about good health, good food, and exercise. But, does your family avoid talking about cancer or heart disease history in your family? Just talking about good health cannot prevent diseases. Living a healthy life also requires understanding health risks. This is why your family should know about their health history.

What is family health history? Family health history is information about health and disease in your family. It also includes information about lifestyle, such as eating habits and exercise and where you and your family live.

Why is family health history important? You inherit more than just culture, values, and looks from your family. You also inherit genes. Some genes protect you from developing certain diseases. However, some genes
increase the chance that you will develop certain diseases. Knowing your family health history helps your family to make informed choices to prevent disease. There are often steps that your family can take to prevent illness.

For example, your family might change what they eat and how often they exercise. Your family can also see a physician to discuss getting medical tests early and often for family-related diseases.

Your family may think there is no specific reason to talk about family health history. You may start to talk about cancer history or stroke history only after a family member has experienced a serious warning sign. Perhaps none of your family members are having health problems now. But, your family may prepare for the future and perhaps avoid serious health problems by talking about family health history now. Prevention is always better than regret.

Who should you collect your family health history information from?

First, collect family health history information for cancer, heart disease, and stroke about yourself and then from your parents and your siblings. Next, you should gather information from your grandparents, aunts, uncles, and cousins. Your family should at least update the information each year. Doing so can
help your family stay informed of disease risks.

You may feel uncomfortable asking about family health history. Especially, you may not talk to your father very often. You may feel that he doesn’t want to talk about his experiences with cancer, heart disease, or stroke, or his medical history. Maybe he thinks his authority and sense of responsibility as the head of household will be threatened if he reveals serious health issues. But, you should start talking to your father. Afterward, you can tell him that you still love and respect him, even if he becomes ill.

What should you collect?

- Biological relatives’ names and their relationships to you (mother, brother, etc.).

- Their ethnicity, race or family origin.

- The history of cancer, heart disease, and stroke, together with other health conditions they have experienced.

- Their ages when a diagnosis was made for each condition.

- Age and cause of death for grandparents, parents, siblings, and aunts and uncles.
• Their occupations and whether they smoked.

Family health history is not something to hide or to be ashamed of. It may be used as a preventive tool that is essential for your family’s health. Your family may think it is difficult to talk about these kinds of private issues with your more distant relatives. But, your family can show just how important family is by having these conversations.

Do you better understand why knowing family health history is important now? For you and your family’s health, start talking about family health history today.

Note: The source of information is the Talk Health History campaign (http://www.talkhealthhistory.org/family/faq.shtml).
Table 3-5

*Chinese Social-embeddedness Narrative for Phase 2*

“Talk about *Your Family* Health History”

**Do you know your family health history?** Family health history information is an important preventive tool for your family’s future. You and your family should learn about your family’s health history for cancer, heart disease, or stroke. Because a family marries a family, when you get married, you will want to learn about your future spouse’s family health history, too. Prevention is always better than regret.

**What is family health history?** Family health history is information about health and disease in your family. It also includes information about lifestyle, such as eating habits and exercise and where you and your family live.

**Why is family health history important?** You inherit more than just culture, values, and looks from your family. You also inherit genes. Some genes protect you from developing certain diseases. However, some genes
increase the chance that you will develop certain diseases. Knowing your family health history helps your family to make informed choices to prevent disease. There are often steps that your family can take to prevent illness. For example, your family might change what they eat and how often they exercise. Your family can also see a physician to discuss getting medical tests early and often for family-related diseases.

You may have reasons for thinking that family health history is not important. Your family may think body balance is more important for your health. Maybe your family can’t go to the doctor or hospital because you have no insurance. Family health history is not an expensive insurance your family cannot buy. But, it is essential to reduce health risks such as cancer and stroke. Therefore, regardless of body balance, you still need to talk about it.

Who should you collect your family health history information from?

First, collect family health history information for cancer, heart disease, and stroke about yourself and then from your parents and your siblings. Next, you should gather information from your grandparents, aunts, uncles, and
cousins. Your family should at least update the information each year. Doing so can help your family stay informed of disease risks.

You may feel uncomfortable asking about family health history. Especially, you may not talk to your father very often. You may feel that he doesn’t want to talk about his experiences with cancer, heart disease, or stroke, or his medical history. Maybe he thinks his authority and sense of responsibility as the head of household will be threatened if he reveals serious health issues. But, you should start talking to your father. Afterward, you can tell him that you still love and respect him, even if he becomes ill.

What should you collect?

• Biological relatives’ names and their relationships to you (mother, brother, etc.).

• Their ethnicity, race or family origin.

• The history of cancer, heart disease, and stroke, together with other health conditions they have experienced.

• Their ages when a diagnosis was made for each condition.

• Age and cause of death for grandparents, parents, siblings, and
• Aunts and uncles.

• Their occupations and whether they smoked.

Family health history is not something to hide or to be ashamed of. It may be used as a preventive tool that is essential for your family’s health. Your family may think it is difficult to talk about these kinds of private issues with your more distant relatives. But, your family can show just how important family is by having these conversations.

Do you better understand why knowing family health history is important now? For you and your family’s health, start talking about family health history today.

Note: The source of information is the *Talk Health History* campaign (http://www.talkhealthhistory.org/family/faq.shtml).
Do you know your family health history? One of the greatest joys in life is being healthy. For you to live a joyful and healthy life, you should know about your family’s health history. For example, does cancer or heart disease run in your family? Then, you should know and talk about it because it is an important preventive tool for your future. Prevention is always better than regret.

**What is family health history?** Family health history is information about health and disease in your family. It also includes information about lifestyle, such as eating habits and exercise, and where you and your family live.

**Why is family health history important?** You inherit more than just culture, values, and looks from your family. You also inherit genes. Some genes protect you from developing certain diseases. However, some genes increase the chance that you will develop certain diseases. Knowing your
family health history helps you to make informed choices to prevent disease. There are often steps that you can take to prevent illness. For example, you might change what you eat and how often you exercise. You can also see a physician to discuss getting medical tests early and often for family-related diseases.

Let’s say that you have a family health history of high cholesterol. If your biological father has been diagnosed with a gene that increases risk for high cholesterol, then, you have a 50% chance of inheriting the gene. If you have five siblings, each one has a 50% chance of inheriting the gene that increases risk for high cholesterol. High cholesterol causes heart disease and stroke. Therefore, knowing this information is very important to you. Similarly, if you have a family health history of cancer, your risk may be greater for getting the disease than someone with no family health history of cancer. Knowing family health history can help you prevent the disease if you adopt behaviors to lower your risk. This includes telling your doctor about your family health history and getting medical tests to screen for disease. This is why family health history is so important.

Who should you collect your family health history information from?

First, collect family health history information for cancer, heart disease, and stroke about yourself and then from your parents and your siblings. Next,
you should gather information from your grandparents, aunts, uncles, and
cousins. You should at least update the information each year. Doing so can help
you stay informed of disease risks.

**What should you collect?**

- **Biological relatives’ names and their relationships to you** (mother, brother, etc.).

- **Their ethnicity, race or family origin.**

- **The history of cancer, heart disease, and stroke, together with other health conditions they have experienced.**

- **Their ages when a diagnosis was made for each condition.**

- **Age and cause of death for grandparents, parents, siblings, and aunts and uncles.**

- **Their occupations and whether they smoked.**

Family health history can give you the knowledge you need to take control of your health. If you decide to collect your family health history today, you will be able to decrease your risk of getting serious diseases in the future. Therefore, family
health history is a prevention tool that is essential for *you* and your family’s health.

So, *you* should talk about family health history in *your family*. *You* might also help *your family* members know about their family health history.

*Do you* better understand why knowing family health history is important now? For *you* and *your family’s* health, start talking about family health history today.

Note: The source of information is the *Talk Health History* campaign (http://www.talkhealthhistory.org/family/faq.shtml).
Participants and Procedures

A total of 30 undergraduate students (15 South Korean students and 15 Chinese students) attending this university participated in this pilot test during February and March 2014. Before piloting the three cultural narrative messages, the survey was piloted with three Korean and two Chinese undergraduate students in December 2013 to see how long it took them to read it and if they have any questions about the way things are worded and their meaning. According to their responses, the survey was revised. As in the formative research, South Korean and Chinese participants were recruited by the researcher by using convenience sampling (churches, friends, & other religious organizations/sites). Regardless of their citizenship status, South Korean and Chinese students who have stayed in the US for more than 15 years were excluded from this study because they might be too acculturated to participate in this study as the sample of South Korean or Chinese people influenced by their traditional culture.

To assess whether the constructed narratives were perceived as intended by the participants regardless of their gender, 8 female participants and 7 male participants were recruited from each nationality (China and Korea) for this pilot test. A classroom or an office located on the university campus was reserved for each pilot test. One or two students participated in the survey including a short interview per each timeslot. Email reminders were sent 24 hours prior to the scheduled time. Participants were paid $15 for their time.
Table 3-7

Selected Demographic Information about Participants in Pilot Study

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<tr>
<th>No.</th>
<th>Country of citizenship</th>
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<th>College year</th>
<th>Major</th>
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<td>2</td>
<td>Telecommunication</td>
</tr>
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<td>3.</td>
<td>South Korea</td>
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<td>1-3</td>
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<td>Criminology</td>
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<tr>
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<td>South Korea</td>
<td>F</td>
<td>4-6</td>
<td>1</td>
<td>Chemistry</td>
</tr>
<tr>
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<td>South Korea</td>
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<td>1-3</td>
<td>3</td>
<td>Advertising</td>
</tr>
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<td>F</td>
<td>10-15</td>
<td>4</td>
<td>International politics</td>
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<td>South Korea</td>
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<td>4-6</td>
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<td>4-6</td>
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<td>M</td>
<td>1-3</td>
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<td>Chemistry</td>
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<td>10.</td>
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<td>7-10</td>
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<td>4-6</td>
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<td>1-3</td>
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<td>14.</td>
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<td>1-3</td>
<td>3</td>
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<td>1-3</td>
<td>3</td>
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<td>Course</td>
<td>Year</td>
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<td>4-6</td>
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<td>1-3</td>
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Table 3-8a

*Message Distribution Used for Korean (n = 15) Participants*

<table>
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<tr>
<th>Korean social - embeddedness</th>
<th>Chinese social - embeddedness</th>
<th>Euro-American autonomy control</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
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<td>3</td>
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<tr>
<td>Total</td>
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</table>
Table 3-8b

Message Distribution Used for Chinese (n = 15) Participants

<table>
<thead>
<tr>
<th></th>
<th>Korean social - embeddedness</th>
<th>Chinese social - embeddedness</th>
<th>Euro-American autonomy control</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>7</td>
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<tr>
<td>Female</td>
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<td>Total</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>15</td>
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After the participants were seated in the reserved room, the researcher explained the participant’s right based on the informed consent form and let them read and decide to sign the form. After submitting the form, the participants received a questionnaire and took their time reading the questionnaire. First of all, baseline for health status, experiences of three diseases (cancer, heart disease, & stroke), years in the US, English competency, English use, and cognitive developmental state were measured. Then, after reading 1 of the 3 narratives, several questions were asked to examine if the researcher’s manipulation regarding social-embeddedness vs. autonomy and cultural archetypes (China, South Korea, & European American comparison) is consistent with cultural norms. Transportation and identification were measured to see the difference of message processing according to the type of cultural narrative. Since the cultural archetypes inserted into narrative messages were related to counterarguments grounded on each culture, resistance to counter-arguing were also measured to examine the effects of cultural narratives. In addition, participants’ comprehension was assessed to see the effectiveness of cultural narrative messages. To assess Korean and Chinese students’ understandability for questionnaire, all the
questions for phase 3 were asked in this phase as well. Also, after participants finished the questionnaire, they were asked to read the three messages, and choose one of the three messages that best fits their own cultural background and explain why. Based on the qualitative data, the researcher was able to understand why the manipulation is reasonable or unreasonable from the participants’ perspectives.

**Instrumentation**

**Manipulation Checks.** The goal of designing cultural narrative messages was to have different participants perceive differences in the message based on their cultural identity. These differences were to be perceived in terms of whether or not social-embeddedness, autonomy, and cultural closeness are reflected in each message condition.

**Social-embeddedness versus autonomy.** To assess if participants perceived the message to support autonomy versus social-embeddedness, the following items were included: for autonomy, (a) based on the message, it is my choice whether to talk about family health history; (b) talking about family health history is up to me; and (c) talking about family health history with family members if for my benefit; and for social-embeddedness, (a) based on the message, talking to family members about family health history is for the benefit of the family as a whole; (b) it is my family’s choice whether to talk about family health history; and (c) talking about family health history is up to my family. The response options range from 1 (strongly disagree) to 7 (strongly agree). I created two scales by averaging item responses (autonomy: $\alpha = .50$; embeddedness; $\alpha = .55$). The alphas of these scales were smaller than the conventionally acceptable level (i.e., .70), which indicated that the internal consistencies of these scales might be low. Therefore, for the main study, the six items were revised for participants to understand the items in a clearer way. The revised
items are as follows: (a) according to the message, it is up to me to decide whether to talk about family health history; (b) according to the message, talking about family health history is my choice; and (c) according to the message, talking about family health history with family members will benefit my health, and for social-embeddedness, (a) according to the message, it up to my family to decide whether to talk about family health history; (b) according to the message, whether to talk about family health history is a choice my family makes; and (c) according to the message, talking about family health history with family members will benefit my whole family’s health.

Table 3-9

Means and Standard Deviations of Perceived Autonomy for both Chinese and Korean participants

<table>
<thead>
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<th>Message type</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
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<td>Korean social-embeddedness</td>
<td>10</td>
<td>6.0</td>
<td>1.02</td>
</tr>
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<td>Chinese social-embeddedness</td>
<td>10</td>
<td>5.73</td>
<td>.80</td>
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<tr>
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<td>5.72</td>
<td>1.02</td>
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</tbody>
</table>

The results showed that the mean of perceived autonomy for both Chinese and Korean participants was highest in the Korean social-embeddedness condition, and lowest in the Euro-American autonomy control condition. This is an almost reversed
outcome of what was expected based on the manipulation of cultural narrative message content relating to cultural archetypes but may relate to the perceptions regarding agency.

Table 3-10

*Means and Standard Deviations of Perceived Social-embeddedness for both Chinese and Korean participants*

<table>
<thead>
<tr>
<th>Both Chinese and Korean</th>
<th>Message type</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived social-</td>
<td>Korean social-embeddedness</td>
<td>10</td>
<td>6.00</td>
<td>.90</td>
</tr>
<tr>
<td>embeddedness</td>
<td>Chinese social-embeddedness</td>
<td>10</td>
<td>5.73</td>
<td>1.11</td>
</tr>
<tr>
<td></td>
<td>Euro-American Autonomy control</td>
<td>10</td>
<td>5.73</td>
<td>.84</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>5.82</td>
<td>.94</td>
</tr>
</tbody>
</table>

According to the results, however, the mean of perceived social-embeddedness for both Chinese and Korean participants was highest in the Korean Social-embeddedness condition while there was no difference between Euro-American autonomy control condition and Chinese social-embeddedness condition. This outcome is not perfect either, but better reflects the intention of message manipulation. Therefore, I looked at the mean differences in each identity condition.
Table 3-11

Means and Standard Deviations of Perceived Autonomy for Chinese Participants

<table>
<thead>
<tr>
<th>Chinese Message type</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived autonomy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korean social-embeddedness</td>
<td>5</td>
<td>6.27</td>
<td>.89</td>
</tr>
<tr>
<td>Chinese social-embeddedness</td>
<td>5</td>
<td>5.53</td>
<td>1.12</td>
</tr>
<tr>
<td>Euro-American Autonomy control</td>
<td>5</td>
<td>6.00</td>
<td>1.25</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>5.93</td>
<td>1.06</td>
</tr>
</tbody>
</table>

The results showed that the mean of perceived autonomy for Chinese participants was highest in the Korean Social-embeddedness condition, and lowest in the Chinese social-embeddedness control condition. Although this result is not statistically significant ($p = .58$) and ungeneralizable due to the small sample size, this result slightly reflects the intention of message manipulation in that Chinese participants perceived lowest autonomy in the Chinese social-embeddedness narrative.

Table 3-12

Means and Standard Deviations of Perceived Social-embeddedness for Chinese participants

<table>
<thead>
<tr>
<th>Chinese Perceived social-embeddedness</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korean social-embeddedness</td>
<td>5</td>
<td>5.73</td>
<td>1.14</td>
</tr>
<tr>
<td>Chinese social-embeddedness</td>
<td>5</td>
<td>5.20</td>
<td>1.32</td>
</tr>
<tr>
<td>Euro-American Autonomy control</td>
<td>5</td>
<td>5.73</td>
<td>1.23</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>5.56</td>
<td>1.17</td>
</tr>
</tbody>
</table>
The results showed that the mean of perceived social-embeddedness for Chinese participants was highest in both Korean Social-embeddedness condition and Euro-American autonomy control condition, and lowest in the Chinese social-embeddedness control condition. It seems this outcome doesn’t successfully reflect the manipulation of cultural narratives in the messages.

**Table 3-13**

*Means and Standard Deviations of Perceived Autonomy for Korean participants*

<table>
<thead>
<tr>
<th>Korean</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived autonomy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korean social-embeddedness</td>
<td>5</td>
<td>5.80</td>
<td>1.19</td>
</tr>
<tr>
<td>Chinese social-embeddedness</td>
<td>5</td>
<td>5.93</td>
<td>.28</td>
</tr>
<tr>
<td>Euro-American Autonomy control</td>
<td>5</td>
<td>4.80</td>
<td>.93</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>5.51</td>
<td>.97</td>
</tr>
</tbody>
</table>

The results showed that the mean of perceived autonomy for Korean participants was lowest in the Euro-American condition, and highest in the Korean social-embeddedness control condition. This outcome didn’t successfully reflect the intended manipulation of cultural narrative messages, either.
Table 3-14

*Means and Standard Deviations of Perceived social-embeddedness for Korean participants*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived social-embeddedness</td>
<td>Korean social-embeddedness</td>
<td>5</td>
<td>6.27</td>
</tr>
<tr>
<td></td>
<td>Chinese social-embeddedness</td>
<td>5</td>
<td>6.27</td>
</tr>
<tr>
<td></td>
<td>Euro-American Autonomy control</td>
<td>5</td>
<td>5.73</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>15</td>
<td>6.09</td>
</tr>
</tbody>
</table>

According to the results, the mean of perceived social-embeddedness for Korean participants was highest in both Korean Social-embeddedness condition and Chinese social-embeddedness control condition, and lowest in the Euro-American autonomy control condition. Although this result is not statistically significant ($p = .19$) and ungeneralizable due to the small sample size, this result slightly reflects the intention of message manipulation in that Korean participants perceived lowest social-embeddedness in the Euro-American autonomy control narrative.

*Types of cultural archetypes (South Korean, Chinese, and control) in the narrative message.* To assess if participants identified the different cultural archetypes revealed in the narrative evidence according to their culture, the following three questions were asked: (a) I’m familiar with the situations and stories in the message; (b) this message presents a situation that is an accurate reflection of my culture; and (c) this message presents a situation that I have no understanding about based on my cultural background [recoded]. The response options range from 1 (strongly disagree) to 7 (strongly agree). I created one scale by averaging item responses ($\alpha = .54$). The alpha of this scales was smaller than the conventionally acceptable level (i.e., .70),
which indicated that the internal consistencies of this scale might be low. Therefore, for the main study, according to the values of Cronbach’s alpha if item deleted, item (c) \((\alpha = .75)\) (i.e., this message presents a situation that I have no understanding about based on my cultural background [recoded]) was revised as ‘this message presents a situation that I can understand very well based on my cultural background.’

Table 3-15

Means and Standard Deviations of Cultural Closeness for both Chinese and Korean participants

<table>
<thead>
<tr>
<th>Message type</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural closeness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korean social-embeddedness</td>
<td>10</td>
<td>5.20</td>
<td>1.31</td>
</tr>
<tr>
<td>Chinese social-embeddedness</td>
<td>10</td>
<td>5.07</td>
<td>1.12</td>
</tr>
<tr>
<td>Euro-American Autonomy control</td>
<td>10</td>
<td>4.60</td>
<td>1.22</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>4.96</td>
<td>1.20</td>
</tr>
</tbody>
</table>

The results showed that the mean of cultural closeness for both Chinese and Korean participants was lowest in the Euro-American condition, and highest in the Korean social-embeddedness control condition \((p = .52)\). Although this result is not statistically significant \((p = .58)\) and ungeneralizable due to the small sample size, this outcome reveals overall both Chinese and Korean participants felt greater cultural closeness in social-embeddedness conditions compared to Euro-American autonomy control condition.
Table 3-16

Means and Standard Deviations of Cultural Closeness for Chinese participants

<table>
<thead>
<tr>
<th>Cultural closeness</th>
<th>Message type</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese social-embeddedness</td>
<td>5</td>
<td>5.33</td>
<td>.62</td>
<td></td>
</tr>
<tr>
<td>Chinese social-embeddedness</td>
<td>5</td>
<td>4.80</td>
<td>.77</td>
<td></td>
</tr>
<tr>
<td>Euro-American Autonomy control</td>
<td>5</td>
<td>5.07</td>
<td>1.23</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
<td>5.07</td>
<td>.87</td>
</tr>
</tbody>
</table>

According to the results, the mean of cultural closeness for Chinese participants was lowest in Chinese social-embeddedness condition, and highest in the Korean social-embeddedness control condition. This result reveals that the difference between Chinese and Korean social-embeddedness narratives might not be successfully perceived by the participants.

Table 3-17

Means and Standard Deviations of Cultural Closeness for Korean participants

<table>
<thead>
<tr>
<th>Cultural closeness</th>
<th>Message type</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korean social-embeddedness</td>
<td>5</td>
<td>5.07</td>
<td>1.85</td>
<td></td>
</tr>
<tr>
<td>Chinese social-embeddedness</td>
<td>5</td>
<td>5.33</td>
<td>1.43</td>
<td></td>
</tr>
<tr>
<td>Euro-American Autonomy control</td>
<td>5</td>
<td>4.13</td>
<td>1.12</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
<td>4.84</td>
<td>1.48</td>
</tr>
</tbody>
</table>
According to the results, the mean of cultural closeness for Korean participants was lowest in Euro-American autonomy control condition, and highest in the Chinese social-embeddedness control condition ($p = .44$). This result also suggests that although Korean and Chinese participants perceive differences in cultural closeness between social-embeddedness condition and autonomy control condition, their perceptions regarding the differences between Korean and Chinese cultural narratives are not clear enough.

In conclusion, although not conclusive, differences in social-embeddedness and autonomy manipulated in the three message conditions were partially reflected in the participants’ perceptions. At the same time, the Chinese and Korean participants felt greater cultural closeness in the social-embeddedness message conditions compared to the autonomy control message while their perceived differences between Korean and Chinese social-embeddedness messages were not exactly same as the intention of manipulation. Due to the small sample size, individual interviews were conducted to complement the manipulation checks after each survey, contributing to the message revisions described below.

Measures.

**Cultural identity.** To know participants’ cultural identity the following question was asked: To which culture do you most identify with? Response options are 1) US, 2) South Korea, and 3) China.

**Cultural background.** To assess participants’ cultural background the following question was asked: Choose the best answer that describes yourself. Response options are 1) I was born and mostly raised in the US, 2) I was born and mostly raised in South Korea, 3) I was born and mostly raised in China, 4) I immigrated from South Korea, 5) I immigrated from China, 6) Other [What if other].
**Years in US.** To assess the length of participants’ stay in the US, the following question was asked: How long have you been in the US. The response options are 1) 1-3 years, 2) 4-6 years, 3) 7-10 years, 4) 10-15 years and 5) longer than 15 years.

**English competency.** TOEFL (Test of English as a Foreign Language) score was used to measure English competency: What is your TOFEL score (if you have)? According to the Educational Testing Service (ETS, 2015) website, “The TOEFL test is the most widely respected English-language test in the world, recognized by more than 9,000 colleges, universities and agencies in more than 130 countries, including Australia, Canada, the U.K. and the United States.”

**English use.** The following three items were used to assess participants’ English use: (a) what language do you mostly speak at home; (b) what language do you mostly count numbers in; and (c) what language do you mostly read in? The response options were 1) English, 2) Mandarin Chinese, 3) Korean, and 4) other.

**Demographics.** To assess participants’ self-identified ethnicity, the following question was asked: what is your ethnicity? Response options were 1) European American, 2) Hispanic or Latino, 3) African American, 4) Asian: Korean, 5) Asian: Chinese, 6) Asian: other, 7) Native American or American Indian, 8) other [What if other]. Years in college and major were also asked. In addition, participants were asked if their biological parents and grandparents were living.

**Baseline for health status.** To assess participants’ baseline for health status, four questions modified from the 36-item Short Form Questionnaire (SF-36) (Ware, Kosinski, & Keller, 1994) were used; (a) in general, would you say your health is; (b) compared to one year ago, how would you rate your health in general now; (c) my health now limits my physical activities such as lifting heavy objects or pushing a vacuum cleaner; and (d) during the past 4 weeks, I had problems with my work or
other regular daily activities as a result of my physical health. The response options for (a) and (b) range from 1 (poor) to 7 (excellent) and the response options for (c) and (d) range from 1 (strongly agree) to 7 (strongly disagree). The alpha ($\alpha = .37$) of these scales was much smaller than the conventionally acceptable level (i.e., .70), which indicated that the internal consistencies of this scale might be severely low. In addition, although the alpha for the first two items was good ($\alpha = .77$), the alpha for the other two items was still low. Therefore, for more consistent measurement, item (a) and (b) measuring general health conditions were removed, and item (c) and (d) asking about health limitations or problems were left for the main study. Furthermore, one new item (i.e., during the past 4 weeks, how much did pain interfere with your normal work?) was added for the main study.

**Health conditions mentioned in the messages.** To assess participants’ experiences of the three health conditions (cancer, heart diseases, & stroke), the following questions were asked: Has a doctor or other health care provider diagnosed you with any of the following conditions. The response options are 1) cancer, 2) heart disease and 3) stroke.

**Current knowledge about family health history.** Six items were asked to measure the participants’ current knowledge about family health history. Specifically, the following items were asked: (a) I know about my parents’ health history of stroke; (b) I know about my parents’ health history of heart disease; (c) I know about my grandparents’ health history of cancer; (d) I know about my grandparents’ health history of stroke; and (e) I know about my grandparents’ health history of heart disease. The response options ranged from 1 (not at all) to 7 (very well). The internal consistency of the six items was acceptable ($\alpha = .86$).

**Current communication about family health history.** Considering each
country’s leading top causes of death, eighteen items were developed to measure the frequency of communication regarding family health history. These items include specific communication experiences regarding three diseases that were mentioned in the three messages; cancer, stroke, and heart disease. Specifically, items include: (a) I have talked with my family members about family history of cancer; (b) I have talked with my parents about family history of cancer; (c) I have talked with my grandparents about family history of cancer; (d) I have talked with my family members about family history of heart disease; (e) I have talked with my family members about whether to share the family health history of cancer with other family members; (f) I have talked with my parents about whether to share the family health history of cancer with other family members; and (g) I have talked with my grandparents about whether to share the family health history of cancer with other family members. The response options range from 1 (not at all) to 7 (frequently). The internal consistency of the eighteen items was high ($\alpha = .94$). Although reliability of these items was high, several items regarding stroke were removed from the randomized trial scales due to the participants’ lack of understanding.

**Narrative tendencies.** To control participants’ preference for receiving narratives as a predisposition (Newman, 2005), six items of the narrative tendencies construct developed by Newman (2005) were used to measure an individual’s predisposition for creating and finding narratives: (a) I enjoy hearing funny stories; (b) I enjoy making people laugh with my stories; (c) I do not enjoy a story with cliché plots or characters; (d) I enjoy telling stories; (e) my best stories are about things that happened to me; and (f) I often exaggerate to make my stories more entertaining. The response options ranged from 1 (strongly disagree) to 7 (strongly agree). The reliability assess using Cronbach’s alpha ($\alpha = .47$) of these scales was slightly smaller
than the conventionally acceptable level (i.e., .70), which indicated that the internal consistencies of this scale might be low. Therefore, for the main study, according to the values of Cronbach’s alpha if item deleted, I removed item (c) ($\alpha = .65$) and added two new following items; (f) I enjoy silence [recoded]; and (g) I think telling stories is a waste of time [recoded].

**Integration into the US culture.** To control participants’ integration into the US culture, in addition to the length/duration of participants’ stay in the US, five items of modified socio-cultural adaptation scales developed by Ward and Kennedy (1999) were used. The scales included the following items: (a) I have several American friends; (b) I have difficulties in taking an American perspective on the culture [recoded]; (c) I like going to American social gatherings; (d) I enjoy American food; and (e) I have difficulties in understanding American family relationships [recoded]. The response options range from 1 (strongly disagree) to 7 (strongly agree). The internal consistency of the five items was acceptable ($\alpha = .77$).

**General attitude toward family health history communication.** Semantic differential scales drawn from Ajzen (2011), Petty, Cacioppo, and Schumann (1983), and Osgood, Suci, and Tannenbaum’s (1957) were used to measure the general attitude toward family health history communication. Four items with the stem “communicating family health history with family members would be” were asked. The response options range (a) from 1 (bad) to 7 (good); (b) from 1 (unpleasant) to 7 (pleasant); (c) from 1 (unfavorable) to 7 (favorable); and (d) from 1 (harmful) to 7 (beneficial). The alpha ($\alpha = .56$) of these scales was smaller than the conventionally acceptable level (i.e., .70), which indicated that the internal consistencies of this scale might be low. Therefore, for the main study, I added seven more items with response options ranging (e) from 1 (foolish) to 7 (wise); (f) from 1 (useless) to 7 (useful); (g)
from 1 (worthless) to 7 (valuable); (h) from 1 (important) to 7 (not important) [recoded]; (i) from 1 (necessary) to 7 (not necessary) [recoded]; (j) from 1 (life-saving) to 7 (not relevant) [recoded]; and (k) from 1 (helpful) to 7 (not helpful) [recoded].

**Genetic essentialism.** Six items based on Parrott and colleagues (2012) were used to measure genetic essentialist beliefs. Specifically, the following items were asked: (a) genes are the most important factor in determining a person’s health; (b) genes are more important than one's own behavior in determining one's health; (c) the genes one is born with determine how healthy one will be throughout life; (d) genes determine the effects of one's own behavior in determining one's health; (e) genes determine whether medication works; and (f) genes are the most important contributor to human health. The response options range from 1 (strongly disagree) to 7 (strongly agree). The alpha ($\alpha = .69$) of these scales was slightly lower than the conventionally acceptable level (i.e., .70). Therefore, for the main study, according to the values of cronbach’s alpha if item deleted, I removed item (e) ($\alpha = .75$) from these items.

**Transpersonal and paranormal belief.** Since the meaning of religion and spirituality might be different in Asian cultures such as China and South Korea, transpersonal and paranormal beliefs were measured as a dimension of Asian religions by using seven items based on Trapnell (2005). The items include (a) I expect there may be some gifted psychics with unusual powers (e.g., communicating with persons who have died); (b) I believe some may indeed experience real memories from a past life lived before this one; (c) During altered states, such as sleep or trances, a person’s soul or spirit may indeed be able to briefly depart from the body; (d) Human beings have no capacity whatsoever to develop magical powers or abilities; (e) I believe the human body has energy fields beyond known physics; (f) I’m quite receptive to supernatural experiences; and (g) I tend to believe Karma does exist—one’s present
actions determine one's destiny in a future reincarnation. The response options range from 1 (strongly disagree) to 7 (strongly agree). The internal consistency of the seven items was acceptable ($\alpha = .84$).

**Spirituality.** To measure spirituality in a culturally appropriate way, six items of spiritual beliefs constructed by Trapnell (2005) were used. This measure mainly operationalizes the degree of spiritual beliefs regardless of religious affiliation. Specifically, affirmation beliefs include (a) My beliefs about the world are completely atheistic; (b) I doubt our universe has any intended purpose by any form of "higher" force or being; (c) I tend to reject all spiritual interpretations of things; (d) I’m attracted to spiritual perspectives on life; (e) I tend to have spiritual beliefs that are important to me; and (f) I tend to think of myself as spiritually-oriented. The response option range from 1 (strongly disagree) to 7 (strongly agree). Responses were averaged into one score. The internal consistency of the seven items was acceptable ($\alpha = .75$).

**Intrinsic–extrinsic religious orientation.** Fifteen items based on Allport and Ross (1967) were asked to measure intrinsic–extrinsic religious orientation. The measure includes five items measuring intrinsic religiosity and ten items measuring extrinsic religiosity. Each item deals with various types of religious ideas and social opinions. Specifically, the following items were included. For intrinsic orientation, (a) I try hard to carry my religion over into all my other dealings in life; (b) The prayers I say when I am alone carry as much meaning and personal emotion as those said by me during services; and (c) Quite often I have been keenly aware of the presence of God or the Divine Being. The response options range from 1 (strongly disagree) to 7 (strongly agree). The internal consistency of the five items was acceptable ($\alpha = .83$).

For extrinsic orientation, (a) although I believe in my religion, I feel there are
many more important things in my life; (b) It doesn’t matter so much what I believe so long as I lead a moral life; (c) The primary purpose of prayer is to gain relief and protection; (d) The church is most important as a place to formulate good social relationships; and (e) What religion offers me most is comfort when sorrow and misfortune strike. The response options range from 1 (strongly disagree) to 7 (strongly agree). The internal consistency of the ten items was acceptable ($\alpha = .87$).

**Subjective norms about family health history communication.** Based on the scales developed by Ajzen (1991; 2011), six items were used to measure subjective norms about family health history communication: (a) Members of my family approve of my communicating family health history with family members; (b) Members of my family have talked about family health history with other family members; (c) Members of my family expect me to talk about family health history with other family members; (d) Members of my family think that I should do everything I can to communicate family health history with other family members; (e) Members of my family think it would be a good idea for me to communicate family health history with other family members; and (f) Members of my family would want me to communicate family health history with other family members. The response options range from 1 (strongly disagree) to 7 (strongly agree). The internal consistency of the ten items was acceptable ($\alpha = .83$).

**Stigma beliefs.** To better understand the social norms regarding family health history, stigma beliefs as an attitude toward people with family health history were measured. Twenty one items modified from Link and colleagues (1989) were used to measure stigma beliefs about family health history. These items include specific stigma beliefs regarding three diseases that were mentioned in the three messages. The items include: (a) Most people would feel that having a family health history for
heart disease is a sign of personal failure; (b) Most people would not hire a person with family health history for heart disease to take care of their children, even if they have not shown symptoms; (c) Most people will think less of a person with family health history for heart disease; (d) Most employers would pass over the application of a person with family health history for heart disease in favor of someone else; (e) Most people would be reluctant to date someone with family health history for heart disease; (f) Most people would not want their children to marry someone with family health history for heart disease; and (g) Once they know that someone has family health history for heart disease, most people will take his or her opinions less seriously. The response options range from 1 (strongly disagree) to 7 (strongly agree). Responses were averaged into one score. The internal consistency of the twenty one items was high ($\alpha = .94$). Although reliability of these items was high, items concerning stroke were removed from the current scales due to the participants’ understandability.

**Norms related to power dynamics in a family.** To better understand family norms power dynamics in family were measured. First of all, five questions from the Network of Relationships Inventory (NRI) (Furman & Buhrmester, 1985, 1992) were used to assess relative power in a family with regard to participants’ relationships with their parents. Respondents rated their relationships with both of their parents: (a) who tells the other person what to do more often, you or your father; (b) who tells the other person what to do more often, you or your mother; (c) between you and your father, who tends to be the boss; (d) between you and your mother, who tends to be the boss; and (e) in your relationship, who tends to take charge and decides what should be done, you, your father, your mother, or other.

Five items modified from Keller (2009) were used to measure the frequency of
family power conflicts. The participants were asked to answer the following questions: (a) how often are there power struggles among your family members; (b) how often are family members domineering; (c) how often are family members in a struggle over who is in control; (d) how often do family members have trouble taking directions from someone else; and (e) how often do family members try to dominate others. The response options range from 1 (never) to 7 (always). The internal consistency of the twenty one items was acceptable (\( \alpha = .87 \)).

Six items from NRI (Furman & Buhrmester, 1985, 1992) were used to measure family power conflicts between participants and their parents. The participants were asked to indicate the extent to which they agreed with the following statements: (a) how much do you and your father get upset with or mad at each other; (b) how much do you and your mother get upset with or mad at each other; (c) how much do you and your father disagree and quarrel; (d) how much do you and your mother disagree and quarrel; (e) how much do you and your father argue with each other; and (f) how much do you and your mother argue with each other. The response options range from 1 (none) to 7 (the most always). The alpha (\( \alpha = .69 \)) of these scales was slightly lower than the conventionally acceptable level (i.e., .70). Therefore, for the main study, according to the values of Cronbach’s alpha if item (e) deleted (\( \alpha = .72 \)), I removed both (e) and (f) from these items.

**Perceived family boundary.** Perceived family boundary were measured by asking the five questions. As the first question, the following item were asked: (a) when you think about what family means to you, you usually think of 1) your parents, siblings, or children, 2) your parents, siblings, children, grandparents, grandchildren, aunts, uncles, nephews, nieces or half-siblings, or 3) your parents, siblings, children, grandparents, grandchildren, aunts, uncles, nephews, nieces, half-siblings, first-
cousins, great-grandparents or great grandchildren. The participants were asked to choose one of the three choices. In addition to this, the following four questions were asked: (b) my family is composed of my parents, my sibling(s) and me; (c) I think my grandparents are included in my family; (d) I think my aunts, uncles, nephews and nieces are included in my family; and (e) I think my first-cousins are included in my family. The response options range from 1 (strongly disagree) to 7 (strongly agree).

**Perceived behavioral control toward family health history communication.**

Based on scales developed by Ajzen and Fishbein (1980) and Ajzen (1991; 2011), three items were used to measure perceived behavioral control toward family health history communication. The questions include (a) I am confident that I can communicate family health history with family members in next three months; (b) My communicating family health history with family members in the next three months is up to me; and (c) communicating family health history with family members would be easy. The response options range from 1 (strongly disagree) to 7 (strongly agree). These items were asked again after being modified to measure self-efficacy regarding the perceived family boundary, age, and gender in communicating family health history. The alpha ($\alpha = .64$) of these scales was slightly lower than the conventionally acceptable level (i.e., .70). Therefore, for the main study, I revised these items and added four more items: (d) I control whether I talk about family health history with other family members; (e) my family controls whether I talk about family health history with other family members; (f) I have control over my ability to talk about family health history with family members; and (g) if I want to, I can talk about family health history with my family members.

**Engagement.** To assess participants’ engagement or transportation in the cultural narratives, eight items from Green and Brock (2000) were used. Specifically,
the following items were used: (a) while I was reading the message, I could easily visualize the events in it taking place; (b) while I was reading the message, I was distracted by activities going on in the room around me [recoded]; (c) I could visualize myself in the scene of the events described in the message; (d) I was mentally involved in the message while reading it; (e) after finishing the message, I found it easy to put it out of my mind [recoded]; (f) the message affected me emotionally; (g) the events in the message are relevant to my everyday life; and (g) the events in the message have changed my life. The response options range from 1 (strongly disagree) to 7 (strongly agree). I created one scale by averaging item responses \(\alpha = .64\). The alpha of these scales was smaller than the conventionally acceptable level (i.e., .70), which indicated that the internal consistencies of this scale might be low. Therefore, for the main study, according to the values of Cronbach’s alpha if item deleted, I removed item (b) \(\alpha = .75\) and (e) \(\alpha = .72\).

Identification. Four questions were asked to assess participants’ identification with the cultural narrative message. These items include (a) the speaker of the message reminds me of myself; (b) while reading the message, I could imagine the message-speaker; (c) the speaker of the message is someone like me; and (d) I think the speaker of the message sounded like someone around my age. The response options range from 1 (strongly disagree) to 7 (strongly agree). I created one scale by averaging item responses. The internal consistency of the four items was acceptable \(\alpha = .74\).

Resistance to counter-arguing. Five items of counter-arguments were utilized to evaluate participants’ resistance to counter-arguments. Specifically, the following items were used for the measurements: (a) because family health history cannot perfectly predict the diseases that can be developed in the future, it is not important to
communicate about family health history in my family [recoded]; (b) it’s important to talk about family health history only if there is a specific health risk in my family [recoded]; (c) it’s not necessary to talk about family health history before marriage [recoded]; (d) it’s better to hide family health history [recoded]; and (e) it is not a good idea to discuss family health history with distant relatives [recoded]. The response options range from 1 (strongly disagree) to 7 (strongly agree). I created one scale by averaging item responses ($\alpha = .37$). The alpha of these scales was much smaller than the conventionally acceptable level (i.e., .70), which indicated that the internal consistencies of this scale might be severely low. Therefore, for the main study, according to the values of Cronbach’s alpha if item deleted, I removed item (a) ($\alpha = .42$) and (b) ($\alpha = .49$).

**Perceived evidence quality.** Perceived evidence quality was measured by employing a modified version of the Parrott et al. (2005) measures. Participants were asked four questions with the stem, “I think the information in the message is” that is followed by the four explanations: (a) accurate; (b) well-explained; (c) understandable; and (d) supported. The response options range from 1 (strongly disagree) to 7 (strongly agree). The internal consistency of the four items was high ($\alpha = .95$).

**Comprehension.** To examine participants’ comprehension of the cultural narrative messages, six questions based upon Parrott et al. (2005) were asked. The questions start with the heading “according to the message,” which is followed by six statements regarding the message contents related to important information about family health history communication;(a) according to the message, knowing family health history is significant for a family’s health; (b) according to the message, we inherit only genes from our family [recoded]; (c) according to the message, family
health history can help us make healthy choices to prevent diseases; (d) according to the message, it is necessary to update family health history on a regular basis; (e) according to the message, talking about family health history with family members is not important [recoded]; and (f) according to the message, some genes increase our chances of developing certain diseases. The response options range from 1 (strongly disagree) to 7 (strongly agree). The alpha (\(\alpha = .30\)) of these scales was much smaller than the conventionally acceptable level (i.e., .70), which indicated that the internal consistencies of this scale might be severely low. Therefore, for the main study, according to the values of Cronbach’s alpha if item deleted (\(\alpha = .60\)), I revised one critical item (b) (i.e., according to the message, we inherit only genes from our family [recoded]) by removing ‘only’ not to recode it when creating a scale.

**Perceived message effectiveness.** Perceived message effectiveness was assessed by employing Parrott et al. (2005) and Dillard et al. (2007). Specifically, the following items were used: I think the message I just read is (a) not persuasive (persuasive), (b) ineffective (effective), (c) not convincing (convincing), and (d) not compelling (compelling). The response options range from 1 (strongly disagree) to 7 (strongly agree). The internal consistency of the four items was acceptable (\(\alpha = .83\)).

**Behavioral intention.** Behavioral intention was measured by the following eight items: (a) I intend to get information about family health history for heart disease from my parents/grandparents/siblings/or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months; (b) I intend to get information about family health history for cancer from my parents/grandparents/siblings/or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months; (c) I intend to get information about family health history for stroke from my parents/grandparents/siblings/or other
biological relatives such as aunts, uncles, nephews, and nieces within the next three months; (d) I intend to share information about family health history for heart disease with my parents/grandparents/siblings/ or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months; (e) I intend to share information about family health history for cancer with my parents/grandparents/siblings/ or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months; (f) I intend to share information about family health history for stroke with my parents/grandparents/siblings/ or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months; (g) I intend to talk with my family members about what kind of family’s health history our family has; and (h) I intend to talk with my family members about changing behavior (such as drinking, eating, exercise, or smoking) to avoid health conditions related to our family health history. The response options range from 1 (unlikely) to 7 (likely). The internal consistency of the eight items was high ($\alpha = .95$).

**Phase 2 (Pilot Study) Summary**

According to the pilot study with 30 participants, means and standard deviations for each scale were calculated for manipulation check. Since the number of participants in each message condition was not enough (ten in total, five from each culture) for statistical analyses, I tried to complement the results based on mean differences by adding the interview results regarding participants’ evaluations of the three messages and their understanding of questionnaire. Especially, I tried to find the reasons why the mean values of the three message types were different from my expectation based on the message development procedure, and revised the messages as well as the questionnaire by connecting the statistical results to the participants’ interview data. In addition, as discussed previously, based on Cronbachs’ alpha and
Cronbach’s alpha if item deleted, several items were deleted or revised.

There were several words in the questionnaire that the Chinese and Korean participants couldn’t clearly understand such as ‘domineering’ (7 participants), ‘cliché’ (3 participants), ‘stroke’ (4 participants), and ‘atheistic’ (3 participants). The words participants couldn’t understand were revised or removed from the questionnaire. Especially, items and contents regarding stroke were removed from both questionnaire and three narratives. Therefore, in the third phase, the questionnaire and the narratives included only two diseases; heart disease and cancer. In addition, there were a few expressions or phrases the participants couldn’t understand such as ‘think less of a person’ (4 participants) and ‘inherit only genes from our family (most participants).’ Therefore, these expressions were also revised or removed from the questionnaire.

Several participants provided suggestions for message revision during the interviews. Several Chinese students indicated that they couldn’t identify with the narrator in the Chinese social-embeddedness narrative because of the content regarding insurance problems in China. They said since most Chinese students at Penn state are richer than most Chinese people, they didn’t experience any insurance-related problem in China. Therefore, I removed the content regarding lack of health insurance from the Chinese social-embeddedness narrative. In terms of the content regarding communication with father, some Korean and Chinese students agreed with the narrator’s perspective and found the message was effective to them, but other students were negative toward the content because they didn’t experience those communication problems in their lives. This suggests there are cultural differences between members belonging in same culture. Therefore, because of the two poles in the participant opinions, the content about communication with father in Korean and
Chinese social-embeddedness narratives was replaced with parents’ authority, which illustrates a more general value existing in authoritative societies.

In addition, a few Chinese participants thought Korean message was most effective because of the 1st and 4th paragraphs regarding talking about good health and communication after disease, and a few Korean participants thought Chinese message was most effective to them because of the 1st paragraph about marriage and family. However, they were not revised because these contents were developed based on specific socio-cultural contexts of each culture found in the formative research. Several participants also indicated that Euro-American message was most effective because they thought most college students preferred numbers as evidence to other types of contents. However, many of them acknowledged the other types of messages (i.e., Chinese or Korean social –embeddedness narratives) might best fit their cultural background although a few students still thought evidences based on numbers would be most effective in their cultures.
### Table 3-18

**Pilot Study Interview Summaries**

<table>
<thead>
<tr>
<th>No.</th>
<th>Ethnicities &amp; gender</th>
<th>Message(s)</th>
<th>Interview summaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Korean Female 1</td>
<td>1</td>
<td>Message 1 is the best. Message 3 is too specific. In terms of message 2, it seems that too specific explanation regarding message is out of the blue.</td>
</tr>
<tr>
<td>2.</td>
<td>Korean Female 2</td>
<td>2</td>
<td>Message 1 is the best. In our family, we also don’t talk about negative topics. We usually talk about good health and good things.</td>
</tr>
<tr>
<td>3.</td>
<td>Korean Female 2</td>
<td>2</td>
<td>Message 3 is the best. People in my culture prefer numbers to other types of information.</td>
</tr>
<tr>
<td>4.</td>
<td>Korean Female 3</td>
<td>3</td>
<td>Message 1 is the best. I like counter-arguments in the first message. The content of message 3 is good, but I couldn’t be mentally involved easily.</td>
</tr>
<tr>
<td>5.</td>
<td>Korean Female 1</td>
<td>1</td>
<td>Message 1 is the best. I like the first paragraph. Also, communication with father is good I think message 2 is too much emphasizing family. It doesn’t seem to focus on myself. Message 3 - contents about possibility is informative, but it seems it is pushing me too much.</td>
</tr>
<tr>
<td>6.</td>
<td>Korean Female 3</td>
<td>3</td>
<td>Message 3 is best. Message contents are informative. I cannot empathize with message 1 and 2 because of the content about father.</td>
</tr>
<tr>
<td>7.</td>
<td>Korean Female 3</td>
<td>3</td>
<td>Message 1 is best. I could emphasize with the</td>
</tr>
</tbody>
</table>
paragraph about communication with father. But the content in message 3 was also good.

8. Korean Female 2  
Message 3 is best because of specific examples. Message 1 is also good considering my cultural background, but because of the paragraph about communication with father, I didn’t choose it. In terms of the intro, message 1 is the best. Message 3 is easy to read like an advertisement, but it’s hard for me to be personally involved in it.

9. Korean Male 1  
Message 3 is the best. Message 1 is too broad and not specific. It needs more supports.

10. Korean Male 1  
Message 3 is best. I think specific information such as cholesterol is very helpful. And message 1 is better than message 2. I don’t think these days people care too much about spouses’ health history. Also contents about good health and good food are prevalent.

11. Korean Male 1  
Message 3 is the best – specific numbers and specific contents about FHH were good. I think I’m relevant to the contents (message 1 & 2) about communication with father. Also, content about insurance is not persuasive.

12. Korean Male 2  
Message 1 is best. Intro in message 2 (family marriage) is good, but I cannot be mentally involved in the content about insurance. Specific contents in
message are good.

13. Korean Male 2 Message 1 is best because it sounds very comfortable to me. It’s like a conversation or an essay. I guess it’s because of the good wording of the message. But, there are not enough supports in the message. On the contrary, the message 3 is more credible because it includes specific information and numbers. But I think it would be better to contain information relating to heart disease, cancer, or stroke than cholesterol.

14. Korean Male 3 Message 3 is best. I think Koreans are more attracted by numbers. When we listen to doctors’ explanation, it’s more trustworthy when they mention specific percentage of something. To me, message 1 and 2 are similar to each other. But because of the intro (good health and good exercise etc.) I think message 1 is better than message 2.

15. Korean Male 3 Message 2 is best because of family marriage content. Contents about discrimination toward people with family health history could reflect my cultural background well. Message 3 was like a pamphlet - and the example about cholesterol was too long. Message 1 was most comfortable for me to read.

16. Chinese 1 Message 3 is best. I like the expression ‘you’ because
Female it’s more direct. I also like numbers in message 3.

17. Chinese 2 Message 1 is best, but except for insurance, message Female 2 is better because it seems more objective and 2 is better because it seems more objective and persuasive. I think message 1 is forcing me too much. Message 3 is academic.

Female 2 is better because it seems more objective and persuasive. I think message 1 is forcing me too much. Message 3 is academic.

18. Chinese 3 Culturally message 2 is best – especially the first Female paragraph about family and marriage. But to me, message 3 is best because I think data in the message is very good. Message 1 is not good because there are repetitive contents, which makes me uncomfortable.

19 Chinese 3 Message 2 is best – especially content about body Female balance. But communication with father is not my problem. To me, message 3 is best because it reminds me of my experience.

Female balance. But communication with father is not my problem. To me, message 3 is best because it reminds me of my experience.

20 Chinese 3 Message 3 is best especially the specific information Female with numbers (the third paragraph). But, in terms of culture, I think message 1 best describes my culture. Especially, the expressions of my family, content about communication with father, communicating after specific disease are very good. I could be involved with message 1 and 3 better than message 2 because message 2 sounds like a textbook.

Female especially the specific information with numbers (the third paragraph). But, in terms of culture, I think message 1 best describes my culture. Especially, the expressions of my family, content about communication with father, communicating after specific disease are very good. I could be involved with message 1 and 3 better than message 2 because message 2 sounds like a textbook.

21. Chinese 2 Message 1 is best for my culture although it sounds Female like a lecture. Message 2 is too straightforward, but I think the first paragraph about marriage is very
relevant to my culture. But personally I think message 3 is best because of the first and fourth paragraphs. This message sounds friendly and conversational, and contains good information.

22, Chinese Female

Message 3 is best because of detailed and clear examples about family health history. Message 1 is worse because the first paragraph (good health, good exercise etc.) is too general and the fifth paragraph concerning communication with father. I think the first paragraph in message 2 is good – family marriage is very important in China. But I don’t think body balance is much related to health. They are different.

23, Chinese Female

Message 1 is best reflecting my cultural background. Especially, I agree with the content concerning communication with father. Although I think the first paragraph in message 2 (family marriage) is better than message 1, I didn’t choose it because of the insurance content. Insurance is not very expensive in China.

24, Chinese Male

Message 3 is best. Information in this message is beneficial. Message 1 is casual, but the statements in message 2 are good.

25, Chinese Male

Message 2 is best. I think the relationship between me and my spouse is important. ‘Family marries
family’ – in my culture, marriage between families is very important. To me, it seems message 1 and 3 are very similar to each other. In China, I don’t think families have basic knowledge about health and health history. In fact, Chinese people don’t talk about this kind of thing. The content about communication with father is very good.

26. Chinese Male 2 Message 2 is best. The fourth paragraph about body balance is very good. Also, intro about family marriage is better than the other messages. At the same time, message 3 is very specific and scientific, so it’s very convincing.

27. Chinese Male 1 Message 1 is best. I think message 1 focuses on my family, so it’s reasonable. But message 2 considers marriages, which doesn’t make sense to me. Also, I think body balance is not important. In terms of message 3, specific percentage about cholesterol is not credible because I don’t think gene decides everything. Specific number of 50% cannot be possible.

28. Chinese Male 1 I chose message 3 because of its detailed information. I’m from a mixed cultural background, so I don’t know exactly what my cultural identification is. But, I think message 3 is best in supporting its argument with evidences.
29 Chinese Male 3 I think message 3 is best because other two messages failed to reflect my culture. In terms of message 2, marriage is important, but we don’t care about insurance – Chinese students at Penn state are richer than Chinese people in China. Also, since we don’t care too much about health, I think the paragraphs in message 1 are not relevant to us.

30. Chinese Male 3 Message 1 is best because of the 4th paragraph – we don’t talk about family health history until something happens. The content about communication with father is good, but insurance problem in message 2 is not relevant to me.

Note: Message 1 = Korean social-embeddedness message, Message 2 = Chinese social-embeddedness message, and Message 3 = Euro-American autonomy control message
Phase 3: Randomized Trial

To answer the research questions and hypotheses about the persuasiveness of cultural narratives based on types of agency (social-embeddedness vs. autonomy) and cultural archetype manipulation (South Korean, Chinese, & Euro-American control) and the roles of participants’ culture influencing subjective norms, health beliefs, perceived behavioral control, message outcomes and behavioral intentions, a total of 664 subjects participated in the randomized trial from April 8 to November 4 in 2014. Phase 3 of the study included the 3x3 (i.e., South Korean participants, Chinese participants, & Euro-American participants * South Korean social-embeddedness narrative, Chinese social-embeddedness narrative, & Euro-American autonomy control narrative) between subjects factorial design.

Participants

Cultural identity. To know participants’ cultural identity the following question was asked: To which culture do you most identify with? Response options were 1) US, 2) South Korea, 3) China, and 4) other [what if other]. Originally 315 participants self-reported their identity as American with 165 as Korean, 178 as Chinese, and 10 as other. Among the 10 participants who indicated that their identities are in the category of ‘other,’ 4 participants (Switzerland, China-Europe, Japan-China, and Canada-Korea) were removed, and 6 percipients’ identities were recoded according to short answers describing cultural identities and their language use. Finally, the data include 317 Americans (47.7 %), 169 Koreans (25.5 %) and 178 Chinese (26.8 %).

Demographics. To assess participants’ self-identified ethnicity, the following question was asked; what is your ethnicity? Responses are options are 1) European American, 2) Hispanic or Latino, 3) African American, 4) Asian: Korean, 5) Asian:
Chinese, 6) Asian: other, 7) Native American or American Indian, 8) other [What if other]. Many participants \((n = 261; 39.3\%\) responded that their ethnicity is European American, with 27.9\% \((n = 185)\) reporting their ethnicity as Chinese and 26.7 \(\%\) \((n = 177)\) as Korean. Only ten (1.5 \%) participants named their race as Hispanic or Latino, and nine participants said identified themselves as African American. There were seven (1.1 \%) ‘other’ Asian participants and two (0.3 \%) self-identified American Indian participants. Thirteen participants said their ethnicity is in the category of ‘other,’ and five of them said they are just Americans, and the others described their ethnicity as multi-racial (e.g., Hispanic - Middle East, Chinese – East European etc.).

To assess participants’ demographic information, years in college, gender, age, religion, and major were also asked. Participants ranged from 17 to 32 years of age \((M = 20.30; \text{SD} = 2.23)\). 33.4 \(\%\) \((n = 222)\) of the participants self-reported their education as freshman, with 25.2 \(\%\) \((n = 167)\) as sophomore, 21.5 \(\%\) \((n = 143)\) as junior, and 19.9 \(\%\) \((n = 132)\) as senior. About half of the participants indicated that they are female \((n = 360, 54.2 \%)\) and about half indicated that they are male \((n = 304, 45.8 \%)\). With regard to participants’ religion, 34.9 \(\%\) \((n = 232)\) responded they didn’t have a religion with 30.9 \(\%\) \((n = 205)\) reporting their religious identity as Christian, 22.6 \(\%\) \((n = 150)\) as Catholic, and 4.5 \(\%\) \((n = 30)\) as Buddhist. 7.1 \(\%\) \((n = 47)\) said their religion was in the category of ‘other.’ Majority of \((n = 125, 70.2 \%)\) Chinese participants responded they didn’t have any religion. 40.7 \(\%\) \((n = 129)\) of American participants and 11.2 \(\%\) \((n = 19)\) Korean participants said they were catholic, and 56.8 \(\%\) \((n= 96)\) of Korean participants and 28.1 \(\%\) \((n = 89)\) of American participant stated their religious identity as Christian.

In addition, due to the characteristics of family health history communication, participants were asked if their biological parents and grandparents were living. 98.9 \(\%\) \((n = 657)\) of the
participants responded their biological mother was living, with 97.7% \((n = 649)\) reporting their biological father was living. In addition, 85.2% \((n = 566)\) of the participants responded their biological grandmother was living with 67.0% \((n = 445)\) reporting their biological grandfather was living.

**Cultural background.** To assess participants’ cultural background the following question was asked; Choose the best answer that describes yourself. Response options are 1) I was born and mostly raised in the US, 2) I was born and mostly raised in South Korea, 3) I was born and mostly raised in China, 4) I immigrated from South Korea, 5) I immigrated from China, 6) Other [What if other]. Almost half of participants \((n = 303; 45.6\%)\) responded that they were born and mostly raised in the US, 19.6% \((n = 130)\) said they were born and mostly raised in South Korea, and 26.5% \((n = 176)\) reported they were born and mostly raised in China. 3.2% \((n = 21)\) responded that they immigrated from South Korea with 0.6% \((n = 4)\) from China. 4.5% \((n = 30)\) responded their cultural background was in the category of ‘other.’ In terms of each cultural identity, 92.4% \((n = 293)\) of American participants responded that they were born and mostly raised in the US. 73.4% \((n = 124)\) of Korean participants responded they were born and mostly raised in South Korea and 9.5% \((n=16)\) said they immigrated from South Korea. 95.5% \((n = 170)\) of Chinese participants responded they were born and mostly raised in China, and 2.2% \((n = 4)\) said they immigrated from China.

**Years in US.** To assess the length of participants’ stay in the US, the following question was asked: How long have you been in the US. The response options are 1) 1-3 years, 2) 4-6 years, 3) 7-10 years, 4) 10-15 years and 5) longer than 15 years. 45.9% \((n = 305)\) of the participants stated they had been in the US for longer than 15 years with 28.6% \((n = 190)\) reporting for 1-3 years, 15.5% \((n = 103)\) for 4-6 years,
7.4% (n = 49) for 7-10 years, and 2.6% (n = 17) for 10-15 years. 94% (n = 298) of the American participants indicated they had stayed in the US for longer than 15 years. 36.1% (n = 61) of the Korean participants stated they have been in the US for 1-3 years with 31.4% (n = 53) reporting for 4-6 years and 23.1% (n = 39) for 7-10 years. 70.8% (n = 126) of the Chinese participants said they had stayed in the US for 1-3 years with 25.8% (n = 46) reporting for 4-6 years.

**English competency.** TOEFL (Test of English as a Foreign Language) score was used to measure English competency: What is your TOFEL score (if you have)? 39.6% (n = 263) of the participants reported their TOEFL scores, and 257 of the participants took a new IBT TOEFL test with the perfect score of 120. Their score ranged from 70 to 120 (M = 96.91; SD = 9.51). This result shows most of the participants’ English competency was enough for this study.

**English use.** The following three items were used to assess participants’ English use: (a) what language do you mostly speak at home; (b) what language do you mostly count numbers in; and (c) what language do you mostly read in? The response options are 1) English, 2) Mandarin Chinese, 3) Korean, and 4) other [what if other]. 46.1% (n = 306) of the participants responded they mostly speak at home in English with 26.2% (n = 174) reporting in Mandarin Chinese and 24.7% (n = 164) in Korean. 54.4% (n = 361) stated they mostly count numbers in English with 23.9% (n = 159) indicating in Mandarin Chinese and 19.1% (n = 127) in Korean. 64.5% (n = 428) responded they mostly read in English with 20.5% (n = 136) reporting in Mandarin Chinese and 13.7% (n = 91) in Korean. Of the 317 American participants, 93.4% (n = 296) mostly speak, 97.2% (n = 308) mostly count numbers, and 98.7% (n = 313) mostly read in English. Of the 169 Korean participants, 91.1% (n = 154) mostly speak, 73.4% (n = 124) mostly count numbers, and 53.5% (n = 90)
mostly read in Korean. Of the 178 Chinese participants, 93.3 % (n = 166) mostly speak, 84.3 % (n = 150) mostly count numbers, and 73.6 % (n = 131) mostly read in Mandarin Chinese.

**Health conditions mentioned in the messages.** To assess participants’ experiences of the three health conditions (cancer or heart diseases), the following question were asked: Has a doctor or other health care provider diagnosed you with any of the following conditions. The response options are 1) cancer, 2) heart disease and 3) none. Of the 664 participants, 4 (0.6 %) stated a doctor had diagnosed them with cancer, and 11 (1.7 %) said they had been diagnosed with heart disease.

**Recruitment and Procedures**

G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) was used to calculate the sample size for a one-way, fixed effect, and omnibus ANOVA. I expected the interaction between cultural components within a message and participants’ cultural background/identity to have a small effect on the outcome variables. Therefore, I entered an effect size of .18, an alpha of .05, and a power of .80 for an ANOVA with nine groups (South Korean, Chinese, & Euro-American * South Korean social-embeddedness, Chinese social-embeddedness, & Euro-American autonomy control). This calculation indicated that 477 participants (or 157 participants per each cultural background) are needed to detect an effect size of .18. In addition, to compare Asian culture vs. American culture, I recruited twice as many American participants as participants from each Asian culture (Korean or Chinese participants).

The researcher submitted the Institutional Review Board (IRB) documents in spring 2014 and got an approval before the study started in the same semester. Participants were recruited in two ways for the randomized trial. First, the study was listed as the basic public speaking course research pool of the Department of
Communication Arts and Sciences for spring and summer semesters 2014. Since every undergraduate student attending the university should take this course for graduation, the population represents a generalized population in terms of many aspects including major, gender, etc. However, based on the research purposes, the data were classified by the ethnicities of participants, and American participants and international students who originally came from South Korea and China were included for data analysis. Participants assigned to the study from the basic public speaking course were given a range of days to participate in the study and received 2% credit in their course for completing the study. Before beginning the survey, students read an online IRB-approved informed consent form. When they accessed the survey, participants first read an introductory screen. This screen told participants that the survey was about family health history communication and would take them approximately 30 minutes to complete.

The majority of undergraduate students attending this University are, however, composed of American students (mostly European Americans) and thus, more South Korean and Chinese students’ participation was needed. According to the Global Program, currently 899 Korean students and 1813 Chinese students are studying at Penn State. Therefore, the researcher contacted the Global Program to announce this study and recruit the 320 South Korean and Chinese participants. The announcements included advertisements that every participant was paid $7 for their participation in the online survey. The director or the Global Program sent out the recruitment email to Chinese and South Korean students for the researcher in spring and fall 2014. Although enough Chinese participants could be recruited through the Global Program, only half of necessary Korean participants completed the survey at Penn State. Therefore, the researcher contacted Korean Student Associations at Temple
University, George Washington University and the University of Oklahoma to announce this study and finally recruited the half of necessary Korean undergraduate students to participate in the third phase through the KSAs.

**Narrative Evidence: Message Consistencies**

Following Parrott et al. (2005), several items were controlled for message consistencies. All narratives were titled as “Talk about Your Family Health History,” and included a note about source information (*Talk Health History* campaign). Narratives range from 603 to 615 ($M = 607.3$) words in length and Flesh-Kincaid for all the narratives range from 8.6 to 9.2 (8-9th grader). In all narratives, the narrator shares the same information regarding the definition of family health history, two disease conditions (cancer and heart disease), the reasons of family health history communication, and when/how to collect it and what kind of information should be collected. Table 3-19 shows what content was held constant as evidence across the three conditions. The Korean and Chinese messages were identical in content for paragraphs three, five, and six. However, to emphasize agency, even some of the headings were revised to emphasize ‘your family’ versus ‘you.’ The Korean message included 25 uses of ‘your family’ and only three uses of ‘you’ that do not appear in headings. The Chinese message includes 22 uses of ‘your family’ outside the headings and four uses of ‘you.’ The Euro-American message includes five uses of ‘your family’ outside of headings and 22 uses of ‘you’—thus comprising a strong effort to revise agency in a manner that would guide participant perceptions. As a result, participants in Phase 3 received one of the following messages. Messages were either:

(a) South Korean social-embeddedness narrative, (b) Chinese social-embeddedness narrative and (c) Euro-American autonomy control narrative.
Table 3-19

South Korean Social-embeddedness Narrative for Phase 3

“Talk about Your Family Health History”

Do you know your family health history? Your family wants to live a healthy life. Korean families talk about good health, good food, and exercise. But, does your family avoid talking about cancer or heart disease history in your family? Just talking about good health cannot prevent disease. Living a healthy life also requires understanding health risks. This is why your family should know about their health history.

What is family health history? Family health history is information about health and disease in your family. It also includes information about lifestyle, such as eating habits and exercise and where you and your family live.

Why is family health history important? Your family inherits more than just culture, values, and looks from the ancestors of your family. Your family also inherits genes. Some genes protect your family from developing certain diseases. However, some genes increase the chance that you will develop certain diseases. Knowing your family health history helps your family to make informed choices to prevent disease. There are often steps that your family can take to prevent illness. For example, your family might change what they eat and how often they exercise. Members of your family can also see a physician to discuss getting medical tests early and often for family-related diseases.

Your family may think there is no specific reason to talk about family health
history. Your family members may start to talk about cancer history or heart disease history only after a family member has experienced a serious warning sign. Perhaps none of your family members are having health problems now. But, your family may prepare for the future and perhaps avoid serious health problems by talking about family health history now. Prevention is always better than regret.

Who should your family members collect your family health history information from? First, collect and share family health history information for cancer, and heart disease about yourself and then about your parents and your siblings. Next, gather information from your grandparents, aunts, uncles, and cousins and share with family members. Your family should at least update the information each year. Doing so can help your family stay informed of disease risks.

Your family members may feel uncomfortable asking about other members’ health history. They may feel that other members don’t want to talk about experiences with cancer, heart disease, or other medical history. Maybe parents think their authority and sense of responsibility will be threatened if they reveal serious health issues. But, you and your parents should start sharing health history with each other. Afterwards, tell your parents that you love and respect them, even if they become ill.

What should your family members collect?

- Biological relatives’ names and their relationships to you (mother, brother, etc.).
- Their ethnicity, race or family origin.
- The history of cancer, and heart disease, together with other health conditions they have experienced.
• Their ages when a diagnosis was made for each condition.

• Age and cause of death for grandparents, parents, siblings, and aunts and uncles.

• Their occupations and whether they smoked.

Family health history is not something to hide or to be ashamed of. It may be used as a preventive tool that is essential for your family’s health. Your family may think it is difficult to talk about these kinds of private issues with your more distant relatives. But, your family can show just how important family is by having these conversations.

Do you better understand why knowing family health history is important now? For you and your family’s health, start talking about health history with your family members today.

Note: The source of information is the Talk Health History campaign (http://www.talkhealthhistory.org/family/faq.shtml).
Do you know your family health history? Family health history information is an important preventive tool for your family’s future. You and your family should learn about your family’s health history for cancer or heart disease. As is said in China, because “a family marries a family,” when you get married, your family will want to learn about your future spouse’s family health history, too. Prevention is always better than regret.

What is family health history? Family health history is information about health and disease in your family. It also includes information about lifestyle, such as eating habits and exercise and where you and your family live.

Why is family health history important? Your family inherits more than just culture, values, and looks from the ancestors of your family. Your family also inherits genes. Some genes protect your family from developing certain diseases. However, some genes increase the chance that you will develop certain diseases. Knowing your family health history helps your family to make informed choices to prevent disease. There are often steps that your family can take to prevent illness. For example, your family might change what they eat and how often they exercise. Your family can also see a physician to discuss getting medical tests early and often for family-related diseases.

Your family may have reasons for thinking that family health history is not
important. Your family may think “body balance is important for your health.” Body balance might be important for your health. But, family health history is essential to reduce health risks in your family such as cancer and heart disease. Therefore, regardless of body balance, your family still needs to talk about health history.

**Who should your family members collect your family health history information from?** First, collect and share family health history information for cancer, and heart disease about yourself and then about your parents and your siblings. Next, gather information from your grandparents, aunts, uncles, and cousins and share with family members. Your family should at least update the information each year. Doing so can help your family stay informed of disease risks.

Your family members may feel uncomfortable asking about other members’ health history. They may feel that other members don’t want to talk about experiences with cancer, heart disease, or other medical history. Maybe parents think their authority and sense of responsibility will be threatened if they reveal serious health issues. But, you and your parents should start sharing health history with each other. Afterwards, tell your parents that you love and respect them, even if they become ill.

**What should your family members collect?**

- Biological relatives’ names and their relationships to you (mother, brother, etc.).
- Their ethnicity, race or family origin.
- The history of cancer, and heart disease, together with other health conditions they have experienced.
- Their ages when a diagnosis was made for each condition.
- Age and cause of death for grandparents, parents, siblings, and aunts and uncles.

- Their occupations and whether they smoked.

Family health history is not something to hide or to be ashamed of. It may be used as a preventive tool that is essential for your family’s health. Your family may think it is difficult to talk about these kinds of private issues with your more distant relatives. But, your family can show just how important family is by having these conversations.

Do you better understand why knowing family health history is important now? For you and your family’s health, start talking about health history with your family members today.

Note: The source of information is the Talk Health History campaign (http://www.talkhealthhistory.org/family/faq.shtml).
Do you know your family health history? One of the greatest joys in life is being healthy. For you to live a joyful and healthy life, you should know about your family’s health history. For example, does cancer or heart disease run in your family? Then, you should know and talk about it because it is an important preventive tool for your future. Prevention is always better than regret.

What is family health history? Family health history is information about health and disease in your family. It also includes information about lifestyle, such as eating habits and exercise, and where you and your family live.

Why is family health history important? You inherit more than just culture, values, and looks from your family and your ancestors. You also inherit genes. Some genes protect you from developing certain diseases. However, some genes increase the chance that you will develop certain diseases. Knowing your family health history helps you to make informed choices to prevent disease. There are often steps that you can take to prevent illness. For example, you might change what you eat and how often you exercise. You can also see a physician to discuss getting medical tests early and often for family-related diseases.

Let’s say that you have a family health history of high cholesterol. If your biological father has been diagnosed with a gene that increases risk for high cholesterol, then, you have a 50% chance of inheriting the gene. If you have five
siblings, each one has a 50% chance of inheriting the gene that increases risk for high cholesterol. Since high cholesterol causes heart disease, knowing this information is very important to you. Similarly, if you have a family health history of cancer, your risk may be greater for getting the disease than someone with no family health history of cancer. Knowing family health history can help you prevent the disease if you adopt behaviors to lower your risk. This includes telling your doctor about your family health history and getting medical tests to screen for disease. This is why family health history is so important.

**Who should you collect your family health history information from?**

First, collect family health history information for cancer, and heart disease about yourself and then from your parents and your siblings. Next, you should gather information from your grandparents, aunts, uncles, and cousins. You should at least update the information each year. Doing so can help you stay informed of disease risks.

**What should you collect?**

- Biological relatives’ names and their relationships to you (mother, brother, etc.).
- Their ethnicity, race or family origin.
- The history of cancer, and heart disease, together with other health conditions they have experienced.
- Their ages when a diagnosis was made for each condition.
- Age and cause of death for grandparents, parents, siblings, and aunts and uncles.
- Their occupations and whether they smoked.
Family health history can give you the knowledge you need to take control of your health. If you decide to collect your family health history today, you will be able to decrease your risk of getting serious diseases in the future. Therefore, family health history is a prevention tool that is essential for you and your family’s health. So, you should talk about family health history in your family. You might also help your family members know about their family health history.

Do you better understand why knowing family health history is important now? For you and your family’s health, start talking about family health history today.

Note: The source of information is the Talk Health History campaign (http://www.talkhealthhistory.org/family/faq.shtml).
**Instrumentation**

Many of the measures on the survey in phase 3 are the same or similar to the pilot test. However, several of the measures were revised based on the measurement analysis and qualitative responses from the pilot study. The survey consists of pre-message and post-message measures. To test hypotheses and research questions proposed earlier, measurement related to the following constructs were used. The independent variables relating to participants’ current conditions and covariates are: (a) current knowledge about family health history; (b) current communication about family health history; (c) narrative tendencies; (d) baseline for health status; and (e) integration into the US culture. The independent variables (and potential mediating variables) relating to TPB are (a) general attitude toward family health history communication; (b) genetic essentialism; (c) transpersonal and paranormal belief; (d) spirituality; (e) extrinsic-intrinsic religious orientation; (f) subjective norms about family health history communication; (g) stigma beliefs; (h) norms related to power dynamics in a family; (i) perceived family boundary; and (j) perceived behavioral control toward family health history communication. Manipulation check measures of the cultural narrative type were assessed at post-test to assess whether manipulations were perceived as intended. The dependent variables regarding message processing are (a) engagement; and (b) identification. The dependent variables relating to outcomes of message processing are: (a) perceived message quality; (b) comprehension; (c) perceived message effectiveness; (d) resistance to counter-arguing; and (e) behavioral intentions.

To examine each item (Clark & Watson, 1995) and the distribution of the data (Scott & Mazhindu, 2005), item-analysis for normal distribution and scale analysis were performed before conducting main analyses for research questions and
hypotheses. These included analyzing skewness and kurtosis of the items. Due to the large sample size, it seemed that the $t$-statistics (the skewness or kurtosis statistic divided by its standard error) might be too sensitive to identify meaningful deviations from normality (Tabachnick & Fidell, 2007). According to literature, skewness should not influence statistical estimates as long as they are smaller than the absolute value of two (Curran, West, & Finch, 1996; Muthén & Kaplan, 1985; Tabachnick & Fidell, 2007). In addition, West, Finch, and Curran (1995) proposed a substantial difference from normality as an absolute kurtosis value greater than seven. Therefore, the researcher examined if skew statistics were greater than two and kurtosis statistics were greater than seven.

To check for unidimensionality of the measures, maximum likelihood exploratory factor analyses were conducted using principal axis factoring to explain the maximum variance and take into account the correlation of items (Hair, Anderson, Tatham, & Black, 1998). The 60 vs. 40 rule was applied to eigenvalues above one set to determine the extractable factors (Hair et al., 1998). Before performing the EFAs, the Kaiser, Meyer, Olkin (KMO) measure of sampling adequacy was checked to assess the appropriateness of factor analyzing the items. According to Kaiser (1974), values greater than .50 indicate that factor analysis of the variables is appropriate. For all scales, confirmatory factor analyses were also performed to understand the measurement model of the scales. For CFA, indices developed by Hu and Bentler (1999) (i.e., CFI > .95; SRMR < .08; RMSEA < .06) were employed to assess the model fits. SPSS version 22 and IBM AMOS version 22 were used to perform these analyses and significance was assessed at the .05 level. Finally, the reliability of the scales was calculated by using Cronbach’s alpha.
Measures.

Baseline for health status. To assess participants’ baseline for health status, three questions modified from the 36-item Short Form Questionnaire (SF-36) (Ware, Kosinski, & Keller, 1994) were used; (a) my health now limits my physical activities such as lifting heavy objects or pushing a vacuum cleaner; (b) during the past 4 weeks, I had problems with my work or other regular daily activities as a result of my physical health; and (c) during the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)? The response options for (a) and (b) range from 1 (strongly disagree) to 7 (strongly agree), and the response options for (c) range from 1 (extremely) to 7 (not at all) [recoded]. The exploratory factor analysis (*KMO* = .72) indicated that the items formed a unidimensional scale that accounted for 77.32% of the variance in the items. Confirmatory factor analyses indicated a perfect model fit, with the measure having three items and a justified model (*df* = 0). A composite scale formed from these items had a reliability of *α* = .66 (*M* = 2.15, *SD* = 1.32)

Current knowledge about family health history. Four items were asked to measure the participants’ current knowledge about family health history. Specifically, the following items were asked: (a) I know whether my parents had health history of cancer; (b) I know whether my parents had health history of heart disease; (c) I know whether my grandparent had health history of cancer; and (d) I know whether my grandparents had health history of heart disease. The response options range from 1 (not at all) to 7 (very well). The exploratory factor analysis (*KMO* = .72) indicated that the items formed a unidimensional scale that accounted for 63.33% of the variance in the items. A confirmatory factor analysis was performed, showing a good model fit ($\chi^2 = .85$, *df* = 1, *p* = .36, SRMR = .01, CFI = 1.00, RMSEA = .00). A
composite scale formed from these items had a reliability of $\alpha = .86$ ($M = 4.64$, $SD = 2.09$).

**Current communication about family health history.** Twelve items were used to measure the frequency of communication regarding family health history. These items include specific communication experiences regarding two diseases that were mentioned in the three messages; cancer and heart disease. Specifically, items include:

(a) I have talked with my family members about whether we have a family history of cancer; (b) I have talked with my parents about whether we have a family history of cancer; (c) I have talked with my grandparents about whether we have a family history of cancer; (d) I have talked with my family members about whether we have a family history of heart disease; (e) I have talked with my parents about whether we have a family history of heart disease; (f) I have talked with my grandparents about whether we have a family history of heart disease; (g) I have talked with my family members about whether to share the family health history of cancer with other family members; (h) I have talked with my parents about whether to share the family health history of cancer with other family members; (i) I have talked with my grandparents about whether to share the family health history of cancer with other family members; (j) I have talked with my family members about whether to share the family health history of heart disease with other family members; (k) I have talked with my parents about whether to share the family health history of heart disease with other family members; and (l) I have talked with my grandparents about whether to share the family health history of heart disease with other family members. The response options range from 1 (not at all) to 7 (frequently). The exploratory factor analysis ($KMO = .90$) indicated that the items formed a unidimensional scale that accounted for 68.23% of the variance in the items. A confirmatory factor analysis was
performed, resulting in an adequate model fit ($\chi^2 = 477.31, df = 32, p < .001, \text{SRMR} = .05, \text{CFI} = .96, \text{RMSEA} = .14$) although RMSEA is high. A composite scale formed from these items had a reliability of $\alpha = .96 (M = 3.09, SD = 1.63)$.

**Narrative tendencies.** To control participants’ preference for receiving narratives as a predisposition (Newman, 2005), seven modified items of the narrative tendencies construct developed by Newman (2005) were used to measure an individual’s predisposition for creating and finding narratives: (a) I enjoy hearing funny stories; (b) I enjoy making people laugh with my stories; (c) I enjoy telling stories; (d) my best stories are about things that happened to me; (e) I often exaggerate to make my stories more entertaining; (f) I enjoy silence [recoded]; and (g) I think telling stories is a waste of time [recoded]. The response option range from 1 (strongly disagree) to 7 (strongly agree). Preliminary analyses indicated that one item was skewed at an absolute value of 2 and leptokurtic at the absolute value of 7: (a) I enjoy hearing funny stories. Therefore, square root and log transformations were performed to remove skewness and kurtosis, but skewness statistics worsened for each of the transformations. After the item analysis, a maximum likelihood exploratory factor analysis was performed to identify items to be removed for analysis among the original items. The EFA ($KMO = .79$) indicated that the items formed a multi-dimensional scale that consisted of two factors: Factor 1: (a) I enjoy hearing funny stories; (b) enjoy making people laugh with my stories; (c) I enjoy telling stories; (d) My best stories are about things that happened to me; (e) I often exaggerate to make my stories more entertaining ($\alpha = .78$); and factor 2: (f) I enjoy silence [recoded]; (g) I think telling stories is a waste of time [recoded] ($r = .21; p < .01$). Then, several confirmatory factor analyses were performed to find a best model by removing and adding items, and finally by removing (f) I enjoy silence and
(e) I often exaggerate to make my stories more entertaining. EFA ($KMO = .80$) indicated that the items formed a unidimensional scale that accounted for 51.70% of the variance in the items. A confirmatory factor analysis was performed with the five items, showing an adequate model fit ($\chi^2 = 26.142$, $df = 4$, $p < .001$, SRMR = .03, CFI = .98, RMSEA = .09). A composite scale formed from these items had a reliability of $\alpha = .82$ ($M = 5.84$, $SD = .92$).

**Integration into the US culture.** To control participants’ integration into the US culture, in addition to the length/duration of participants’ stay in the US, five items of modified socio-cultural adaptation scales developed by Ward and Kennedy (1999) were used. The scales include the following items: (a) I have several American friends; (b) I have difficulties in taking an American perspective on the culture [recoded]; (c) I like going to American social gatherings; (d) I enjoy American food; and (e) I have difficulties in understanding American family relationships [recoded]. The response options range from 1 (strongly disagree) to 7 (strongly agree). The exploratory factor analysis ($KMO = .82$) indicated that the items formed a unidimensional scale that accounted for 51.03% of the variance in the items. A confirmatory factor analysis was performed with the five items, showing an adequate model fit ($\chi^2 = 4.97$, $df = 4$, $p = .29$, SRMR = .01, CFI = 1.00, RMSEA = .02). A composite scale formed from these items had a reliability of $\alpha = .84$ ($M = 5.45$, $SD = 1.31$).

**General attitude toward family health history communication.** Semantic differential scales drawn from Ajzen (2011), Petty, Cacioppo, and Schumann (1983), and Osgood, Suci, and Tannenbaum’s (1957) were used to measure the general attitude toward family health history communication. Eleven items with the stem “communicating family health history with family members would be” were asked.
The response options range (a) from 1 (foolish) to 7 (wise); (b) from 1 (useless) to 7 (useful); (c) from 1 (worthless) to 7 (valuable); (d) from 1 (important) to 7 (not important) [recoded]; from 1 (necessary) to 7 (not necessary) [recoded]; (e) from 1 (life-saving) to 7 (not relevant) [recoded]; (f) from 1 (a bad idea) to 7 (a good idea); (g) from 1 (unpleasant) to 7 (pleasant); (h) from 1 (unfavorable) to 7 (favorable); (i) from 1 (harmful) to 7 (beneficial); and (j) from 1 (helpful) to 7 (not helpful) [recoded]. The exploratory factor analysis ($KMO = .92$) indicated that the items formed a unidimensional scale that accounted for 61.74% of the variance in the items. A confirmatory factor analysis was performed with the five items, showing an adequate model fit ($\chi^2 = 243.43, df = 36, p < .001$, SRMR = .04, CFI = .97, RMSEA = .09). A composite scale formed from these items had a reliability of $\alpha = .94$ ($M = 5.78, SD = 1.11$).

**Genetic essentialism.** Six items based on Parrott and colleagues (2012) were used to measure genetic essentialist beliefs. Specifically, the following items were asked: (a) genes are the most important factor in determining a person's health; (b) genes are more important than one's own behavior in determining one's health; (c) the genes one is born with determine how healthy one will be throughout life; (d) genes determine the effects of one's own behavior in determining one's health; and (e) genes are the most important contributor to human health. The response options range from 1 (strongly disagree) to 7 (strongly agree). The exploratory factor analysis ($KMO = .85$) indicated that the items formed a unidimensional scale that accounted for 57.50% of the variance in the items. A confirmatory factor analysis was performed, showing an adequate model fit ($\chi^2 = 2.10, df = 3, p = .55$, SRMR = .01, CFI = 1.00, RMSEA = .00). A composite scale formed from these items had a reliability of $\alpha = .87$ ($M = 3.97, SD = 1.19$).
Transpersonal and paranormal belief. Since the meaning of religion and spirituality might be different in Asian cultures such as China and South Korea, transpersonal and paranormal beliefs were measured as a dimension of Asian religions by using seven items based on Trapnell (2005). The items include (a) I expect there may be some gifted psychics with unusual powers (e.g., communicating with persons who have died); (b) I believe some may indeed experience real memories from a past life lived before this one; (c) During altered states, such as sleep or trances, a person’s soul or spirit may indeed be able to briefly depart from the body; (d) Human beings have no capacity whatsoever to develop magical powers or abilities [recoded]; (e) I believe the human body has energy fields beyond known physics; (f) I’m quite receptive to supernatural experiences; and (g) I tend to believe Karma does exist—one’s present actions determine one’s destiny in a future reincarnation. The response options range from 1 (strongly disagree) to 7 (strongly agree). The exploratory factor analysis (KMO = .89) indicated that the items formed a unidimensional scale that accounted for 49.06% of the variance in the items. A confirmatory factor analysis was performed, showing an adequate model fit ($\chi^2 = 28.40, df = 13, p < .01, SRMR = .02, CFI = .99, RMSEA = .04$). A composite scale formed from these items had a reliability of $\alpha = .86$ ($M = 3.64, SD = 1.28$).

Spirituality. To measure spirituality in a culturally appropriate way, six items of spiritual beliefs constructed by Trapnell (2005) were used. This measure mainly operationalizes the degree of spiritual beliefs regardless of religious affiliation. Specifically, affirmation beliefs include (a) My beliefs about the world are completely atheistic; (b) I doubt our universe has any intended purpose by any form of "higher" force or being; (c) I tend to reject all spiritual interpretations of things; (d) I’m attracted to spiritual perspectives on life; (e) I tend to have spiritual beliefs that are
important to me; and (f) I tend to think of myself as spiritually-oriented. The response option range from 1 (strongly disagree) to 7 (strongly agree). The exploratory factor analysis ($KMO = .82$) indicated that the items formed a unidimensional scale that accounted for 55.79% of the variance in the items. A confirmatory factor analysis was performed, showing an adequate model fit ($\chi^2 = 31.03$, $df = 5$, $p < .001$, SRMR = .02, CFI = .99, RMSEA = .09). A composite scale formed from these items had a reliability of $\alpha = .87$ ($M = 4.49$, $SD = 1.32$).

**Intrinsic–extrinsic religious orientation.** Ten items based on Allport and Ross (1967) were asked to measure intrinsic–extrinsic religious orientation. The measure includes five items measuring intrinsic religiosity and ten items measuring extrinsic religiosity. Each item deals with various types of religious ideas and social opinions. Specifically, the following items were included: for intrinsic orientation, (a) it is important for me to spend periods of time in private religious thought and meditation; (b) I try hard to carry my religion over into all my other dealings in life; (c) the prayers I say when I am alone carry as much meaning and personal emotion as those said by me during services; (d) quite often I have been keenly aware of the presence God or the Divine Being; and (e) my religious beliefs are really what lie behind my whole approach to life, and for extrinsic orientation, (a) although I believe in my religion, I feel there are many more important things in my life; (b) what religion offers me most is comfort when sorrow and misfortune strike; (c) although I am a religious person I refuse to let religious considerations influence my everyday affairs; (d) occasionally I find it necessary to compromise my religious beliefs in order to protect my social well-being; and (e) one reason for my being a church member is that such membership helps to establish a person in the community. The response options range from 1 (strongly disagree) to 7 (strongly agree). For intrinsic religious
orientation, the exploratory factor analysis ($KMO = .89$) indicated that the items formed a unidimensional scale that accounted for 66.48% of the variance in the items. A confirmatory factor analysis was performed, showing an adequate model fit ($\chi^2 = 23.46, df = 5, p < .001, \text{SRMR} = .02, \text{CFI} = .99, \text{RMSEA} = .07$). A composite scale formed from these items had a reliability of $\alpha = .91 (M = 3.82, SD = 1.46)$. For extrinsic religious orientation, the exploratory factor analysis ($KMO = .61$) indicated that one factor in the scale could account only for 26.97% of the variance in the items. In addition, a composite scale formed from these items had a low reliability ($\alpha = .56, M = 4.22, SD = .91$). A confirmatory factor analysis was performed, and item (b) was removed due to low factor loading. A confirmatory factor analysis was performed again with the four items resulting in an adequate model fit ($\chi^2 = 2.10, df = 1, p = .15, \text{SRMR} = .01, \text{CFI} = 1.00, \text{RMSEA} = .04$). A composite scale formed from these items had a reliability of $\alpha = .59 (M = 4.21, SD = 1.02)$.

**Subjective norms about family health history communication.** Based on the scales developed by Ajzen (1991; 2011), six items were used to measure subjective norms about family health history communication: (a) Members of my family approve of my communicating family health history with family members; (b) Members of my family have talked about family health history with other family members; (c) Members of my family expect me to talk about family health history with other family members; (d) Members of my family think that I should do everything I can to communicate family health history with other family members; (e) Members of my family think it would be a good idea for me to communicate family health history with other family members; and (f) Members of my family would want me to communicate family health history with other family members. The response options range from 1 (strongly disagree) to 7 (strongly agree). The exploratory factor
analysis ($KMO = .83$) indicated that the items formed a unidimensional scale that accounted for 58.10% of the variance in the items. A confirmatory factor analysis was performed, showing an adequate model fit ($\chi^2 = 14.44, df = 5, p < .05, SRMR = .02, CFI = 1.00, RMSEA = .05$). A composite scale formed from these items had a reliability of $\alpha = .89$ ($M = 4.65, SD = 1.14$).

**Perceived family boundary.** Perceived family boundary was measured by asking the five questions. As the first question, the following item was asked: (a) when you think about what family means to you, you usually think of 1) your parents, siblings, or children, 2) your parents, siblings, children, grandparents, grandchildren, aunts, uncles, nephews, nieces or half-siblings, or 3) your parents, siblings, children, grandparents, grandchildren, aunts, uncles, nephews, nieces, half-siblings, first-cousins, great-grandparents or great grandchildren. The participants were asked to choose one of the three choices. In addition to this, the following four questions were asked; (b) my family is composed of my parents, my sibling(s) and me; (c) I think my grandparents are included in my family; (d) I think my aunts, uncles, nephews and nieces are included in my family; and (e) I think my first-cousins are included in my family. The response options range from 1 (strongly disagree) to 7 (strongly agree).

**Perceived family boundary guiding the intention of family health history communication.** To answer questions regarding cultural/subjective norms associated with perceived family boundary, age, and gender, three questions were asked. The questions start with the heading “I think the family members I may communicate family health history with are,” which was followed by three response options (if all my relatives are still alive): (a) 1) parents and full siblings, 2) parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings, or 3) parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings, first-cousins,
great-grandparents; (b) 1) older members, 2) younger members, 3) both, or 4) none; and (c) 1) female members, 2) male members, 3) both, or 4) none.

*Stigma beliefs.* To better understand the subjective norms regarding family health history, stigma beliefs as an attitude toward people with family health history were measured. Eight items modified from Link and colleagues (1989) were used to measure stigma beliefs about family health history. These items include specific stigma beliefs regarding three diseases that were mentioned in the three messages. The items include: (a) most people would feel that having a family health history for heart disease is a sign of personal failure; (b) most people would feel that having a family health history for cancer is a sign of personal failure; (c) most employers would pass over the application of a person with family health history for heart disease; (d) most employers would pass over the application of a person with family health history for cancer; (e) most people would not want their children to marry someone with family health history for heart disease; (f) most people would not want their children to marry someone with family health history for cancer; (g) once they know that someone has family health history for heart disease, most people will take his or her opinions less seriously; and (h) once they know that someone has family health history for cancer, most people will take his or her opinions less seriously. The response options range from 1 (strongly disagree) to 7 (strongly agree). The exploratory factor analysis (*KMO* = .78) indicated that the items formed a unidimensional scale that accounted for 60.16% of the variance in the items. A confirmatory factor analysis was performed, showing an adequate model fit ($\chi^2 = 69.72$, $df = 16$, $p < .001$, SRMR = .04, CFI = .99, RMSEA = .07). A composite scale formed from these items had a reliability of $\alpha = .92$ ($M = 3.00$, $SD = 1.29$).

*Norms related to power dynamics in a family.* To better understand family
norms, power dynamics in family was measured. As discussed in the literature, family power dynamics was assessed via the frequency of family conflicts and the perceptions of family power conflict. Four items modified from Keller (2009) were used to measure the frequency of family power conflicts. The participants were asked to answer the following questions: (a) how often are there power struggles among your family members; (b) how often are family members in a struggle over who is in control; (c) how often do family members have trouble taking directions from someone else; and (d) how often do family members try to dominate others. The response options range from 1 (never) to 7 (always). The exploratory factor analysis ($KMO = .84$) indicated that the items formed a unidimensional scale that accounted for 77.75% of the variance in the items. A confirmatory factor analysis was performed, showing a good model fit ($\chi^2 = 5.17, df = 1, p < .05$, SRMR = .01, CFI = 1.00, RMSEA = .08). A composite scale formed from these items had a reliability of $\alpha = .93 (M = 2.78, SD = 1.48)$.

Four items from NRI (Furman & Buhrmester, 1985, 1992) were used to measure family power conflicts between participants and their parents. The participants were asked to indicate the extent to which they agreed with the following statements: (a) how much do you and your father get upset with or mad at each other; (b) how much do you and your mother get upset with or mad at each other; (c) how much do you and your father disagree and quarrel; and (d) how much do you and your mother disagree and quarrel. The response options range from 1 (none) to 7 (the most always). The exploratory factor analysis ($KMO = .54$) indicated that the items formed a unidimensional scale that accounted for 60.60% of the variance in the items. A confirmatory factor analysis was performed, showing a perfect model fit as a saturated model ($\chi^2 = .00, df = 0$, SRMR = .00, CFI = 1.00, RMSEA = .00). A
composite scale formed from these items had a reliability of $\alpha = .89 (M = 3.07, SD = 1.22)$.

**Perceived behavioral control toward family health history communication.**

Based on scales developed by Ajzen and Fishbein (1980) and Ajzen (1991; 2011), seven items were used to measure perceived behavioral control toward family health history communication. The questions include (a) I am confident that I can talk about family health history with family members in next three months; (b) I control whether I talk about family health history with other family members; (c) my family controls whether I talk about family health history with other family members; (d) I think talking about family health history with family members in the next three months is up to me; (e) talking about family health history with family members would be easy; (f) I have control over my ability to talk about family health history with family members; and (g) if I want to, I can talk about family health history with my family members. The response options range from 1 (strongly disagree) to 7 (strongly agree). The exploratory factor analysis ($KMO = .87$) indicated that the items formed a unidimensional scale that accounted for 51.90% of the variance in the items. A confirmatory factor analysis was performed, showing an adequate model fit ($\chi^2 = 45.20, df = 12, p < .001$, SRMR = .03, CFI = .99, RMSEA = .06). A composite scale formed from these items had a reliability of $\alpha = .81 (M = 5.12, SD = .99)$.

**Engagement.** To assess participants’ engagement or transportation in the cultural narratives, eight items from Green and Brock (2000) were used. Specifically, the following items were used: (a) while I was reading the message, I could easily visualize the events in it taking place; (b) I could visualize myself in the scene of the events described in the message; (c) I was mentally involved in the message while reading it; (d) the message affected me emotionally; (e) the events in the message are
relevant to my everyday life; and (f) the events in the message have changed my life. The response options range from 1 (strongly disagree) to 7 (strongly agree). The exploratory factor analysis ($KMO = .83$) indicated that the items formed a unidimensional scale that accounted for 61.02% of the variance in the items. A confirmatory factor analysis was performed, showing an adequate model fit ($\chi^2 = 5.37$, $df = 4$, $p = .25$, SRMR = .01, CFI = 1.00, RMSEA = .02). A composite scale formed from these items had a reliability of $\alpha = .89$ ($M = 4.39$, $SD = 1.13$).

**Identification.** Four questions were asked to assess participants’ identification with the cultural narrative message. These items include (a) the speaker of the message reminds me of myself; (b) while reading the message, I could imagine the message-speaker; (c) the speaker of the message is someone like me; and (d) I think the speaker of the message sounded like someone around my age. The response options range from 1 (strongly disagree) to 7 (strongly agree). The response options range from 1 (strongly disagree) to 7 (strongly agree). The exploratory factor analysis ($KMO = .82$) indicated that the items formed a unidimensional scale that accounted for 63.97% of the variance in the items. A confirmatory factor analysis was performed, showing a good model fit ($\chi^2 = 5.40$, $df = 2$, $p = .07$, SRMR = .01, CFI = 1.00, RMSEA = .05). A composite scale formed from these items had a reliability of $\alpha = .87$ ($M = 4.04$, $SD = 1.17$).

**Perceived message quality.** Perceived evidence quality was measured by employing a modified version of the Parrott et al. (2005) measures. Participants were asked four questions with the stem, “I think the information in the message is” that is followed by the four explanations: (a) accurate; (b) well-explained; (c) understandable; and (d) supported. The response options range from 1 (strongly
disagree) to 7 (strongly agree). The exploratory factor analysis ($KMO = .85$) indicated that the items formed a unidimensional scale that accounted for 78.73% of the variance in the items. A confirmatory factor analysis was performed, showing a good model fit ($\chi^2 = .89$, $df = 1$, $p = .35$, SRMR = .00, CFI = 1.00, RMSEA = .00). A composite scale formed from these items had a reliability of $\alpha = .94$ ($M = 5.43$, $SD = 1.10$).

**Comprehension.** To examine participants’ comprehension of the cultural narrative messages, six questions based upon Parrott et al. (2005) were asked. The questions start with the heading “according to the message,” which is followed by six statements regarding the message contents related to important information about family health history communication: (a) according to the message, knowing family health history is significant for a family’s health; (b) according to the message, we inherit genes from our family; (c) according to the message, family health history can help us make healthy choices to prevent diseases; (d) according to the message, it is necessary to update family health history on a regular basis; (e) according to the message, talking about family health history with family members is not important [recoded]; and (f) according to the message, some genes increase our chances of developing certain diseases. The response options range from 1 (strongly disagree) to 7 (strongly agree). The exploratory factor analysis ($KMO = .86$) indicated that the items formed a unidimensional scale that accounted for 60.42 % of the variance in the items. A confirmatory factor analysis was performed, showing an adequate model fit ($\chi^2 = 12.20$, $df = 8$, $p = .14$, SRMR = .01, CFI = 1.00, RMSEA = .03). A composite scale formed from these items had a reliability of $\alpha = .82$ ($M = 5.51$, $SD = .98$).

**Perceived message effectiveness.** Perceived message effectiveness was assessed by employing Parrott et al. (2005) and Dillard et al. (2007). Specifically, the
following items were used: I think the message I just read is (a) not persuasive (persuasive), (b) ineffective (effective), (c) not convincing (convincing), and (d) not compelling (compelling). The response options range from 1 (strongly disagree) to 7 (strongly agree). The exploratory factor analysis ($KMO = .84$) indicated that the items formed a unidimensional scale that accounted for 72.30% of the variance in the items. A confirmatory factor analysis was performed, showing an adequate model fit ($\chi^2 = .54$, $df = 2$, $p = .77$, SRMR = .00, CFI = 1.00, RMSEA = .00). A composite scale formed from these items had a reliability of $\alpha = .91$ ($M = 5.22$, $SD = 1.14$).

**Resistance to counter-arguing.** Three items of counter-arguments were utilized to evaluate participants’ resistance to counter-arguments. Specifically, the following items were used for the measurements: (a) it’s not necessary to talk about family health history before marriage [recoded]; (b) it’s better to hide family health history [recoded]; and (c) it is not a good idea to discuss family health history with distant relatives [recoded]. The response options range from 1 (strongly disagree) to 7 (strongly agree). The exploratory factor analysis ($KMO = .76$) indicated that the items formed a unidimensional scale that accounted for 66.90% of the variance in the items. Confirmatory factor analyses indicated a perfect model fit, with the measure having three items and a justified model ($df = 0$). A composite scale formed from these items had a reliability of $\alpha = .86$ ($M = 5.08$, $SD = 1.41$).

**Behavioral intention.** Behavioral intention was measured by the following six items: (a) I intend to get information about family health history for heart disease from my parents/grandparents/siblings/or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months; (b) I intend to get information about family health history for cancer from my parents/grandparents/siblings/or other biological relatives such as aunts, uncles,
nephews, and nieces within the next three months; (c) I intend to share information about family health history for heart disease with my parents/grandparents/siblings/ or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months; (d) I intend to share information about family health history for cancer with my parents/grandparents/siblings/ or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months; (d) I intend to talk with my family members about what kind of family’s health history our family has; and (f) I intend to talk with my family members about changing behavior (such as drinking, eating, exercise, or smoking) to avoid health conditions related to our family health history. The response options range from 1 (unlikely) to 7 (likely). The exploratory factor analysis (KMO = .88) indicated that the items formed a unidimensional scale that accounted for 79.21% of the variance in the items. A confirmatory factor analysis was performed, showing a good model fit ($\chi^2 = 13.58$, $df = 5$, $p = .19$, SRMR = .01, CFI = 1.00, RMSEA = .05). A composite scale formed from these items had a reliability of $\alpha = .96$ ($M = 4.63$, $SD = 1.40$)

**Message Manipulation Checks**

**Social-embeddedness versus autonomy.** To assess if participants perceived the message to support autonomy versus social-embeddedness, the following items were originally included in the online randomized trial: for autonomy, (a) according to the message, it is up to me to decide whether to talk about family health history; (b) according to the message, talking about family health history is my choice; and (c) according to the message, talking about family health history with family members will benefit my health, and for social-embeddedness, (a) according to the message, it up to my family to decide whether to talk about family health history; (b) according to the message, whether to talk about family health history is a choice my family makes;
and (c) according to the message, talking about family health history with family members will benefit my whole family’s health. The response options range from 1 (strongly disagree) to 7 (strongly agree). I created two scales by averaging item responses (autonomy: $\alpha = .87$; embeddedness; $\alpha = .75$). Since the alphas of these scales were greater than the conventionally acceptable level (i.e., .70), two scales were created and one-way ANOVA was performed to analyze the influence of message type (i.e., Korean social-embeddedness, Chinese social-embeddedness, and Euro-American autonomy control) on the participants’ perceived social-embeddedness and autonomy control. However, the differences between the three messages were not significant.

Since the developed scales were not significant, each item was analyzed. Frequency distributions showed all the items were normally distributed. Maximum likelihood exploratory factor analyses were performed on the two scales. According to EFA, both social-embeddedness ($KMO = .57$) and autonomy ($KMO = .72$) scales were unidimensional. Therefore, one-way ANOVA was performed on the six items of social-embeddedness and autonomy. As a result, of the six items, only one social-embeddedness item (i.e., According to the message, talking about family health history with family members will benefit my whole family’s health) was significant ($F(2, 661) = 3.24, p < .05$). Since this result was very problematic, inter-item correlations and scale reliability were examined (Table 3-22). And it was found that the autonomy items and the social-embeddedness items were significantly correlated with each other and the six items showed a reliability of $\alpha = .80$, which requested re-theorization and re-operationalization of the autonomy and social-embeddedness scales.
Table 3-22

*Correlations between Autonomy Control and Social-embeddedness Items*

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. According to the message, it is up to me to decide whether to talk about family health history</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. According to the message, talking about family health history is my choice</td>
<td></td>
<td>0.78**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. According to the message, talking about family health history with family members will benefit my health</td>
<td></td>
<td></td>
<td>0.63** 0.65**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. According to the message, it up to my family to decide whether to talk about family health history</td>
<td></td>
<td></td>
<td></td>
<td>0.17** 0.18** 0.15**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5. According to the message, whether to talk about family health history is a choice my family makes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.21** 0.24* 0.19** 0.83*</td>
<td>1</td>
</tr>
<tr>
<td>6. According to the message, talking about family health history with family members will benefit my whole family’s health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.44** 0.44** 0.64** 0.30** 0.34** 1</td>
</tr>
</tbody>
</table>

** **p < .01
Table 3-23

Descriptive Statistics of Autonomy control and Social-embeddedness Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Message type</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>According to the message, it is up to me to decide whether to talk about family health history</td>
<td>Korean</td>
<td>218</td>
<td>5.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chinese</td>
<td>225</td>
<td>5.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Euro-American</td>
<td>221</td>
<td>5.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>664</td>
<td>5.34</td>
</tr>
<tr>
<td>8.</td>
<td>According to the message, talking about family health history is my choice</td>
<td>Korean</td>
<td>218</td>
<td>5.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chinese</td>
<td>225</td>
<td>5.31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Euro-American</td>
<td>221</td>
<td>5.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>664</td>
<td>5.30</td>
</tr>
<tr>
<td>9.</td>
<td>According to the message, talking about family health history with family members will benefit my health</td>
<td>Korean</td>
<td>218</td>
<td>5.69</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chinese</td>
<td>225</td>
<td>5.61</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Euro-American</td>
<td>221</td>
<td>5.49</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>664</td>
<td>5.60</td>
</tr>
<tr>
<td>10.</td>
<td>According to the message, it up to my family to decide whether to talk about family health history</td>
<td>Korean</td>
<td>218</td>
<td>4.53</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chinese</td>
<td>225</td>
<td>4.57</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Euro-American</td>
<td>221</td>
<td>4.47</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>664</td>
<td>4.52</td>
</tr>
<tr>
<td>11.</td>
<td>According to the message, whether to talk about family health history is a choice my family makes</td>
<td>Korean</td>
<td>218</td>
<td>4.53</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chinese</td>
<td>225</td>
<td>4.60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Euro-American</td>
<td>221</td>
<td>4.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>664</td>
<td>4.53</td>
</tr>
<tr>
<td>12.</td>
<td>According to the message, talking about family health history with family members will benefit my whole family’s health</td>
<td>Korean</td>
<td>218</td>
<td>5.41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chinese</td>
<td>225</td>
<td>5.39</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Euro-American</td>
<td>221</td>
<td>5.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>664</td>
<td>5.31</td>
</tr>
</tbody>
</table>
After careful consideration about the three autonomy and social-embeddedness items, the researcher could be aware that there were problems in the items because the boundary of agency “I” in the autonomy items is narrower than that of “my family” in the social-embeddedness items, and thus the agency of “my family” may include the agency of “I” especially in the Asian culture. Specifically, with regard to the first two items (i.e., According to the message, it’s up to my family to decide whether to talk about family health history & According to the message, whether to talk about family health history is a choice my family makes), “my choice” doesn’t necessarily exclude my family’s choice because “my choice” and “my family’s choice” might not be considered contradictory to each other from the participants’ perspectives and the nature of contradiction depends on participants’ perception or culture. Furthermore, the third autonomy item (i.e., according to the message, talking about family health history with family members will benefit my health) seemed to reflect the value of social-embeddedness because it indicates that communication between family members influences my health. As expected, the mean values of the third autonomy item (i.e., according to the message, talking about family health history with family members will benefit my health) were aligned with the direction expected for the social-embeddedness items.

As a result, I concluded that the six items should be perceived and re-theorized as two ends of continuum. In other words, although in the original items the response options ranged from 1 (strongly disagree) to 7 (strongly agree), in the new items, the same response options implicate 1 (strongly disagree; autonomy end or social-embeddedness end) and 7 (strongly agree; social-embeddedness end or autonomy end) because social-embeddedness and autonomy control need to be understood as relative to each other.
Being aware of the continuous and relative nature of the items, according to the results of one-way ANOVA, two items with no variance (i.e., according to the message, talking about family health history is my choice ($p = .92$); according to the message, it up to my family to decide whether to talk about family health history ($p = .76$) were removed from the scale. The four remaining items (1) according to the message, it is up to me to decide whether to talk about family health history; 2) according to the message, talking about family health history with family members will benefit my health; 3) according to the message, whether to talk about family health history is a choice my family makes; and 4) according to the message, talking about family health history with family members will benefit my whole family’s health) showed a reliability of $\alpha = .72$. It was assumed that the response options implicate 1 (autonomy end) and 7 (social-embeddedness end) in each item.

### Table 3-24

The examination of Post-hoc Least Significant Difference

<table>
<thead>
<tr>
<th>Item</th>
<th>Message type</th>
<th>Mean Difference</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>According to the message, talking about family health history</td>
<td>Korean</td>
<td>Chinese</td>
<td>.02</td>
</tr>
<tr>
<td>with family members</td>
<td></td>
<td>Euro-American</td>
<td>.28*</td>
</tr>
<tr>
<td>family health history</td>
<td>Chinese</td>
<td>Korean</td>
<td>-.02</td>
</tr>
<tr>
<td>with family members</td>
<td></td>
<td>Euro-American</td>
<td>.26*</td>
</tr>
<tr>
<td>will benefit my whole family’s health.</td>
<td>Euro-American</td>
<td>Korean</td>
<td>-.28*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chinese</td>
<td>-.26*</td>
</tr>
</tbody>
</table>

* $p < .05$
Before investigating the effect of message types on the perceived autonomy and social-embeddedness continuum, message conditions were re-considered according to several post-hoc test results. In the result of one-way ANOVA performed on the only significant social-embeddedness item (i.e., according to the message, talking about family health history with family members will benefit my whole family’s health), the examination of post-hoc least significant difference (LSD) test indicated (Table 3-24) that there was no significant difference between Korean social-embeddedness message and Chinese social-embeddedness message. Furthermore, according to the results of 3*3 ANOVA performed to analyze the effect of three message types on the perceived autonomy - social-embeddedness continuum (4-item scale) and the interaction effect between perceived identity and message type, there was a significant perceived identity * message type interaction \((F (4, 655) = 1.16, p < .05)\) although the main effect of three message types was not significant. In addition, LSD post-hoc examination showed that although there was no difference between South Korean social-embeddedness message and Euro-American autonomy control message and between South Korean social-embeddedness message and Chinese social-embeddedness message, the difference between Euro-American autonomy control message and Chinese social-embeddedness message was significant \((p < .05)\). Furthermore, in spite of the non-significance between South Korean social-embeddedness message and Autonomy control message, the order of mean values was aligned with the assumption of these message conditions (Euro-American Autonomy control message \(M = 5.09\); South Korean social-embeddedness message \(M = 5.22\); Chinese Social-embeddedness \(M = 5.27\)).

Therefore, I integrated Korean social-embeddedness message and Chinese social-embeddedness message to re-analyze the effect of two types (autonomy &
embeddedness) of messages on the perceived autonomy – social-embeddedness continuum and the interaction effect between the two message types and three types of perceived identities. Although the results of 2*3 two-way ANOVA revealed that the main effect of message types was still not significant, the size of \( p \)-value decreased from .32 to .20, and the interaction effect between the two message types (social-embeddedness and autonomy control) and three perceived identities increased from \( p = .05 \) to \( p = .02 \). Then, according to the re-adjustment of message types, I integrated perceived Korean identity and Chinese identity into one type of identity to re-analyze the effect of two types (autonomy & social-embeddedness) of messages on the perceived autonomy – social-embeddedness continuum and the interaction effect between message type and the two identity types. The results of 2*2 two-way ANOVA showed significant main effect of message type \( (F(1, 660) = 4.64, p < .05) \) as well as more significant identity * message type interaction \( (F(1, 660) = 6.59, p = .01) \).

On the premise that two types of messages are effective on the perceived autonomy – social-embeddedness continuum of participants with two types of identities, independent sample t-test was performed on the autonomy - social-embeddedness continuum scale created by the four items to investigate the effect of two message types (autonomy & social-embeddedness) on the perceived autonomy and social-embeddedness continuum. It was assumed that the response options implicate 1 (autonomy end) and 7 (social-embeddedness end) in each item, and the following four items were included: 1) according to the message, it is up to me to decide whether to talk about family health history; 2) according to the message, talking about family health history with family members will benefit my health; 3) according to the message, whether to talk about family health history is a choice my
family makes; and 4) according to the message, talking about family health history with family members will benefit my whole family’s health ($\alpha = .721$). According to the results, there was a significant difference ($t(662) = 2.05$, $p < .05$) in the effects on the perceived autonomy and social-embeddedness continuum between the social-embeddedness message ($M = 5.25$; $SD = .93$) and the autonomy control message ($M = 5.09$; $SD = .87$).

As previously discussed, however, since the second item (i.e., according to the message, talking about family health history with family members will benefit my health) reflected the value of social-embeddedness, the first item (i.e., according to the message, it is up to me to decide whether to talk about family health history) was the only item that reflected autonomy control among the four items that include response options ranging from 1 (autonomy end) to 7 (social-embeddedness end). Furthermore, in the results of 3*3 ANOVA performed on this item, LSD post-hoc examination revealed no difference between the Korean social-embeddedness message and the autonomy control message and between the Chinese social-embeddedness message and the autonomy control message. Therefore, for the consistency of items, the first item was removed from the scale.

Finally, independent sample t-test was conducted again on the autonomy-social-embeddedness continuum scale created by the three items to investigate the effect of two message types (autonomy & social-embeddedness). It was assumed that the response options implicate 1 (autonomy end) and 7 (social-embeddedness end) in each item, and the following three items were included in the scale; 1) according to the message, talking about family health history with family members will benefit my health; 2) according to the message, whether to talk about family health history is a choice my family makes; and 3) according to the message, talking about family health
history with family members will benefit my whole family’s health ($\alpha = .64$).

Although the alpha of this scale was slightly smaller than the conventionally acceptable level (i.e., .70), according to the t-test results, there was a significant difference ($t (662) = 2.31, p < .05$) in the effects on the perceived autonomy - social-embeddedness continuum between the social-embeddedness message ($M = 5.21; SD = .991$) and the autonomy control message ($M = 5.02; SD = .93$). In addition, the three item scale improved the $p$-value from .041 to .021. Furthermore, the results of 2*2 two-way ANOVA showed a significant main effect of message type ($F (1, 660) = 4.64, p < .05$) as well as a significant identity * message type interaction ($F (1, 660) = 6.59, p < .01$).

The exploratory factor analysis ($KMO = .61$) indicated that the three items formed a unidimensional scale that accounted for 37.00% of the variance in the items. Confirmatory factor analyses indicated a perfect model fit, with the measure having three items and a justified model ($df = 0$). A composite scale formed from these items had a reliability of $\alpha = .64$ ($M = 5.14, SD = .97$).

**Types of cultural archetypes (South Korean, Chinese, and autonomy control) in the narrative message.** To assess if participants identified the different cultural archetypes revealed in the narrative evidence according to their culture, the following three questions were asked: (a) I’m familiar with the situations and stories in the message; (b) this message presents a situation that is an accurate reflection of my culture; and (c) this message presents a situation that I can understand very well based on my cultural background. The response options range from 1 (strongly disagree) to 7 (strongly agree). I created one scale by averaging item responses ($\alpha = .87$).

After selecting each identity (i.e., American, Korean, and Chinese), one-way
ANOVA was performed to measure the differences in the effects of three messages on cultural closeness in each identity condition. However, there was no significant difference found in the three identity conditions, and LSD post-hoc examinations also revealed no statistical significance. Therefore, I tested the same effect with two message conditions (i.e., social-embeddedness message vs. autonomy control message), but there was no significant effect, either. Finally, I tested the same effect on the two identity condition (i.e., American and Asian), but no significant effect was found. The problem was that overall American participants’ mean cultural closeness ($M = 5.44; SD = .98$) was much higher than Asian (Korean and Chinese) participants’ mean ($M = 4.82; SD = .91$).

Like the autonomy control and social-embeddedness items, however, it seemed that the items measuring cultural-closeness needed to be understood in a relative way. Therefore, I looked at the mean differences between the two message conditions in each identity condition, and found that Asian participants’ cultural closeness was higher in the social-embeddedness message condition ($M = 4.67; SD = 1.12$) than in the autonomy control message condition ($M = 4.62; SD = 1.13$) while American participants’ cultural closeness was higher in the autonomy control message condition ($M = 5.12; SD = 1.08$) than in the social-embeddedness message condition ($M = 5.05; SD = 1.21$). Therefore, one-sample t-test was performed on the American and Asian mean values to see whether or not participants’ cultural closeness was significantly different from the overall mean value in each identity condition. This analysis showed that both American and Asian (Korean and Chinese) participants were significantly different from each mean value (American: $t (316) = -5.53$, $p < .001$; Asian: $t (346) = -2.81$, $p < .01$), which means that Asian participants felt more cultural-closeness with the social-embeddedness message than the autonomy control
message while American participants were culturally more close to the autonomy
control message than the social-embeddedness message.

The exploratory factor analysis ($KMO = .72$) indicated that the three items
formed a unidimensional scale that accounted for 69.34% of the variance in the items.
Confirmatory factor analyses indicated a perfect model fit, with the measure having
three items and a justified model ($df = 0$). A composite scale formed from these items
had a reliability of $\alpha = .87$ ($M = 4.85, SD = 1.16$).
CHAPTER FOUR

RESULTS

The questionnaire for the third phase (randomized trial) first asked about information about identity, cultural and linguistic background, knowledge about family health history, current family health history communication, attitude and perceived behavioral control for family health history communication, subjective norms (stigma and subjective norm about family health history, and frequency and quantity of family conflicts), subjective/cultural norms of perceived family boundary guiding intentions to communicate family health history, and several individual characteristics (narrative tendencies, genetic essentialism, spirituality, intrinsic and extrinsic religiosity, and paranormal belief). Then, after participants read one of the three cultural narrative messages, they answered questions about manipulation checks (cultural closeness, perceived social-embeddedness and autonomy control), message processing (identification and engagement), message outcomes (perceived message effectiveness and quality, comprehension, and resistance to counter-arguing), and behavioral intention to communicate family health history with their family members.

Several data analysis strategies were used to test the 10 hypotheses and 15 research questions using the Statistical Package for the Social Sciences (SPSS) Version 22 and AMOS 22. Several analyses including bivariate correlations, multiple/bivariate regressions and 3x3 analyses were computed to assess the effects of participants’ cultural identity (i.e., American, Korean, and Chinese) and type of cultural narrative (i.e., Euro-American autonomy control, Korean social-embeddedness, and Chinese social-embeddedness) on dependent variables of interest. To further theory development, the relationships between cultural identity and type of cultural narrative on message processing and behavioral outcomes of interest were
examined with path analyses using structural equation modeling.

**Covariates**

Covariates were added to analyses when significant relationships were determined via bivariate Pearson correlations (see Tables 4-3, 4-5, 4-15, 4-22, 4-28, 4-33, and 4-38). Participants’ integration in the US culture was controlled for research questions and hypotheses developed only for Asian participants because Asian participants’ adaptation to the US culture may influence the processing and the effects of cultural narrative messages. As discussed in the literature, participants’ narrative tendencies were controlled when the function of each type of cultural narrative message was tested because individuals’ narrative tendencies may affect their engagement, identification and the effects of message processing. Participants’ current family health history communication was also controlled to test their behavioral intention to communicate family health history in relation to the message outcomes. In addition, participants’ cultural identity was controlled when it has a significant effect on the three constructs of theory of planned behavior, and individual/cultural characteristics and/or norms. Since participants’ cultural identity may exert a moderating effect, it was controlled to assess more accurate effects of those variables on participants’ message processing and current family health history communication.

**Tests of Hypotheses and Research Questions**

**Existing Family Health History Knowledge and Communication**

**Research question 1.** Before exposure to the message, research question one asked if participants have knowledge about family health history, or if the three groups differed in their knowledge about family health history. To answer this research question, a one-way analysis of variance (ANOVA) of three identity conditions was performed on the participants’ knowledge about family health history.
The results revealed a main effect of identity, $F (2, 661) = 51.17, p < .001$, partial $\eta^2 = .13$. Fisher’s least significant difference (LSD) comparisons showed that the main effect occurred because Korean participants’ knowledge about their family health history ($n = 169, M = 3.44, SD = 1.98$) was significantly lower than American participants’ ($n = 317, M = 5.31, SD = 1.71$) and Chinese participants’ knowledge ($n = 178, M = 4.60, SD = 2.28$), and Chinese participants’ knowledge was also significantly lower than American participants’ knowledge.

**Research question 2.** Before exposure to the message, research question two asked if participants have experiences with communicating about family health history within their families or differ in their experiences of communicating about family health history within their families. To answer this research question, a one-way analysis of variance (ANOVA) of three identity condition was performed on the participants’ communication about family health history. The results revealed a main effect of identity, $F (2, 661) = 28.80, p < .001$, partial $\eta^2 = .03$.

Fisher’s least significant difference (LSD) comparisons showed that the main effect occurred because Korean participants’ communication about their family health history ($n = 169, M = 2.60, SD = 1.54$) was significantly lower than American participants’ ($n = 317, M = 3.33, SD = 1.61$) and Chinese participants’ communication ($n = 178, M = 3.12, SD = 1.67$). Notably, American and Chinese participants revealed low likelihood of having communicated as well, with means below the midpoint on the 7-point scale.
**Table 4-1**

*Means, Standard Deviations, and Cultural Differences in the Participants’ knowledge about family health history and Current Communication*

<table>
<thead>
<tr>
<th></th>
<th>Mean (SD)</th>
<th>American Mean (SD)</th>
<th>Korean Mean (SD)</th>
<th>Chinese Mean (SD)</th>
</tr>
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<td>4.64 (2.09)</td>
<td>5.31 (1.71)\textsubscript{a}</td>
<td>3.44 (1.98)\textsubscript{b}</td>
<td>4.60 (2.28)\textsubscript{c}</td>
</tr>
<tr>
<td><strong>Current Family Health History Communication</strong> (RQ2)</td>
<td>3.09 (1.63)</td>
<td>3.33 (1.61)\textsubscript{a}</td>
<td>2.60 (1.54)\textsubscript{b}</td>
<td>3.12 (1.67)\textsubscript{a}</td>
</tr>
</tbody>
</table>

*Note: American (n) = 317; Korean (n) = 169; and Chinese (n) = 178
a, b, or c = Fisher’s least significance difference (LSD)*

\*p < .05; \**p < .01; \***p < .001
Testing the Effects of Cultural Narrative Messages

**Hypothesis 1-1 & 1-2.** Hypothesis 1-1 posits that Asian perceivers experience more engagement and identification with social-embeddedness narratives (Chinese & South Korean) than the Euro-American autonomy-control narrative. Hypothesis 1-2 predicts that American perceivers experience more engagement and identification with a Euro-American autonomy-control narrative than Chinese or South Korean social-embeddedness narrative.

To test the two hypotheses, a 3x3 multivariate analysis of co-variance (MANCOVA) for identity type condition (Korean, Chinese, and American) and cultural narrative condition (Korean social-embeddedness narrative, Chinese social embeddedness narrative, and Euro-American autonomy-control narrative) across the dependent variables of identification and engagement with the covariates of narrative tendencies and current family health history communication were conducted. The results revealed a main effect for the identity condition, $F(4, 1304) = 6.50, p < .001$, Wilk’s Lambda = .96, partial $\eta^2 = .02$, such that the dependent variables of identification and engagement differ across identity conditions. In addition, a main effect of narrative tendencies was found; $F(2, 652) = 11.47, p < .001$, Wilk’s Lambda = .97, partial $\eta^2 = .03$, and a main effect of current family health history communication was also found; $F(2, 652) = 40.23, p < .001$, Wilk’s Lambda = .89, partial $\eta^2 = .11$. However, there were no significant effects for narrative message type; $F(4, 1304) = .34, p = .85$, Wilk’s Lambda = 1.00, partial $\eta^2 = .00$. No interaction effects were significant.
Table 4-2

Descriptive Statistics and Pairwise Comparisons for Dependent Variables

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<td>4.67(_{Bab})</td>
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<td></td>
<td>Total</td>
<td>4.74</td>
<td>1.35</td>
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<tr>
<td>China(^b)</td>
<td>Korean(^a)</td>
<td>4.90(_{Ba})</td>
<td>1.51</td>
<td>56</td>
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<tr>
<td></td>
<td>Chinese(^a)</td>
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<tr>
<td></td>
<td>Euro American(^a)</td>
<td>4.43(_{Ba})</td>
<td>1.56</td>
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<tr>
<td></td>
<td>Total</td>
<td>4.63</td>
<td>1.48</td>
<td>178</td>
</tr>
<tr>
<td>Behavioral intention **</td>
<td>US^A</td>
<td>Korean^a</td>
<td>4.72_{Aa}</td>
<td>1.62</td>
</tr>
<tr>
<td>------------------------</td>
<td>------</td>
<td>----------</td>
<td>------------</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td>Chinese^a</td>
<td>4.56_{Aa}</td>
<td>1.51</td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>Euro American^a</td>
<td>4.44_{Aa}</td>
<td>1.37</td>
<td>103</td>
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<tr>
<td></td>
<td>Total</td>
<td>4.57</td>
<td>1.51</td>
<td>317</td>
</tr>
<tr>
<td>South Korea^A</td>
<td>Korean^a</td>
<td>4.25_{Aa}</td>
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<td>54</td>
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<tr>
<td></td>
<td>Chinese^a</td>
<td>4.75_{Aa}</td>
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<tr>
<td></td>
<td>Total</td>
<td>4.43</td>
<td>1.35</td>
<td>169</td>
</tr>
<tr>
<td>China^H</td>
<td>Korean^a</td>
<td>4.89_{Ba}</td>
<td>1.28</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Chinese^a</td>
<td>4.91_{Ba}</td>
<td>1.08</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>Euro American^a</td>
<td>4.92_{Ba}</td>
<td>1.26</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4.91</td>
<td>1.20</td>
<td>178</td>
</tr>
</tbody>
</table>

*Note: SD = Standard Deviation
A, B, or C = identity type difference; a or b = message type difference (ab = a & b)
*p < .05; **p < .01; ***p < .001 (Identity type); ^p < .05 (Narrative message type)
Table 4-3

Bivariate Correlation of Message Processing, Message Outcomes, and Integration into the US culture (Asian participants): H2-1, H2-2, H7-3, & H7-4

<table>
<thead>
<tr>
<th>Variable</th>
<th>Int. the US</th>
<th>Id.</th>
<th>Eng.</th>
<th>Quality</th>
<th>Comp.</th>
<th>Effect</th>
<th>C. arg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration into the US culture</td>
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<tr>
<td>Identification</td>
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<td>1</td>
<td></td>
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</tr>
<tr>
<td>Engagement</td>
<td>-.10</td>
<td>.77***</td>
<td>1</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>.09</td>
<td>.18**</td>
<td>.34***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comprehension</td>
<td>.16**</td>
<td>-.02</td>
<td>.18**</td>
<td>.61***</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness</td>
<td>.04</td>
<td>.38***</td>
<td>.50***</td>
<td>.51***</td>
<td>.46***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Resistance to counter-arguing</td>
<td>.14**</td>
<td>-.38**</td>
<td>-.23***</td>
<td>.11*</td>
<td>.34***</td>
<td>.05</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: *p < .05; **p < .01; ***p < .001
**Hypothesis 2-1 & 2-2.** Hypothesis 2-1 posits that South Koreans experience greater engagement and identification with a social-embeddedness narrative reflecting South Korean culture as compared to a social-embeddedness narrative reflecting Chinese culture. Hypothesis 2-2 predicts that Chinese perceivers experience greater engagement and identification with a social-embeddedness narrative reflecting Chinese culture as compared to social-embeddedness narrative reflecting South Korean culture.

After selecting Korean and Chinese participants and social embeddedness messages from the dataset, a 3x3 multivariate analysis of co-variance (MANCOVA) of identity type condition (Chinese vs. Korean) and cultural narrative condition (Chinese social-embeddedness narrative vs. Korean social-embeddedness narrative) across the dependent variables of identification and engagement with the covariate of narrative tendencies, current family health history communication, and integration into the US culture revealed no significant effects for narrative message type (Korean social-embeddedness vs. Chinese social-embeddedness); $F(2, 221) = .63, p = .54$, Wilk’s Lambda = .99, partial $\eta^2 = .01$; and integration into the US culture; $F(2, 221) = .97, p = .05$, Wilk’s Lambda = .97, partial $\eta^2 = .03$. No interaction effect was found. However, for the identity condition, there was a significant main effect; $F(2, 221) = 1.71, p = .05$, Wilk’s Lambda = .99, partial $\eta^2 = .02$, and there were the main effects for narrative tendencies; $F(2, 221) = 4.56, p < .05$, Wilk’s Lambda = .96, partial $\eta^2 = .04$; and current family health history communication; $F(2, 221) = 20.63, p < .001$, Wilk’s Lambda = .84, partial $\eta^2 = .16$. In conclusion, there was no difference in Korean and Chinese participants’ engagement and identification between South Korean social-embeddedness narratives and Chinese social-embeddedness narrative.
### Table 4-4

**Means, Standard Deviations, and Cultural Differences in Subjective Norms: RQ3, RQ4-1, & RQ5-1**

<table>
<thead>
<tr>
<th></th>
<th>Mean (SD)</th>
<th>American Mean (SD)</th>
<th>Korean Mean (SD)</th>
<th>Chinese Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective norm (RQ3)</td>
<td>4.65 (1.14)</td>
<td>4.94 (1.10)\text{a}</td>
<td>4.44 (1.13)\text{b}</td>
<td>4.32 (1.10)\text{b}</td>
</tr>
<tr>
<td>Family conflicts frequency (RQ4-1)</td>
<td>2.78 (1.48)</td>
<td>2.78 (1.53)\text{a}</td>
<td>3.62 (1.42)\text{a}</td>
<td>2.92 (1.45)\text{a}</td>
</tr>
<tr>
<td>Family conflicts quantity (RQ4-1)</td>
<td>3.07 (1.22)</td>
<td>3.02 (1.16)\text{a}</td>
<td>2.90 (1.20)\text{a}</td>
<td>3.35 (1.32)\text{b}</td>
</tr>
<tr>
<td>Stigma (RQ5-1)</td>
<td>3.00 (1.29)</td>
<td>2.31 (1.05)\text{a}</td>
<td>3.39 (1.17)\text{b}</td>
<td>3.88 (1.08)\text{c}</td>
</tr>
</tbody>
</table>

*Note: American (n) = 317; Korean (n) = 169; and Chinese (n) = 178  
a, b, or c = Fisher’s least significance difference (LSD)  
*p < .05; **p < .01; ***p < .001*
The Effect of the Three Variables of TPB and Individual Characteristics on Family Health History Communication and Message Processing

**Research question 3.** Research question 3 explored if subjective norms about family health history communication differ between cultures, as judged prior to exposure to the message. To answer this question, a one-way analysis of variance (ANOVA) of three identity conditions on the dependent of subjective norm was conducted. The result revealed a main effect for the identity condition on subjective norm, $F(2, 661) = 22.21, p < .001$, partial $\eta^2 = .06$.

Fisher’s least significant difference (LSD) comparisons showed that the main effect for identity occurred because American participants’ subjective norms ($n = 317, M = 4.94, SD = 1.10$) were significantly higher than Korean participants’ ($n = 169, M = 4.44, SD = 1.13$) and Chinese participants’ ($n = 178, M = 4.32, SD = 1.10$) subjective norms regarding family health history communication.

**Research question 4-1.** Research question 4-1 investigated if power dynamics differ between cultures. To answer this question, a multivariate analysis of variance (MANOVA) of three identity conditions on the dependent variables of the frequency and perceived quantity of family conflicts was conducted. The results revealed a main effect for the identity condition on the two variables, $F(2, 660) = 2034.64, p < .001$, Wilk’s Lambda $= .14$, partial $\eta^2 = .86$.

Although overall perception about the quantity of family conflicts is pretty low in the three cultural groups, Fisher’s least significant difference (LSD) comparisons showed that the main effect for identity occurred because Chinese participants’ perceived quantity of family conflicts ($n = 178, M = 3.35, SD = 1.32$) was significantly higher than Korean participants’ ($n = 169, M = 2.90, SD = 1.20$) and American participants’ perceived conflicts ($n = 317, M = 3.01, SD = 1.16$).
**Research question 5-1.** Research question investigated if stigma about family health history differs between cultures. To answer this question, a one-way analysis of variance (ANOVA) of three identity conditions on the dependent variables of stigma about family health history was conducted. The results revealed a main effect for the identity condition on the two variables, $F(2, 661) = 133.34, p < .001$, partial $\eta^2 = .89$.

Although overall perception about stigma is pretty low in the three cultural groups, Fisher’s least significant difference (LSD) comparisons showed that the main effect for identity occurred because American participants’ perceived stigma about their family health history ($n = 317, M = 2.31, SD = 1.05$) was significantly lower than Korean participants’ ($n = 169, M = 3.39, SD = 1.17$) and Chinese participants’ perceived stigma ($n = 178, M = 3.88, SD = 1.08$). Korean participants’ ($n = 169, M = 3.39, SD = 1.17$) perceived stigma was also significantly lower than Chinese participants’ perceived stigma ($n = 178, M = 3.88, SD = 1.08$).
### Table 4-5

**Correlation of Current FHH Communication, Subjective Norms, Message Processing, and Message Outcomes: H3-1, H3-2, RQ4-2, RQ4-3, RQ5-2, & RQ5-3**

<table>
<thead>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stigma</td>
<td>-.12**</td>
<td></td>
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<td></td>
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</tr>
<tr>
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<td>.16***</td>
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</tr>
<tr>
<td>Family conflicts quantity</td>
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<td>.23***</td>
<td>.60***</td>
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<td>.03</td>
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<td></td>
</tr>
<tr>
<td>Identification</td>
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<td>.22***</td>
<td>.13**</td>
<td>.02</td>
<td>.31***</td>
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<td></td>
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<tr>
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<td>.14***</td>
<td>.03</td>
<td>-.02</td>
<td>.32***</td>
<td>.75***</td>
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</tr>
<tr>
<td>Quality</td>
<td>.25***</td>
<td>-.18***</td>
<td>-.10*</td>
<td>-.17***</td>
<td>.05</td>
<td>.12**</td>
<td>.30***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comprehension</td>
<td>.25***</td>
<td>-.35***</td>
<td>-.09*</td>
<td>-.09*</td>
<td>.00</td>
<td>-.04</td>
<td>.16***</td>
<td>.61***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness</td>
<td>.33***</td>
<td>-.05</td>
<td>.00</td>
<td>-.04</td>
<td>.19***</td>
<td>.39***</td>
<td>.56***</td>
<td>.51***</td>
<td>.45***</td>
<td></td>
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</tr>
<tr>
<td>Resistance to counter-arguing</td>
<td>.15***</td>
<td>-.39***</td>
<td>-.15***</td>
<td>-.15***</td>
<td>.02</td>
<td>-.25***</td>
<td>-.10*</td>
<td>.22***</td>
<td>.46***</td>
<td>.15***</td>
<td></td>
</tr>
</tbody>
</table>

*Note: *p < .05; **p < .01; ***p < .001*
Table 4-6

Summary of Hierarchical Regression Analysis for Subjective Norms Predicting Family Health History Communication: H3-1, RQ4-2, & RQ 5-2

<table>
<thead>
<tr>
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<th>Model 1</th>
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<th></th>
<th>Model 2</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>B(SE)</td>
<td>β</td>
<td>B</td>
<td>B(SE)</td>
<td>β</td>
</tr>
<tr>
<td>Identity1 (Korean)</td>
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<td>.15</td>
<td>-.19***</td>
<td>-.69</td>
<td>.15</td>
<td>-.19***</td>
</tr>
<tr>
<td>Identity2 (Chinese)</td>
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<td>.15</td>
<td>-.06</td>
<td>-.25</td>
<td>.16</td>
<td>-.07</td>
</tr>
<tr>
<td>Subjective norm</td>
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<td>.05</td>
<td>.45***</td>
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<tr>
<td>Family conflicts freq.</td>
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<td>.04</td>
<td>.03</td>
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</tr>
<tr>
<td>Stigma</td>
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<td>.05</td>
<td>.22***</td>
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</tr>
<tr>
<td>$R^2$</td>
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<td>.265</td>
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<td>$F$-value</td>
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<td>47.41***</td>
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<tr>
<td>$\Delta R^2$</td>
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<td>.232***</td>
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</tr>
</tbody>
</table>

Note: **p < .01; ***p < .001
Identity was coded as Americans = 00; Koreans = 10; Chinese = 01
Model 1: $F(2, 661) = 11.14, p < .001, R^2 = .033$; Model 2: $F(5, 658) = 47.41, p < .001, R^2 = .27$
Hypothesis 3-1, research question 4-2, & research question 5-2. Hypothesis 3-1 posits participants’ positive subjective norms about family health history communication are positively associated with their family health history communication. Research question 4-2 asked if power dynamics in family relate to family health history communication. Research question 5-2 explored if stigma about family health history relates to family health history communication. To investigate the hypothesis and research questions, first of all, bivariate Pearson correlations (Table 4-5) were performed. The results show participants’ subjective norms (H3-1, $r = .46, p < .001$), family conflicts frequency (RQ4-2, $r = .08, p < .05$), and stigma (RQ5-2, $r = .11, p < .01$) were positively correlated with their current family health history communication, while family conflicts quantity was not correlated with it (RQ 4-2).

To further investigate H 3-1, RQ 4-2 and 5-2, a hierarchical regression was conducted by entering dummy-coded cultural identities (Americans = 00; Koreans = 10; and Chinese = 01) in block 1, and subjective norms, family conflicts frequency, and stigma in block 2. Since the group coded as 0(s) functions as the reference group (Cohen & Cohen, 1983; Myers & Well, 2003), the effect of Korean and Chinese participants’ identity was explored compared to American identity. Table 4-6 reports the statistics related to this analysis and reveals that in both models, the variables together explained a significant amount of the variance of family health history communication; Model 1: $F (2, 661) = 11.14, p < .001, R^2 = .033$; Model 2: $F (5, 658) = 47.41, p < .001, R^2 = .27$. According to the results of the second model, compared to American participants, Korean participants are less likely to communicate family health history ($\beta = -.19, p < .001$), and subjective norms ($\beta = .45, p < .001$) and stigma ($\beta = .22, p < .001$) significantly predict family health history communication.
### Table 4-7

**Summary of Hierarchical Regression Analysis for Subjective Norms Predicting Identification: H3-2, RQ4-3, & RQ5-3**

<table>
<thead>
<tr>
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<th>Model 1</th>
<th></th>
<th>Model 2</th>
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</tr>
</thead>
<tbody>
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<td></td>
<td>$B$</td>
<td>$B(SE)$</td>
<td>$\beta$</td>
<td>$B$</td>
</tr>
<tr>
<td>Identity1 (Korean)</td>
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<td>-.01</td>
<td>-.06</td>
</tr>
<tr>
<td>Identity2 (Chinese)</td>
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<td>.11</td>
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<td>.28</td>
</tr>
<tr>
<td>Subjective norm</td>
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<td>.04</td>
<td>.29***</td>
<td></td>
</tr>
<tr>
<td>Family conflicts frequency</td>
<td>.06</td>
<td>.03</td>
<td>.08*</td>
<td></td>
</tr>
<tr>
<td>Stigma</td>
<td>.18</td>
<td>.04</td>
<td>.20***</td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = .022$  
$F$-value $= 7.49$**  
$\Delta R^2 = .123$***

**Note:** *p < .01; **p < .01; ***p < .001
Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.
Model 1: $F(2, 661) = 7.49, p < .01, R^2 = .022$; Model 2: $F(5, 658) = 22.31, p < .001, R^2 = .145$
### Table 4-8

*Summary of Hierarchical Regression Analysis for Subjective Norms Predicting Engagement: H3-2, RQ4-3, & RQ5-3*

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th></th>
<th>Model 2</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( B )</td>
<td>( B(SE) )</td>
<td>( \beta )</td>
<td>( B )</td>
<td>( B(SE) )</td>
<td>( \beta )</td>
</tr>
<tr>
<td>Identity1 (Korean)</td>
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<td>.11</td>
<td>-.10*</td>
<td>-.23</td>
<td>.11</td>
<td>-.09*</td>
</tr>
<tr>
<td>Identity2 (Chinese)</td>
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<td>.11</td>
<td>.10*</td>
<td>.24</td>
<td>.12</td>
<td>.10*</td>
</tr>
<tr>
<td>Subjective norm</td>
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<td>.04</td>
<td>.33***</td>
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<tr>
<td>Stigma</td>
<td>.14</td>
<td>.04</td>
<td>.15***</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[
R^2 = .026 \\
F\text{-value} = 8.86^{***} \\
\Delta R^2 = .118^{***}
\]

*Note: *\( p < .01; **p < .01; ***p < .001\)

Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.

Model 1: \( F(2, 661) = 8.86, p < .001, R^2 = .026 \)

Model 2: \( F(4, 659) = 27.65, p < .001, R^2 = .144 \)
Hypothesis 3-2, research question 4-3, & research question 5-3. Hypothesis 3-2 predicts participants’ positive subjective norms about family health history communication are positively associated with their engagement and identification. Research question 4-3 asked if power dynamics in family relate to engagement and identification. Research question 5-3 explored whether stigma about family health history relates to engagement and identification. First, bivariate Pearson correlations (Table 4-5) were performed to explore the hypothesis and research questions. The results show participants’ subjective norms (H3-2, $r = .26, p < .001$), stigma (RQ5-3, $r = .22, p < .001$), and family conflicts frequency (RQ4-3, $r = .13, p < .01$) were positively correlated with their identification, while family conflicts quantity was not correlated with it (RQ 4-2). In addition, according to the results, participants’ subjective norms (H3-2, $r = .30, p < .001$) and family conflicts frequency (RQ5-3, $r = .14, p < .001$) were positively correlated with their engagement, while family conflicts quantity and frequency (RQ4-3) was not correlated with it.

Next, to further investigate H 3-2, RQ 4-3 and 5-3, hierarchical regressions were conducted. Although identification and engagement are also highly correlated, due to the theoretical interest regarding identity and culture, separate analyses were run for these constructs to estimate the effect of culture. To explore the effects on identification, dummy-coded cultural identities (Americans = 00; Koreans = 10; and Chinese = 01) were entered in block 1, and subjective norms, family conflicts frequency, and stigma were entered in block 2. Table 4-7 reports the statistics related to this analysis and reveals that in both models, the variables together explained a significant amount of the variance of identification; Model 1: $F (2, 661) = 7.49, p < .01, R^2 = .022$; Model 2: $F (5, 658) = 22.31, p < .001, R^2 = .145$. According to the results of the second model, compared to American participants, Chinese participants
are more likely to identify with the message \( (\beta = .11, \ p < .05) \), and subjective norms \( (\beta = .29, \ p < .001) \), family conflicts frequency \( (\beta = .08, \ p < .05) \), and stigma \( (\beta = .20, \ p < .001) \) significantly predict participants’ identification.

To explore the effects on engagement, dummy-coded cultural identities (Americans = 00; Koreans = 10; and Chinese = 01) were entered in block 1, and subjective norms and stigma were entered in block 2. Table 4-8 reports the statistics related to this analysis and suggests that in both models, the variables together explained a significant amount of the variance of engagement; Model 1: \( F (2, 661) = 8.86, \ p < .001, R^2 = .026 \); Model 2: \( F (4, 659) = 27.65, \ p < .001, R^2 = .144 \). The results of the second model reveal compared to American participants, Korean participants are less likely to be engaged in the messages \( (\beta = -.09, \ p < .05) \) while Chinese participants’ engagement was significantly higher than American participants \( (\beta = .10, \ p < .05) \). Furthermore, subjective norms \( (\beta = .33, \ p < .001) \) and stigma \( (\beta = .15, \ p < .001) \) significantly predict participants’ engagement.

**Research question 6-1.** Research question 6-1 asked if the perceived boundary of “family” differs between cultures. To answer this question, first the participants were asked to choose one of the following three choices: when you think about what family means to you, you usually think of 1) Your biological parents, siblings, or children; 2) Your biological parents, siblings, children, grandparents, grandchildren, aunts, uncles, nephews, nieces or half-siblings; or 3) Your biological parents, siblings, children, grandparents, grandchildren, aunts, uncles, nephews, nieces, half-siblings, first cousins, great-grandparents or great grandchildren. Then, the participants were asked to choose one of the three choices. In addition to this, the following four questions were asked: (1) my family is composed of my parents, my sibling(s) and me; (2) I think my grandparents are included in my family; (3) I think
my aunts, uncles, nephews and nieces are included in my family; and (4) I think my first-cousins are included in my family. The response options range from 1 (strongly disagree) to 7 (strongly agree).

Although the first item requested the participants to choose one of the three options, this item was considered a continuous variable because each option represents the family boundary of the first, the second, or the third degree relatives. The first item was analyzed via univariate ANOVA, and the results showed a significant effect of identity condition on the participants’ perceived family boundary; $F(2, 661) = 20.60, p < .001$, partial $\eta^2 = .06$. Fisher’s least significant difference (LSD) comparisons showed that the main effect occurred because American participants’ perceived family boundary ($n = 317, M = 2.06, SD = .82$) was significantly wider than Korean participants’ ($n = 169, M = 1.61, SD = .77$) and Chinese participants’ perceived family boundary ($n = 178, M = 1.72, SD = .80$).

Then, since the other four items measuring perceived family boundary are highly correlated to each other, a multivariate analysis of variance (MANOVA) was performed. The results revealed a main effect for the identity condition, $F(8, 1316) = 9.22, p < .001$, Wilk’s Lambda = .90, partial $\eta^2 = .05$. Tests of between-subject effects indicated significant effects for all the four types of family boundary; (1) my family is composed of my parents, my sibling(s) and me, $F(2, 661) = 3.31, p < .05$, partial $\eta^2 = .01$; (2) I think my grandparents are included in my family, $F(2, 661) = 5.85, p < .01$, partial $\eta^2 = .02$; (3) I think my aunts, uncles, nephews and nieces are included in my family, $F(2, 661) = 21.80, p < .001$, partial $\eta^2 = .06$; and (4) I think my first-cousins are included in my family, $F(2, 661) = 23.80, p < .001$, partial $\eta^2 = .07$. Table 4-9 shows descriptive statistics and pairwise comparisons revealing how the main effect for each item occurred.
### Table 4-9

**Descriptive Statistics and Pairwise Comparisons for Perceived Family Boundary**

<table>
<thead>
<tr>
<th>Perceived Family Boundary</th>
<th>Identity</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>My family is composed of my biological parents, my sibling(s) and me</td>
<td>US</td>
<td>5.92</td>
<td>1.75</td>
<td>317</td>
</tr>
<tr>
<td></td>
<td>South</td>
<td>6.05</td>
<td>1.51</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Korea</td>
<td>5.61</td>
<td>1.74</td>
<td>178</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>5.61</td>
<td>1.74</td>
<td>178</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5.87</td>
<td>1.70</td>
<td>664</td>
</tr>
<tr>
<td>I think of my biological grandparents as being included in my family</td>
<td>US</td>
<td>6.07</td>
<td>1.49</td>
<td>317</td>
</tr>
<tr>
<td></td>
<td>South</td>
<td>5.64</td>
<td>1.51</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Korea</td>
<td>5.64</td>
<td>1.51</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>5.68</td>
<td>1.62</td>
<td>178</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5.85</td>
<td>1.54</td>
<td>664</td>
</tr>
<tr>
<td>I think of my biological aunts, uncles, nephews and nieces are included in my family</td>
<td>US</td>
<td>5.86</td>
<td>1.54</td>
<td>317</td>
</tr>
<tr>
<td></td>
<td>South</td>
<td>5.29</td>
<td>1.45</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Korea</td>
<td>5.29</td>
<td>1.45</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>4.92</td>
<td>1.73</td>
<td>178</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5.46</td>
<td>1.62</td>
<td>664</td>
</tr>
<tr>
<td>I think of my first-cousins are included in my family</td>
<td>US</td>
<td>5.71</td>
<td>1.60</td>
<td>317</td>
</tr>
<tr>
<td></td>
<td>South</td>
<td>5.13</td>
<td>1.50</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Korea</td>
<td>5.13</td>
<td>1.50</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>4.67</td>
<td>1.86</td>
<td>178</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5.28</td>
<td>1.71</td>
<td>664</td>
</tr>
</tbody>
</table>

*Note: a, b, or c = mean difference*
### Table 4-10

**LSD Comparisons for Perceived Family Boundary**

<table>
<thead>
<tr>
<th>Perceived Family Boundary</th>
<th>Identity Type</th>
<th>MD (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My family is composed of my biological parents, my sibling(s) and me</td>
<td>US</td>
<td>S. Korea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>South Korea</td>
<td>US</td>
</tr>
<tr>
<td></td>
<td></td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>US</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S. Korea</td>
</tr>
<tr>
<td>I think of my biological grandparents as being included in my family</td>
<td>US</td>
<td>S. Korea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>South Korea</td>
<td>US</td>
</tr>
<tr>
<td></td>
<td></td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>US</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S. Korea</td>
</tr>
<tr>
<td>I think of my biological aunts, uncles, nephews and nieces are included in my family</td>
<td>US</td>
<td>S. Korea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>South Korea</td>
<td>US</td>
</tr>
<tr>
<td></td>
<td></td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>US</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S. Korea</td>
</tr>
<tr>
<td>I think of my first-cousins are included in my family</td>
<td>US</td>
<td>S. Korea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>South Korea</td>
<td>US</td>
</tr>
<tr>
<td></td>
<td></td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>US</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S. Korea</td>
</tr>
</tbody>
</table>

*Note: MD = Mean difference, SE = Standard error

*p < .05, **p < .01; ***p < .001
Research question 6-2. Research question 6-2 asked if cultural and/or subjective norms that guide intention to communicate family health history, differ between cultures in relation to perceived family boundary, age and gender.

Table 4-11

Family Boundaries Relating to Family Health History Communication in Three Cultures

<table>
<thead>
<tr>
<th>Family Members to Communicate to</th>
<th>US</th>
<th>S. Korea</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicate Family Health History</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Parents and full siblings</td>
<td>150 (47.3)</td>
<td>95 (56.2)</td>
<td>89 (50.0)</td>
</tr>
<tr>
<td>Parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings</td>
<td>83 (26.2)</td>
<td>50 (29.6)</td>
<td>53 (29.8)</td>
</tr>
<tr>
<td>Parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings, first-cousins, great-grandparents</td>
<td>79 (24.9)</td>
<td>19 (11.2)</td>
<td>40 (16.9)</td>
</tr>
<tr>
<td>Other</td>
<td>5 (1.6)</td>
<td>6 (3.0)</td>
<td>6 (3.4)</td>
</tr>
<tr>
<td>Total</td>
<td>317 (100.0)</td>
<td>169 (100.0)</td>
<td>178 (100.0)</td>
</tr>
</tbody>
</table>

Note: \( \chi^2 (6, N = 664) = 15.71, p < .05 \).

To answer this research question, first of all, participants were asked to read and answer the following question; with regard to the 20 questions above (relating to cultural and/or subjective norms), “I think the family members I may communicate family health history with are 1) parents and full siblings; 2) parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings; 3) parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings, first-cousins, great-
grandparents, or 4) other. As Table 4-11 shows, 3x4 chi-square test revealed that a significant difference in family boundaries between three cultures in terms of reference groups that guide intention and motivation to comply with these reference groups relating to family health history communication; $\chi^2(6, N = 664) = 15.71, p < .05$.

Then, to investigate the differences in age, participants were asked to read and answer the following question; with regard to the 20 questions above I think the family members I may communicate family health history with are 1) older member, 2) younger members, 3) both, or 4) none. As Table 4-12 shows, 3x4 chi-square test revealed that a significant age difference between three cultures in terms of reference groups that guide intention and motivation to comply with these reference groups relating to family health history communication; $\chi^2(6, N = 664) = 25.77, p < .001$.

Table 4-12

**Age Differences Relating to Family Health History Communication in Three Cultures**

<table>
<thead>
<tr>
<th>Family Members to Communicate to</th>
<th>US</th>
<th>S. Korea</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicate Family Health History</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Older members</td>
<td>152 (47.9)</td>
<td>70 (41.4)</td>
<td>104 (58.4)</td>
</tr>
<tr>
<td>Younger members</td>
<td>10 (3.2)</td>
<td>11 (6.5)</td>
<td>16 (9.0)</td>
</tr>
<tr>
<td>Both</td>
<td>153 (48.3)</td>
<td>83 (49.1)</td>
<td>56 (31.5)</td>
</tr>
<tr>
<td>None</td>
<td>2 (.6)</td>
<td>5 (3.0)</td>
<td>2 (1.1)</td>
</tr>
<tr>
<td>Total</td>
<td>317 (100.0)</td>
<td>169 (100.0)</td>
<td>178 (100.0)</td>
</tr>
</tbody>
</table>

*Note: $\chi^2(6, N = 664) = 25.77, p < .001$.*
Lastly, to investigate the differences in gender, participants were asked to read and answer the following question; with regard to the 20 questions above I think the family members I may communicate family health history with are 1) female member, 2) male members, 3) both, or 4) none. As Table 4-13 shows, 3x4 chi-square test revealed that a significant age difference between three cultures in terms of reference groups that guide intention and motivation to comply with these reference groups relating to family health history communication; $\chi^2 (6, N = 664) = 43.67, p < .001$.

**Table 4-13**

*Gender Differences Relating to Family Health History Communication in Three Cultures*

<table>
<thead>
<tr>
<th>Family Members to Communicate to</th>
<th>US</th>
<th>S. Korea</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicate Family Health History</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Female members</td>
<td>26 (8.2)</td>
<td>21 (12.4)</td>
<td>49 (27.5)</td>
</tr>
<tr>
<td>Male members</td>
<td>9 (2.8)</td>
<td>10 (5.9)</td>
<td>10 (5.6)</td>
</tr>
<tr>
<td>Both</td>
<td>280 (88.3)</td>
<td>134 (79.3)</td>
<td>116 (65.2)</td>
</tr>
<tr>
<td>None</td>
<td>2 (.6)</td>
<td>4 (2.4)</td>
<td>3 (1.7)</td>
</tr>
<tr>
<td>Total</td>
<td>317 (100.0)</td>
<td>169 (100.0)</td>
<td>178 (100.0)</td>
</tr>
</tbody>
</table>

*Note: $\chi^2 (6, N = 664) = 43.67, p < .001$.*
Research question 6-3. Research question 6-3 asked if cultural norms regarding family boundary, age, and gender relate to family health history communication, engagement and identification. To answer this question, first a 4*4 one-way analysis of co-variance (ANCOVA) of cultural norms regarding gender (I may communicate with 1) female members, 2) male members, 3) both, and 4) none) and age (I may communicate with 1) older members, 2) younger members, 3) both, and 4) none) were performed on the participants’ current family health history communication with a covariate of perceived family boundary. The result revealed no significant main effect of norms regarding age, $F(3, 651) = .36, p = .78$, partial $\eta^2 = .00$; and gender, $F(3, 651) = .17, p = .92$, partial $\eta^2 = .00$ while there were significant effects of covariate, perceived family boundary, $F(1, 651) = 25.26, p < .01$, partial $\eta^2 = .04$. No interaction effect was significant.

Then, a 4 (1) female members, 2) male members, 3) both, and 4) none) * 4 (1) older members, 2) younger members, 3) both, and 4) none) multivariate analysis of co-variance (MANCOVA) of cultural norms regarding gender and age were performed on the participants’ identification, and engagement with the same covariate. According to the results, there was no significant main effect for age; $F(6, 1300) = 1.32, p = .24$, Wilk’s Lambda = .99, partial $\eta^2 = .01$, as well as gender; $F(6, 1300) = .45, p = .84$, Wilk’s Lambda = 1.00, partial $\eta^2 = .00$, and no interaction effect was significant either.
Table 4-14

**Means, Standard Deviations, and Cultural Differences in Individual Characteristics: RQ7-1, RQ8-1, & RQ9-1**

<table>
<thead>
<tr>
<th></th>
<th>Mean (SD)</th>
<th>American Mean (SD)</th>
<th>Korean Mean (SD)</th>
<th>Chinese Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrative tendencies (RQ7-1)</td>
<td>5.84 (.92)</td>
<td>6.15 (.73)\textsubscript{a}</td>
<td>5.57 (.96)\textsubscript{b}</td>
<td>5.53 (1.01)\textsubscript{b}</td>
</tr>
<tr>
<td>Spirituality (RQ8-1)</td>
<td>4.49 (1.32)</td>
<td>4.10 (.91)\textsubscript{a}</td>
<td>4.51 (1.32)\textsubscript{a}</td>
<td>4.70 (1.50)\textsubscript{b}</td>
</tr>
<tr>
<td>Intrinsic religiosity (RQ8-1)</td>
<td>3.81 (1.46)</td>
<td>3.60 (1.20)\textsubscript{a}</td>
<td>4.27 (1.49)\textsubscript{b}</td>
<td>3.78 (1.20)\textsubscript{a}</td>
</tr>
<tr>
<td>Extrinsic religiosity (RQ8-1)</td>
<td>4.33 (.99)</td>
<td>4.24 (.86)\textsubscript{a}</td>
<td>4.25 (1.09)\textsubscript{a}</td>
<td>4.56 (1.05)\textsubscript{b}</td>
</tr>
<tr>
<td>Paranormal belief (RQ8-1)</td>
<td>3.64 (1.28)</td>
<td>3.34 (1.83)\textsubscript{a}</td>
<td>3.50 (1.15)\textsubscript{a}</td>
<td>4.30 (1.28)\textsubscript{b}</td>
</tr>
<tr>
<td>Genetic essentialism (RQ9-1)</td>
<td>3.97 (1.19)</td>
<td>3.78 (1.07)\textsubscript{a}</td>
<td>4.13 (1.25)\textsubscript{b}</td>
<td>4.16 (1.26)\textsubscript{b}</td>
</tr>
</tbody>
</table>

*Note:* American \((n) = 317\); Korean \((n) = 169\); and Chinese \((n) = 178\)

\(a, \text{ or } c = \text{Fisher's least significance difference (LSD)}\)

\(*p < .05; **p < .01; ***p < .001\)
Research question 7-1. Research question 7-1 asked if narrative tendencies differ between cultures. A one-way analysis of variance (ANOVA) of three identity condition was performed on the participants’ narrative tendencies. The results revealed a significant main effect of identity, \( F(2, 661) = 38.80, p < .001 \), partial \( \eta^2 = .11 \).

Although overall narrative tendencies are pretty high in the three cultural groups, Fisher’s least significant difference (LSD) comparisons showed that the main effect for identity occurred because American participants’ narrative tendencies (\( n = 317, M = 6.15, SD = .73 \)) was significantly higher than Korean participants’ (\( n = 169, M = 5.57, SD = .96 \)) and Chinese participants’ narrative tendencies (\( n = 178, M = 5.53, SD = 1.01 \)).

Research question 8-1. Research question 8-1 asked if spirituality, religiosity and paranormal beliefs differ between cultures. To answer this question, first of all, a multivariate analysis of variance (MANOVA) of three identity conditions across the dependent variables of spirituality (including religiosity and paranormal beliefs) was conducted to investigate the differences of the dependent variables between cultures. A MANOVA of three identity conditions across spirituality, religiosity, and paranormal beliefs revealed a main effect for the identity condition, \( F(8, 1316) = 24.28, p < .001 \), Wilk’s Lambda = .76, partial \( \eta^2 = .13 \).

Tests of between-subject effects indicated significant effects of identity for spirituality, \( F(2, 661) = 11.81, p < .001 \), partial \( \eta^2 = .04 \); intrinsic religiosity, \( F(2, 661) = 12.08, p < .001 \), partial \( \eta^2 = .04 \); extrinsic religiosity, \( F(2, 661) = 6.81, p < .01 \), partial \( \eta^2 = .02 \); and paranormal belief; \( F(2, 661) = 37.12, p < .001 \), partial \( \eta^2 = .10 \).

Fisher’s least significant difference (LSD) comparisons showed that the main effect for spirituality occurred because Chinese participants’ spirituality (\( n = 178, M = \)
4.10, SD = .91) was significantly lower than Korean participants’ (n =169, M = 4.51, SD = 1.32) and American participants’ spirituality (n = 317, M = 4.70, SD = 1.50). Also, the main effect for intrinsic religiosity occurred because Korean participants’ intrinsic religiosity (n = 169, M = 4.27, SD = 1.49) was significantly higher than American participants’ (n =317, M = 3.60, SD = 1.52) and Chinese participants’ intrinsic religiosity (n = 178, M = 3.78, SD = 1.20). On the contrary, the main effect for extrinsic religiosity occurred because Chinese participants’ extrinsic religiosity (n = 178, M = 4.56, SD = 1.05) was significantly higher than American participants’ (n =317, M = 4.24, SD = .86) and Korean participants’ extrinsic religiosity (n = 169, M = 4.25, SD = 1.09). Additionally, the main effect for paranormal belief occurred because Chinese participants’ paranormal belief (n = 178, M = 4.30, SD = 1.28) was significantly higher than American participants’ (n =317, M = 3.34, SD = 1.83) and Korean participants’ paranormal belief (n = 169, M = 3.50, SD = 1.15).

**Research question 9-1.** Research question 8-1 asked if genetic beliefs differ between cultures. To answer this question, an analysis of variance (ANOVA) of three identity conditions on participants’ genetic beliefs was conducted. The result revealed a main effect of the identity condition on participants’ genetic essentialist belief, $F(2, 661) = 12.11, p < .001$, partial $\eta^2 = .03$. According to the least significant difference (LSD) comparison, the main effect for genetic essentialist belief was occurred because American participants’ genetic essentialist belief (n = 317, M = 3.78, SD = 1.07) was significantly lower than Korean participants’ (n =169, M = 4.13, SD = 1.25) and Chinese participants’ genetic essentialist belief (n = 178, M = 4.16, SD = 1.26).
Table 4-15

*Bivariate Correlation of Engagement, Identification, Individual Characteristics, and Current FHH Communication: RQ8-2, RQ8-3, RQ 9-2, RQ9-3, & H4*

<table>
<thead>
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<td>.14**</td>
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<td>.63***</td>
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<td>-.06</td>
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<td>.20***</td>
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<td>.12**</td>
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<td>-.06</td>
<td>-.11**</td>
<td>.13**</td>
<td>.13**</td>
<td>.17***</td>
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<td>.08*</td>
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<td>.00</td>
<td>.18***</td>
<td>.15***</td>
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</tr>
</tbody>
</table>

*Note: *p < .01; **p < .01; ***p < .001*
Table 4-16

Summary of Hierarchical Regression Analysis for Individual Characteristics Predicting Family Health History Communication: RQ 8-2 & RQ 9-2

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
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<th>Model 2</th>
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<td>β</td>
<td>B</td>
<td>B(SE)</td>
<td>β</td>
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<td>-.27***</td>
</tr>
<tr>
<td>Identity2 (Chinese)</td>
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<td>.15</td>
<td>-.06</td>
<td>-.63</td>
<td>.16</td>
<td>-.17***</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>-.12</td>
<td>.06</td>
<td>-.10</td>
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<tr>
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<td></td>
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</tr>
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<td></td>
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<td>15.00***</td>
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</tbody>
</table>

*Note:* *p < .05; **p < .01; ***p < .001
Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.
Model 1: $F (2, 661) = 11.14, p < .001, R^2 = .033$; Model 2: $F (6, 657) = 15.00, p < .001, R^2 = .120$
Research question 8-2 & research question 9-2. Research question 8-2 asked if spirituality, religiosity and paranormal beliefs relate to family health history communication. Research question 9-2 asked if genetic beliefs relate to family health history communication. To investigate the research questions, first of all, bivariate Pearson correlations (Table 4-15) were performed. The results show participants’ spirituality (RQ8-2, $r = .08$, $p < .05$), intrinsic religiosity (RQ8-2, $r = .15$, $p < .001$), paranormal belief (RQ8-2, $r = .18$, $p < .001$) and genetic essentialism (RQ9-2, $r = .15$, $p < .001$) were positively correlated with their current family health history communication.

Next, to further investigate RQ 8-2 and 9-2, a hierarchical regression was conducted by entering dummy-coded cultural identities (Americans = 00; Koreans = 10; and Chinese = 01) in block 1, and spirituality, intrinsic religiosity, paranormal belief and genetic essentialism in block 2. Table 4-16 reports the statistics related to this analysis and reveals that in both models, the variables together explained a significant amount of the variance of family health history communication; Model 1: $F (2, 661) = 11.14$, $p < .001$, $R^2 = .033$; Model 2: $F (6, 657) = 15.00$, $p < .001$, $R^2 = .120$. According to the results of the second model, compared to American participants, both Korean ($\beta = -.27$, $p < .001$) and Chinese ($\beta = -.17$, $p < .001$) participants are less likely to communicate family health history, and family health history communication was significantly predicted by intrinsic religiosity ($\beta = .22$, $p < .001$), paranormal belief ($\beta = .19$, $p < .001$), and genetic essentialism ($\beta = .12$, $p < .01$).
Table 4-17

Summary of Hierarchical Regression Analysis for Individual Characteristics Predicting Identification: H4, RQ8-3, & RQ9-3

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
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</tr>
</thead>
<tbody>
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<td></td>
<td>B</td>
<td>B(SE)</td>
<td>β</td>
<td>B</td>
</tr>
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<td>Identity1 (Korean)</td>
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<td>-.03</td>
<td>-.24</td>
</tr>
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<td>Identity2 (Chinese)</td>
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<td>.05</td>
<td>.06</td>
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<td>Paranormal belief</td>
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<td>Genetic essentialism</td>
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<td>.04</td>
<td>.21***</td>
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</table>

Note: *p < .05; **p < .01; ***p < .001
Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.
Model 1: $F(2, 661) = 7.59, p < .01, R^2 = .022$; Model 2: $F(6, 657) = 18.02, p < .001, R^2 = .141$
Table 4-18

Summary of Hierarchical Regression Analysis for Individual Characteristics Predicting Engagement: H4, RQ8-3, & RQ9-3

<table>
<thead>
<tr>
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<th>Model 1</th>
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</tr>
</thead>
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<td>Identity2 (Chinese)</td>
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<td>Intrinsic religiosity</td>
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<tr>
<td>Extrinsic religiosity</td>
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<td>.04</td>
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<tr>
<td>Paranormal belief</td>
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<td>Genetic essentialism</td>
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<tr>
<td>(R^2)</td>
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<tr>
<td>(F)-value</td>
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</tr>
<tr>
<td>(\Delta R^2)</td>
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<td></td>
</tr>
</tbody>
</table>

Note: *p < .05; **p < .01; ***p < .001
Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.
Model 1: \(F(3, 660) = 12.20, p < .001, R^2 = .053\); Model 2: \(F(8, 655) = 15.78, p < .001, R^2 = .162\)
Hypothesis 4, research question 8-3, & research question 9-3. Hypothesis 4 posits that narrative tendencies will be positively associated with engagement and identification. Research question 8-3 asked if spirituality, religiosity and paranormal beliefs relate to engagement and identification. Research question 9-3 asked if genetic beliefs relate to engagement and identification. To investigate the hypotheses and research questions, first of all, bivariate Pearson correlations (Table 4-15) were performed to explore the hypothesis and research questions. The results show participants’ intrinsic religiosity (RQ8-3, \( r = .22, p < .001 \)), extrinsic religiosity (RQ8-3, \( r = .11, p < .01 \)), paranormal beliefs (RQ8-3, \( r = .21, p < .001 \)) and genetic essentialism (RQ9-3, \( r = .26, p < .001 \)) were positively correlated with their identification. In addition, according to the results, participants’ narrative tendencies (H4, \( r = .15, p < .001 \)), spirituality (RQ8-3, \( r = .08, p < .05 \)), intrinsic religiosity (RQ8-3, \( r = .19, p < .001 \)), extrinsic religiosity (RQ8-3, \( r = .10, p < .05 \)), paranormal beliefs (RQ8-3, \( r = .20, p < .001 \)) and genetic essentialism (RQ9-3, \( r = .24, p < .001 \)) were positively correlated with their engagement.

Next, to further investigate H4, RQs 8-3 and 9-3, hierarchical regressions were conducted. To explore the effects on identification, dummy-coded cultural identities (Americans = 00; Koreans = 10; and Chinese = 01) were entered in block 1, and intrinsic religiosity, extrinsic religiosity, paranormal beliefs and genetic essentialism were entered in block 2. Table 4-17 reports the statistics related to this analysis and reveals that in both models, the variables together explained a significant amount of the variance of identification; Model 1: \( F (2, 661) = 7.59, p < .01, R^2 = .022 \); Model 2: \( F (6, 657) = 18.02, p < .001, R^2 = .141 \). According to the results of the second model, compared to American participants, Korean participants are less likely to identify with the message (\( \beta = .11, p < .05 \)), and intrinsic religiosity (\( \beta = .20, p \)
<.001), paranormal beliefs ($\beta = .12, p < .01$), and genetic essentialism ($\beta = .21, p < .001$) significantly predict participants’ identification.

To explore the effects on engagement, dummy-coded cultural identities (Americans = 00; Koreans = 10; and Chinese = 01) were entered in block 1, and narrative tendencies, spirituality, intrinsic religiosity, extrinsic religiosity, paranormal beliefs and genetic essentialism were entered in block 2. Since narrative tendencies, which were considered in H4, predicted participants’ engagement (Table 4-15), it was entered in this regression model as a control variable. Table 4-18 reports the statistics related to this analysis and suggests that in both models, the variables together explained a significant amount of the variance of engagement; Model 1: $F(3, 660) = 12.20, p < .001, R^2 = .053$; Model 2: $F(8, 655) = 15.78, p < .001, R^2 = .162$. The results of the second model reveal compared to American participants, Korean participants are less likely to be engaged in the messages ($\beta = - .14, p < .01$), and participants’ narrative tendencies ($\beta = .17, p < .001$), intrinsic religiosity ($\beta = .23, p < .001$), paranormal beliefs ($\beta = .14, p < .01$), and genetic essentialism ($\beta = .19, p < .001$) significantly predict participants’ engagement in the message.

**Research question 7-2.** Research question 7-2 asked if the associations between message processing (engagement & identification) and narrative tendencies are moderated by the types of cultural narrative and participants’ identity. To answer this research question, Hayes’ PROCESS macro in SPSS was used because this research question includes two moderator variables, one of which functions as a variable (message type) moderating the moderating effect of the other variable (identity). The relationship among these variables is called ‘moderated moderation,’ which is better known as three-way interaction.
Figure 4.1 Model 3 in PROCESS by Hayes (2013)
Although interpreting such a model can be quite complicated, thanks to PROCESS, it became much more convenient to extend the principles of simple moderation to complex models with multiple interactions, and probe the models (Hayes, 2013). A basic outline of the analysis is illustrated in Figure 4.1 (i.e., Model 3 in PROCESS) (Hayes, 2013). In model 3, researchers can investigate whether the conditional effect of X on Y differs between two groups defined (Hayes, 2015). A bootstrapping method with 5000 samples and bias-corrected, 95% confidence intervals was used.

As Tables 4-19 and 4-20 present, although the regression model including the moderation effects of the type of cultural narrative and participants’ identity on the associations between narrative tendencies and engagement was significant, $F (7, 656) = 2.74$, $R^2 = .03$, $p < .01$, the model on the association between narrative tendencies and identification was not significant; $F (7, 656) = 1.52$, $R^2 = .02$, $p = .16$. In addition, in both models, the association between message processing (engagement & identification) and narrative tendencies were not moderated by the types of cultural narrative and participants’ identity.
### Table 4-19

**Moderation Effects of the Type of Cultural Narrative and Participants’ Identity on the Associations between Narrative Tendencies (X) and Identification (Y)**

<table>
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<tr>
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<th>b(SE)</th>
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<th>Sig.(p)</th>
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<th>ULCI</th>
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<td>-.20</td>
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<td>.74</td>
</tr>
<tr>
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<td>.69</td>
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<td>.53</td>
</tr>
<tr>
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<td>.26</td>
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<td>.32</td>
<td>-.78</td>
<td>.25</td>
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</tbody>
</table>

*Note:* Identity: Asian = 1, American = 0; Message type: Social-embeddedness message = 1, Autonomy control message = 0

\[ F(7, 656) = 1.52, R^2 = .02, p = .16; \Delta R^2 \text{ due to 3-way interaction} = .002, p = .32 \]

### Table 4-20

**Moderation Effects of the Type of Cultural Narrative and Participants’ Identity on the Associations between Narrative Tendencies (X) and Engagement (Y)**

<table>
<thead>
<tr>
<th></th>
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<th>Sig.(p)</th>
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<td>.45</td>
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<td>-.62</td>
<td>.54</td>
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<td>.34</td>
</tr>
</tbody>
</table>

*Note:* Identity: Asian = 1, American = 0; Message type: Social-embeddedness message = 1, Autonomy control message = 0

\[ F(7, 656) = 2.74, R^2 = .03, p < .01; \Delta R^2 \text{ due to 3-way interaction} = .00, p = .54 \]
Table 4-21

Means, Standard Deviations, and Cultural Differences in the Three Constructs of TPB: RQ3, RQ10, & RQ11

<table>
<thead>
<tr>
<th></th>
<th>Mean (SD)</th>
<th>American Mean (SD)</th>
<th>Korean Mean (SD)</th>
<th>Chinese Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective norm (RQ3)</td>
<td>4.65 (1.14)</td>
<td>4.94 (1.10)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.44 (1.13)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.32 (1.10)&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Attitude (RQ10)</td>
<td>5.78 (1.11)</td>
<td>6.00 (.98)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5.61 (1.13)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>5.56 (1.23)&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>PBC (RQ11)</td>
<td>5.11 (.99)</td>
<td>5.43 (.98)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.88 (.91)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.76 (.91)&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Note: American (n) = 317; Korean (n) = 169; and Chinese (n) = 178

<sup>a, b, or c</sup> = Fisher’s least significance difference (LSD)

*<i>p < .05; **p < .01; ***p < .001</i>
Research question 10. Research question 10 asked if attitudes about family health history communication differ between cultures. To answer this question, a one-way analysis of variance (ANOVA) of three identity conditions on participants’ attitude about family health history communication. A one-way ANOVA revealed a main effect of identity condition on participants’ attitude about family health history communication, \( F(2, 661) = 11.80, p < .001, \) partial \( \eta^2 = .03 \).

Although overall attitude about family health history communication is pretty positive in the three cultural groups, according to the least significant difference (LSD) comparison, the main effect for attitude about family health history communication occurred because American participants’ positive attitude \((n = 317, M = 6.00, SD = .98)\) was significantly higher than Korean participants’ \((n = 169, M = 5.61, SD = 1.13)\) and Chinese participants’ positive attitude \((n = 178, M = 5.56, SD = 1.23)\).

Research question 11. Research question 11 asked if perceived behavioral control about family health history communication differs between cultures. To answer this question, a one-way analysis of variance (ANOVA) of three identity conditions on participants’ perceived behavioral control about family health history communication was performed. A one-way ANOVA revealed a main effect of the identity condition on participants’ attitude about family health history communication, \( F(2, 661) = 31.33, p < .001, \) partial \( \eta^2 = .10 \).

According to the least significant difference (LSD) comparison, the main effect for perceived behavioral control was occurred because American participants’ perceived behavioral control \((n = 317, M = 5.43, SD = .98)\) was significantly higher than Korean participants’ \((n = 169, M = 4.88, SD = .91)\) and Chinese participants’ perceived behavioral control \((n = 178, M = 4.76, SD = .91)\).
Table 4-22

Bivariate Correlation of Major Variables in TPB, FHH Communication, and Message Processing: H3-1, H3-2, H5-1, H5-2, H6-1, & H6-2

<table>
<thead>
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</table>

Note: *p < .05; **p < .01; ***p < .001
Table 4-23

*Summary of Hierarchical Regression Analysis for Three Construct of TPB Predicting Family Health History Communication: H3-1, H5-1, & H6-1*

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
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<th>Model 2</th>
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<td>B</td>
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<td>Subjective norm</td>
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<td>.06</td>
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<td>.06</td>
<td>.03</td>
<td></td>
</tr>
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<td>PBC</td>
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</tr>
<tr>
<td>$R^2$</td>
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<td>$F$-value</td>
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<td>38.84***</td>
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<tr>
<td>$\Delta R^2$</td>
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<td></td>
<td>.195***</td>
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</tr>
</tbody>
</table>

*Note:* *p < .05; **p < .01; ***p < .001

Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.
Model 1: $F(2, 661) = 11.14, p < .001, R^2 = .033$; Model 2: $F (5, 658) = 38.84, p < .001, R^2 = .228$
**Hypothesis 5-1 & hypothesis 6-1.** Hypothesis 5-1 posits that participants’ positive attitudes about family health history communication are positively associated with their family health history communication. Hypothesis 6-1 posits that participants’ perceived behavioral control about family health history communication is positively associated with their family health history communication. To test the hypotheses, first of all, bivariate Pearson correlations (Table 4-22) were performed. The results show participants’ attitudes about family health history communication (H5-1, r = .23, p < .001), and perceived behavioral control (H6-1, r = .20, p < .001) were positively correlated with their current family health history communication.

To further investigate H 5-1 and H 6-1, a hierarchical regression was conducted by entering dummy-coded cultural identities (Americans = 00; Koreans = 10; and Chinese = 01) in block 1, and subjective norms, attitude, and perceived behavioral control in block 2. Although the influence of subjective norms was explored in Table 4-6 with other cultural norms, subjective norm was entered in this model again to investigate the relative influences of the three constructs of TPB. Table 4-23 reports the statistics related to this analysis and reveals that in both models, the variables together explained a significant amount of the variance of family health history communication; Model 1: F (2, 661) = 11.14, p < .001, R² = .033; Model 2: F (5, 658) = 38.84, p < .001, R² = .228. According to the results of the second model, compared to American participants, Korean participants are less likely to communicate family health history (β = -.11, p < .01), and among the three construct of TPB, only subjective norms (β = .45, p < .001) significantly predict family health history communication.
Table 4-24

*Summary of Hierarchical Regression Analysis for Three Construct of TPB Predicting Identification: H3-2, H5-2, & H6-2*

<table>
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<td>.05</td>
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</tr>
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</table>

*Note:* *p < .05; **p < .01; ***p < .001
Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.
Model 1: $F (2, 661) = 7.59, p < .01, R^2 = .022$; Model 2: $F (5, 658) = 16.19, p < .001, R^2 = .110$
### Table 4-25

**Summary of Hierarchical Regression Analysis for Three Construct of TPB Predicting Engagement: H3-2, H5-2, & H6-2**

<table>
<thead>
<tr>
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<th>Model 2</th>
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<td>B(SE)</td>
<td>β</td>
<td>B</td>
<td>B(SE)</td>
<td>β</td>
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<tr>
<td>Identity1 (Korean)</td>
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<td>-.07</td>
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<td>-.03</td>
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<tr>
<td>Identity2 (Chinese)</td>
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<td>.47</td>
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<td>.19***</td>
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</tr>
<tr>
<td>$F$-value</td>
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<td>20.89***</td>
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<tr>
<td>$\Delta R^2$</td>
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<td></td>
<td></td>
<td>.111***</td>
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</tbody>
</table>

*Note: *p < .05; **p < .01; ***p < .001

Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.

Model 1: $F(2, 661) = 8.66, p < .001, R^2 = .026$; Model 2: $F(5, 658) = 20.89, p < .001, R^2 = .137$
Hypothesis 5-2 & hypothesis 6-2. Hypothesis 5-2 predicts participants’ positive attitudes about family health history communication are positively associated with their engagement and identification. Hypothesis 6-2 posits participants’ perceived behavioral control about family health history communication is positively associated with their engagement and identification. To explore the hypotheses, first of all, bivariate Pearson correlations (Table 4-22) were performed. The results show participants’ attitudes about family health history communication (H5-2, \( r = .15, p < .001 \)) and perceived behavioral control (H6-2, \( r = .11, p < .01 \)) were positively correlated with their identification. In addition, according to the results, participants’ attitudes (H5-2, \( r = .22, p < .001 \)) and perceived behavioral control (H6-2, \( r = .13, p < .01 \)) were also positively correlated with their engagement as well.

To further investigate H 5-2 and 6-2, hierarchical regressions were conducted. To explore the effects on identification, dummy-coded cultural identities (Americans = 00; Koreans = 10; and Chinese = 01) were entered in block 1, and subjective norms, attitude, and perceived behavioral control were entered in block 2. Although the influence of subjective norms was explored in Table 4-7 with other cultural norms, subjective norm was entered in this model again to investigate the relative influences of the three constructs of TPB. Table 4-24 reports the statistics related to this analysis and reveals that in both models, the variables together explained a significant amount of the variance of identification; Model 1: \( F (2, 661) = 7.59, p < .01, R^2 = .022 \); Model 2: \( F (5, 658) = 16.19, p < .001, R^2 = .110 \). According to the results of the second model, compared to American participants, Chinese participants are more likely to identify with the message (\( \beta = .23, p < .001 \)), and among the three constructs of TPB, only subjective norms (\( \beta = .27, p < .001 \)) significantly predict participants’ identification.
Next, to explore the effects of three constructs of TPB on engagement, again, dummy-coded cultural identities (Americans = 00; Koreans = 10; and Chinese = 01) were entered in block 1, and subjective norms, attitude, and perceived behavioral control were entered in block 2. Although the influence of subjective norms was explored in Table 4-8 with other cultural norms, subjective norm was entered in this model again to investigate the relative influences of the three constructs of TPB. Table 4-25 shows the statistics related to this analysis and suggests that in both models, the variables together explained a significant amount of the variance of engagement;

Model 1: $F(2, 661) = 8.66, p < .001, R^2 = .026$; Model 2: $F(5, 658) = 20.89, p < .001, R^2 = .137$. The results of the second model reveal compared to American participants, Chinese participants are more likely to be engaged in the messages ($\beta = .19, p < .001$). Furthermore, subjective norms ($\beta = .28, p < .001$) and attitude ($\beta = .12, p < .01$) significantly predict participants’ engagement.

**Hypothesis 7-1 & hypothesis 7-2.** Hypothesis 7-1 posits that Asian perceivers experience more positive message outcomes (perceived message effectiveness, comprehension, perceived message quality, resistance to counter-arguing) and behavioral intention with social-embeddedness narratives (Chinese & South Korean) than the Euro-American autonomy-control narrative. On the contrary, Hypothesis 7-2 predicts that American perceivers experience more positive message outcomes and behavioral intention with a Euro-American autonomy-control narrative than the Chinese or South Korean social-embeddedness narrative.

To test the two hypotheses, a 3x3 multivariate analysis of co-variance (MANCOVA) for identity type condition (Korean, Chinese and American) and cultural narrative condition (Korean social-embeddedness narrative, Chinese social embeddedness narrative, and Euro-American autonomy-control narrative) across the
dependent variables of perceived message effectiveness, comprehension, perceived message quality, and resistance to counter-arguing with the covariate of narrative tendencies and current family health history communication were conducted. The results revealed a main effect for the identity condition, $F(8, 1300) = 9.70, p < .001$, Wilk’s Lambda = .89, partial $\eta^2 = .06$, such that the dependent variables of message effectiveness, comprehension, perceived message quality, and resistance to counter-arguing differ across identity conditions. In addition, there were main effects of narrative tendencies; $F(4, 650) = 25.09, p < .001$, Wilk’s Lambda = .87, partial $\eta^2 = .13$; and current family health history communication; $F(4, 650) = 7.99, p < .001$, Wilk’s Lambda = .95, partial $\eta^2 = .05$. However, there were no significant effects for narrative message type; $F(8, 1300) = 1.06, p = .39$, Wilk’s Lambda = .99, partial $\eta^2 = .01$. No interaction effects were significant.

According to the tests of between-subjects effects, however, narrative message type had a significant effect on resistance to counter-arguing; $F(2,654) = 3.78, p < .05$, partial $\eta^2 = .01$. In addition, as Table 4-2 presents, Fisher’s least significant difference (LSD) comparisons showed that there were significant differences in resistance to counter-arguing across the three narrative type conditions. Specifically, Korean participants’ resistance to counter-arguing was significantly higher in Korean social-embeddedness condition ($n = 218, M = 5.27, SD = 1.45$) than Chinese social-embeddedness ($n = 225, M = 4.97, SD = 1.41$) and Euro-American Autonomy control ($n = 221, M = 4.99, SD = 1.36$) conditions. However, there was no message effect found in other identity conditions.

In addition, as Table 4-2 reveals, identity conditions significantly affected all the variables of message processing and outcomes. Furthermore, the second-order pairwise comparison analyses in each identity condition revealed that the significant
effect of message types on resistance to counter-arguing was generated because
Korean participants’ resistance to counter-arguing was significantly higher in Korean
social-embeddedness condition ($n = 54, M = 5.06, SD = 1.29$) than Chinese social-
embeddedness condition ($n = 58, M = 4.53, SD = 1.46$). However, overall, Hypothesis
7-1 and 7-2 were not supported.

**Hypothesis 7-3 & hypothesis 7-4.** Hypothesis 7-3 posits that Korean
perceivers experience more positive message outcomes (perceived message
effectiveness, comprehension, perceived message quality, resistance to counter-
arguing) and behavioral intention with Korean social-embeddedness narrative than
Chinese social-embeddedness narrative. Hypothesis 7-4 predicts that Chinese
perceivers experience more positive message outcomes (perceived message
effectiveness, comprehension, perceived message quality, resistance to counter-
arguing) and behavioral intention with Chinese social-embeddedness narrative than
Korean social-embeddedness narrative. According to Table 4-3, integration into the
US culture for Asian participants predicted their comprehension and resistance to
counter-arguing. Therefore, integration into the US culture was controlled for in these
hypotheses.

A 2x2 multivariate analysis of co-variance (MANCOVA) of identity type
condition (Chinese vs. Korean) and cultural narrative condition (Chinese social-
embeddedness narrative vs. Korean social-embeddedness narrative) across the
dependent variables of perceived message effectiveness, comprehension, perceived
message quality, and resistance to counter-arguing with the covariates of narrative
tendencies, current family health history communication, and integration into the US
culture revealed no significant effects for narrative message type (Korean social-
embeddedness vs. Chinese social-embeddedness); $F (4, 219) = 1.23, p = .30$, Wilk’s
Lambda = .98, partial $\eta^2 = .02$, and integration into the US culture; $F(4, 219) = 1.75$, $p = .14$, Wilk’s Lambda = .97, partial $\eta^2 = .03$. No interaction effect was found, either. However, for the identity condition, there was a significant main effect; $F(4, 219) = 2.46, p < .05$, Wilk’s Lambda = .96, partial $\eta^2 = .04$, and there were main effects for narrative tendencies; $F(4, 219) = 9.42, p < .001$, Wilk’s Lambda = .85, partial $\eta^2 = .15$; and current family health history communication; $F(4, 219) = 6.04, p < .001$, Wilk’s Lambda = .90, partial $\eta^2 = .10$.

In conclusion, there was no difference in Korean and Chinese participants’ perceived message effectiveness, comprehension, perceived message quality, and resistance to counter-arguing between South Korean social-embeddedness narratives and Chinese social-embeddedness narrative.

**Developing and Testing the Theoretical Models of Cultural Narrative Processing based on Extended ELM and Theory of Planned Behavior**

According to Baron and Kenny (1986), the following three conditions should be held to establish mediation: 1) the independent variable affects the mediator in the first equation; 2) the independent variable predicts the dependent variable in the second equation; and 3) the mediator affects the dependent variable in the third equation. Perfect or complete mediation is the case when the independent variable no longer affects the dependent variable after the mediator is controlled (Baron & Kenny, 1986). On the contrary, partial mediation holds if the path from the independent variable to the dependent variable shows absolute size reduction when the mediator is introduced, but the regression weight is different than zero (Kenny, 2014). The amount of mediation is called the indirect effect.

**Research question 12.** Research question 12 asked how the three major variables in TPB (attitude, subjective norms, and perceived behavioral control)
relate to the processing (identification and engagement) of family health history
narrative evidence and behavioral intention to communicate family health history,
what the differences between cultures are, and what the differences between
message conditions are. To answer this question, a mediation model was developed
to test the conditional indirect effects (Preacher, Rucker, & Hayes, 2007) for the
variables relating to narrative processing, message outcomes, and behavioral
intention to communicate family health history with multi-group analyses (Byrne,
2001).

A conditional indirect effect can be defined as “the magnitude of an indirect
effect at a particular value of a moderator (or at particular values of more than one
moderator)” (Preacher et al., 2007, p. 186). SPSS macro, a regression or path-
analytic framework, and structural equation modeling can be applied to analyze
conditional indirect effects (Preacher et al., 2007). In this dissertation study, SEM
was performed to develop and test the models, and pairwise comparison was
conducted to test the differences or conditional effects between message conditions
(social-embeddedness message vs. autonomy control message), and identity
conditions (American vs. Asian).

A conditional indirect effect can be understood in the framework of
moderated mediation, and Preacher et al. (2007) redefined it as the systematic
variation in conditional indirect effects by including conflicting examples of
moderated mediation addressed by several scholars (e.g., James & Brett, 1984;
Baron & Kenny, 1986; Morgan-Lopez & MacKinnon, 2006). According to Preacher
et al. (2007), there are multiple ways as to how the magnitude of an indirect effect
may depend on a moderator. Among the models, the following case can be applied
to this study in that identity condition and message condition affect message
processing, message outcomes and behavioral intention simultaneously.

It is often a critical question if or not a mediation effect is constant across different contexts, groups, and values (Preacher et al., 2007). Although a mediation effect is not significant in the overall baseline model, it is possible the effect is significant under a specific group condition (i.e., message or identity). Furthermore, even though the effect of first order moderation (i.e., message or identity) is not significant in the overall baseline model, the effect of second-order moderation in the specific message or identity condition might be significant. Therefore, in this dissertation study, regardless of the insignificance of path coefficients in the overall models, the developed models were tested in each message or identity condition with specific identity groups or message groups.

Figure 4.2 The 5th Moderated Mediation Model by Preacher et al. (2007)
First, to explore how perceived behavioral control, subjective norms, and attitude relate to identification, engagement, and behavioral intention (RQ 12), an integrated model was developed based on Ajzen’s (1991) Theory of Planned behavior and Slater’s (2002b) Extended Elaboration Likelihood Model and tested in each message condition of social-embeddedness message and autonomy control message with two groups of Asians and Americans.

According to literature, it seems that there is no clear agreement on how to decide the appropriate sample size for structural equation modeling. Nevertheless, several scholars conclude 100-150 samples can be considered the minimum sample size for performing SEM (Anderson & Gerbing, 1988; Ding, Velicer, & Harlow, 1995; Tabachnick & Fidell, 2007) while other researchers say at least 200 cases should be included (Hoogland & Boomsma 1998; Kline, 2005). However, according to Kline (2005), the rule of thumb can be reduced to 100 cases per group in multi-group modeling. In the present study, each group includes 103 – 229 samples, thus the sample size is acceptable according Kline’s (2005) rule of thumb for multi-group analysis.

The integrated model was first tested in all message conditions with two dummy variables of identity (American = 0; Asian = 1) and cultural narrative message condition (Autonomy control = 0; Social-embeddedness condition = 1) (figure 4.3), and then run in each message condition to investigate the moderation effects of identity on the path coefficients in the model. Pairwise comparison was performed to check the differences between the regression weights. Current family health history communication was controlled for in each model because current FHH communication significantly can predict behavioral intention to communicate family health history in the future.
Figure 4.3 Integrated Model (Standardized): Theory of Planned Behavior and Extended Elaboration Likelihood Model (RQ 12)

Three message conditions; American = 0, Asian = 1; Autonomy control condition = 0, Social-embeddedness condition = 1

Fit Indices: CMIN/DF = 3.08, RMSEA = .06, SRMR = .08, CFI = .93.
**Model 1.** Model 1 (figure 4.3) is an overall integrated model including both identity dummy variable and message dummy variable. This overall model is recursive and identified. Model fit indices suggest the overall integrated model is an adequate model fit ($N=664$, $\text{CMIN/DF} = 3.08$, $\text{RMSEA} = .06$, $\text{SRMR} = .08$, $\text{CFI} = .93$). Looking at the standardized estimates, identity (Asian) is a significant and negative influence on subjective norm ($\beta = -.21, p < .001$), perceived behavioral control ($\beta = -.21, p < .001$), current family health history communication ($\beta = -.14, p < .001$) and engagement ($\beta = -.09, p < .01$) whereas it positively predicts identification ($\beta = .18, p < .001$) and behavioral intention ($\beta = .12, p < .001$), and fails to predict ($\beta = -.04, p = .29$). However, message condition (Social-embeddedness message) failed to predict identification ($\beta = .01, p = .87$), engagement ($\beta = -.01, p = .71$), and behavioral intention ($\beta = .03, p = .27$), and covariance between identity and message condition is not significant ($r = -.02, p = .68$). Subjective norm ($\beta = .44, p < .001$) significantly predicted perceived behavioral control ($\beta = .40, p < .001$), attitude ($\beta = .26, p < .001$), engagement ($\beta = .08, p < .01$), and identification ($\beta = .33, p < .001$). Perceived behavioral control is a predictor of attitude ($\beta = .37, p < .001$) while it failed to predict identification ($\beta = .05, p = .30$). Attitude does not significantly predict identification ($\beta = .02, p = .61$), either. Identification is a significant predictor of engagement ($\beta = .78, p < .001$), and engagement ($\beta = .56, p < .001$), attitude ($\beta = .2, p < .001$), and current family health history communication ($\beta = .17, p < .001$) are significant predictors of behavioral intention.

**Model 2.** Model 2 (figure 4.4) is an integrated model in Autonomy control message condition with Asian participants. This integrated model is recursive and identified. Model fit indices suggest the integrated model in Autonomy control
message condition with multiple groups (Asian vs. American) is an adequate overall model fit \((n = 118, \text{CMIN/DF} = 1.70, \text{RMSEA} = .06, \text{SRMR} = .10, \text{CFI} = .88)\). In this model, subjective norm is a significant predictor of perceived behavioral control \((\beta = .50, p < .001)\), attitude \((\beta = .22, p < .05)\), and identification \((\beta = .23, p < .05)\) while it fails to predict engagement \((\beta = -.00, p = .99)\). Perceived behavioral control has a significant influence on attitude \((\beta = .45, p < .001)\), whereas it does not significantly predict identification \((\beta = .11, p = .34)\). Attitude doesn’t predict identification, either \((\beta = .14, p = .21)\). Identification is a significant predictor of engagement \((\beta = .89, p < .001)\), and engagement \((\beta = .55, p < .001)\), attitude \((\beta = .31, p < .001)\), and current family health history communication \((\beta = .21, p < .01)\) significantly predict behavioral intention.

**Model 3.** Model 3 (**figure 4.5**) is an integrated model in the Autonomy control message condition with American participants. This integrated model is recursive and identified. Model fit indices suggest the integrated model in the Autonomy control message condition with multiple groups (Asian vs. American) is an adequate overall model fit \((n = 221, \text{CMIN/DF} = 1.70, \text{RMSEA} = .06, \text{SRMR} = .10, \text{CFI} = .88)\). Looking at the standardized estimates, subjective norm significantly predicts perceived behavioral control \((\beta = .29, p < .01)\), attitude \((\beta = .35, p < .001)\), and engagement \((\beta = .19, p < .05)\) while its influence on identification is not significant \((\beta = .13, p = .30)\). Perceived behavioral control failed to predict identification \((\beta = -.04, p = .74)\) whereas it has a significant effect on attitude \((\beta = .23, p < .05)\). Attitude doesn’t have a significant influence on both identification \((\beta = .03, p = .82)\) and behavioral intention \((\beta = .07, p = .40)\). However, identification significantly predicts engagement \((\beta = .65, p < .001)\), and engagement has a significant effect on behavioral intention \((\beta = .67, p < .001)\).
Figure 4.4 Integrated Model (Standardized): Theory of Planned Behavior and Extended Elaboration Likelihood Model (RQ 12, Autonomy control condition, Asian)

Fit Indices: CMIN/DF = 1.70, RMSEA = .06, SRMR = .10, CFI = .87
Figure 4.5 Integrated Model (Standardized): Theory of Planned Behavior and Extended Elaboration Likelihood Model (RQ 12, Autonomy control condition, Americans)

Fit Indices: CMIN/DF = 1.70, RMESEA = .06, SRMR = .10, CFI = .87.
Table 4-26

Pairwise Comparison between Americans and Asians (Autonomy control condition, unstandardized)

<table>
<thead>
<tr>
<th></th>
<th>American</th>
<th></th>
<th>Asian</th>
<th></th>
<th>z-score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>p</td>
<td></td>
<td>Estimate</td>
<td></td>
</tr>
<tr>
<td>PBC &lt;---- SN</td>
<td>0.29</td>
<td>0.007</td>
<td>0.54</td>
<td>***</td>
<td>-2.27**</td>
</tr>
<tr>
<td>ATT &lt;---- SN</td>
<td>0.30</td>
<td>***</td>
<td>0.24</td>
<td>0.016</td>
<td>-4.81***</td>
</tr>
<tr>
<td>ATT &lt;---- PBC</td>
<td>0.19</td>
<td>0.018</td>
<td>0.45</td>
<td>***</td>
<td>-1.09</td>
</tr>
<tr>
<td>IDEN &lt;---- SN</td>
<td>0.12</td>
<td>0.298</td>
<td>0.24</td>
<td>0.035</td>
<td>-3.57***</td>
</tr>
<tr>
<td>IDEN &lt;---- PBC</td>
<td>-0.03</td>
<td>0.736</td>
<td>0.11</td>
<td>0.343</td>
<td>0.18</td>
</tr>
<tr>
<td>IDEN &lt;---- ATT</td>
<td>0.03</td>
<td>0.822</td>
<td>0.13</td>
<td>0.213</td>
<td>40.62***</td>
</tr>
<tr>
<td>ENG &lt;---- IDEN</td>
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<td>***</td>
<td>0.79</td>
<td>***</td>
<td>-2.50**</td>
</tr>
<tr>
<td>ENG &lt;---- SN</td>
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<td>2.39**</td>
</tr>
<tr>
<td>BI &lt;---- ENG</td>
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<td>-1.18</td>
</tr>
<tr>
<td>BI &lt;---- ATT</td>
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<td>0.397</td>
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<td>2.05**</td>
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<tr>
<td>BI &lt;---- FHHC</td>
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<td>0.061</td>
<td>0.15</td>
<td>0.002</td>
<td>32.55***</td>
</tr>
</tbody>
</table>

Note: PBC = Perceived Behavioral Control; ATT = Attitude; SN = Subjective Norms; IDEN = Identification; ENG = Engagement; BI = Behavioral Intention; FHHC = Current Family Health History Communication
*p < .05; **p < .01; ***p < .001

Table 4-26 provides pairwise comparisons between Asian participants and American participants in the Autonomy control condition. Significant differences were found between the path coefficients for the paths between subjective norms and PBC (z = -2.27, p < .01), between subjective norms and attitude (z = -4.81, p < .001), between subjective norms and identification (z = -3.57, p < .001), between attitude
and identification \((z = 40.62, p < .001)\), between identification and engagement \((z = -2.50, p < .01)\), between subjective norms and engagement \((z = -2.11, p < .01)\), between attitude and behavioral intention \((z = -2.05, p < .01)\), and between current family health history communication and behavioral intention \((z = 32.55, p < .001)\).

**Model 4.** Model 4 (figure 4.6) is an integrated model in the Social-embeddedness message condition with Asian participants. This integrated model is recursive and identified. Model fit indices suggest the integrated model in the Social-embeddedness message control message condition with multiple groups (Asian vs. American) is an adequate overall model fit \((n = 443, \text{CMIN/DF} = 1.95, \text{RMSEA} = .05, \text{SRMR} = .09, \text{CFI} = .91)\). In this model, subjective norm significantly predicts perceived behavioral control \((\beta = .39, p < .001)\) and identification \((\beta = .39, p < .001)\) whereas its influence on attitude \((\beta = .13, p = .08)\) and engagement \((\beta = .01, p = .85)\) is not significant. Perceived behavioral control is a significant predictor of attitude \((\beta = .42, p < .001)\) while it failed to predict identification \((\beta = .01, p = .92)\). Attitude significantly predicts behavioral intention \((\beta = .20, p < .01)\), but it is not a significant predictor of identification \((\beta = .07, p = .36)\). Identification significantly predicts engagement \((\beta = .80, p < .001)\), and current family health history communication \((\beta = .14, p < .05)\) and engagement \((\beta = .50, p < .001)\) is a significant predictor of behavioral intention.

**Model 5.** Model 5 (figure 4.7) is an integrated model in the Social-embeddedness message condition with American participants. This integrated model is recursive and identified. Model fit indices suggest the integrated model in the Social-embeddedness message control message condition with multiple groups (Asian vs. American) is an adequate overall model fit \((n = 443, \text{CMIN/DF} = 1.95, \text{RMSEA} = .05, \text{SRMR} = .09, \text{CFI} = .91)\). Looking at the standardized estimates, subjective
norm predicts perceived behavioral control ($\beta = .43, p < .001$), attitude ($\beta = .33, p < .001$), identification ($\beta = .30, p < .001$), and engagement ($\beta = .15, p < .01$).

Perceived behavioral control failed to predict identification ($\beta = .06, p = .47$), while its effect on attitude ($\beta = .34, p < .001$) is significant. Attitude didn’t have a significant effect on identification ($\beta = -.11, p = .19$), while it is a positive significant predictor of behavioral intention ($\beta = .21, p < .001$). Identification also significantly predicts engagement ($\beta = .77, p < .001$) in this model, and engagement ($\beta = .56, p < .001$) and current family health history communication ($\beta = .19, p < .001$) has a significant effect on behavioral intention as well.

Table 4-27 provides pairwise comparison results between Asian participants and American participants in the Social-embeddedness condition. Significant differences were found between the path coefficients for the paths between subjective norms and attitude ($z = 1.72, p < .05$), and between subjective norm and engagement ($z = 1.83, p < .05$).
Figure 4.6 Integrated Model (Standardized): Theory of Planned Behavior and Extended Elaboration Likelihood Model (RQ 12, Social-embeddedness condition, Asian)

Fit Indices: CMIN/DF = 1.95, RMSEWA = .05, SRMR = .09, CFI = .91
Figure 4.7 Integrated Model (Standardized): Theory of Planned Behavior and Extended Elaboration Likelihood Model (RQ 12, Social-embeddedness condition, Americans)

Fit Indices: CMIN/DF = 1.95, RMSEA = .05, SRMR = .09, CFI = .91
Table 4-27

*Pairwise Comparison between Americans and Asians (Social-embeddedness condition, unstandardized)*

<table>
<thead>
<tr>
<th></th>
<th>American</th>
<th></th>
<th></th>
<th>Asian</th>
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<th></th>
<th>z-score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>p</td>
<td></td>
<td>Estimate</td>
<td>p</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC &lt;--- SN</td>
<td>0.38</td>
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<td></td>
<td>0.34</td>
<td>***</td>
<td></td>
<td>0.43</td>
</tr>
<tr>
<td>ATT &lt;--- SN</td>
<td>0.28</td>
<td>***</td>
<td></td>
<td>0.12</td>
<td>0.08</td>
<td></td>
<td>1.72*</td>
</tr>
<tr>
<td>ATT &lt;--- PBC</td>
<td>0.32</td>
<td>***</td>
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<td>0.45</td>
<td>***</td>
<td></td>
<td>-1.19</td>
</tr>
<tr>
<td>IDEN &lt;--- SN</td>
<td>0.43</td>
<td>***</td>
<td></td>
<td>0.38</td>
<td>***</td>
<td></td>
<td>0.37</td>
</tr>
<tr>
<td>IDEN &lt;--- PBC</td>
<td>0.08</td>
<td>0.467</td>
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<td>0.01</td>
<td>0.92</td>
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<td>0.48</td>
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<td>IDEN &lt;--- ATT</td>
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<tr>
<td>ENG &lt;--- IDEN</td>
<td>0.67</td>
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<td>0.72</td>
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<td>-0.48</td>
</tr>
<tr>
<td>ENG &lt;--- SN</td>
<td>0.14</td>
<td>0.005</td>
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<td>0.85</td>
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</tr>
<tr>
<td>BI &lt;--- ENG</td>
<td>0.76</td>
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<td>0.61</td>
<td>***</td>
<td></td>
<td>1.10</td>
</tr>
<tr>
<td>BI &lt;--- ATT</td>
<td>0.32</td>
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<td>0.00</td>
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</tr>
<tr>
<td>BI &lt;--- FHHC</td>
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<td></td>
<td>0.11</td>
<td>0.02</td>
<td></td>
<td>1.15</td>
</tr>
</tbody>
</table>

*Note: PBC = Perceived Behavioral Control; ATT = Attitude; SN = Subjective Norms; IDEN = Identification; ENG = Engagement; BI = Behavioral Intention; FHHC = Current Family Health History Communication*

*p < .05; **p < .01; ***p < .001
Summary of model results. In the autonomy control condition, both Asian and American participants’ engagement, which was significantly influenced by identification, had a significant effect on behavioral intention. However, the effect of American participants’ engagement on their behavioral intention was significantly stronger than the effect of Asians participants’ engagement. Although American participants’ engagement had a stronger effect on behavioral intention, their identification with the autonomy control message was not significantly influenced by any of the TPB constructs. However, Asian participants’ identification was significantly influenced by their existing subjective norms about family health history communication. In addition, the effects of Asian participants’ subjective norms as well as attitude on their identification with the message were significantly stronger than the effect of American participants’ subjective norms and attitude. Furthermore, the effects of Asian participants’ attitude and current family health history communication on their behavioral intention were significantly stronger than the effects of American participants’ attitude and current communication.

In the social-embeddedness condition, the association between subjective norm and attitude is significantly stronger in the American condition than the Asian condition. While in both identity conditions, participants’ identification was significantly influenced by their subjective norms regarding family health history communication, the effect of subjective norms on participants’ engagement significantly varied across conditions. Although Asian participants’ engagement in the social embeddedness narrative message was not significantly influenced by their existing subjective norms, American participants’ engagement was greatly affected by the existing norms.
The Effect of Three Constructs of Theory of Planned Behavior and Individual Characteristics on the Message Outcomes and Behavioral Intentions

While previous analyses address the effects of three constructs of theory of planned behavior and individual characteristics on the processing of cultural narrative messages, a significant aim of this dissertation is to understand better the inputs with regard to the outcomes of processing cultural narratives messages including behavioral intentions to communicate family health history.

Hypothesis 8. Hypothesis three posits that major variables in TPB (attitude, subjective norm, and perceived behavioral control) are positively associated with increases in the outcomes (perceived message quality, perceived message effectiveness, comprehension, and resistance to counter-arguing) of family health history narrative processing, and behavioral intentions. Bivariate correlations among the variables and hierarchical regression analyses were performed to examine the major variables in TPB as predictors of each outcome of family health history narrative processing by controlling for participants’ cultural identity.
### Table 4-28

**Bivariate Correlation of Major Variables in TPB, Current FHH Communication, Message Outcomes, and Behavioral Intention: H8**

<table>
<thead>
<tr>
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<tbody>
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<td>Attitude</td>
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<tr>
<td>PBC</td>
<td>.43***</td>
<td>.44***</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current FHH Communication</td>
<td>.46***</td>
<td>.23***</td>
<td>.20***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality</td>
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<td>.33***</td>
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<td>.05</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comprehension</td>
<td>.25***</td>
<td>.37***</td>
<td>.40***</td>
<td>.00</td>
<td>.61***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness</td>
<td>.33***</td>
<td>.40***</td>
<td>.23***</td>
<td>.19***</td>
<td>.51***</td>
<td>.45***</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resistance to counter-arguing</td>
<td>.15***</td>
<td>.23***</td>
<td>.27***</td>
<td>.02</td>
<td>.22***</td>
<td>.46***</td>
<td>.15***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Behavioral intention</td>
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<td>.36***</td>
<td>.21***</td>
<td>.35***</td>
<td>.27***</td>
<td>.21***</td>
<td>.52***</td>
<td>.07</td>
<td>1</td>
</tr>
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</table>

*Note: *p < .05; **p < .01; ***p < .001*
To test hypothesis 8, first of all, bivariate Pearson correlations (Table 4-28) were run. The results show participants’ subjective norms, attitudes toward family health history communication, and perceived behavioral control were positively correlated with their perceived message quality (subjective norms, $r = .25, p < .001$; attitudes, $r = .33, p < .001$; perceived behavioral control, $r = .35, p < .001$), comprehension (subjective norms, $r = .25, p < .001$; attitudes, $r = .37, p < .001$; perceived behavioral control, $r = .40, p < .001$), perceived message effectiveness (subjective norms, $r = .33, p < .001$; attitudes, $r = .40, p < .001$; perceived behavioral control, $r = .23, p < .001$), and resistance to counter-arguing (subjective norms, $r = .15, p < .001$; attitudes, $r = .23, p < .001$; perceived behavioral control, $r = .27, p < .001$).

To further investigate H 8, hierarchical regressions were conducted by entering dummy-coded cultural identities (Americans = 00; Koreans = 10; and Chinese = 01) in block 1, and subjective norms, attitude, and perceived behavioral control in block 2. Table 4-29 reports the statistics related to participants’ perception of message quality and reveals that in both models, the variables together explained a significant amount of the variance of perceived message quality; Model 1: $F (2, 661) = 17.13, p < .001, R^2 = .049$; Model 2: $F (5, 658) = 28.44, p < .001, R^2 = .178$. According to the results of the second model, compared to American participants, Korean participants’ perception of message quality was significantly lower ($\beta = -.12, p < .01$), and participants’ positive attitude ($\beta = .19, p < .01$) and perceived behavioral control ($\beta = .22, p < .001$) significantly and positively influence participants’ perception of message quality.

Table 4-30 reports the statistics related to participants’ comprehension and reveals that in both models, the variables together explained a significant amount of the variance
of comprehension; Model 1: $F(2, 661) = 35.14, p < .001, R^2 = .096$; Model 2: $F(5, 658) = 42.54, p < .001, R^2 = .244$. According to the results of the second model, both Korean ($\beta = -.21, p < .001$) and Chinese participants’ ($\beta = -.11, p < .01$) comprehension was significantly lower than American participants’ comprehension, and among the three construct of TPB, attitude ($\beta = .23, p < .001$) and perceived behavioral control ($\beta = .25, p < .001$) significantly influenced participants’ comprehension of the messages.

Table 4-31 reports the statistics related to participants’ perceived message effectiveness and presents that in both models, the variables together explained a significant amount of the variance of perceived message effectiveness; Model 1: $F(2, 661) = 6.29, p < .001, R^2 = .019$; Model 2: $F(5, 658) = 34.63, p < .001, R^2 = .208$. According to the results of the second model, compared to American participants, Chinese participants are more likely to perceive the effectiveness of the cultural narrative messages ($\beta = .12, p < .01$), and subjective norms ($\beta = .19, p < .001$) and attitude ($\beta = .32, p < .001$) significantly predict participants’ positive perception of the message effectiveness.

Table 4-32 reports the statistics related to participants’ resistance to counter-arguing and shows that in both models, the variables together explained a significant amount of the variance of family health history communication; Model 1: $F(2, 661) = 31.94, p < .001, R^2 = .088$; Model 2: $F(5, 658) = 20.90, p < .001, R^2 = .137$. According to the results of the second model, compared to American participants, both Korean ($\beta = -.19, p < .001$) and Chinese ($\beta = -.22, p < .001$) participants are less likely to resist to counter-arguing, and attitude ($\beta = .14, p < .01$) and perceived behavioral control ($\beta = .15, p < .001$) significantly predict participants’ resistance to counter-arguing.
Table 4-29

Summary of Hierarchical Regression Analysis for Three Construct of TPB Predicting Perceived Message Quality: H8

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
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</thead>
<tbody>
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<td></td>
<td>$B$</td>
<td>$B(SE)$</td>
<td>$\beta$</td>
<td>$B$</td>
</tr>
<tr>
<td>Identity1 (Korean)</td>
<td>-.54</td>
<td>.10</td>
<td>-.21***</td>
<td>-.31</td>
</tr>
<tr>
<td>Identity2 (Chinese)</td>
<td>-.43</td>
<td>.10</td>
<td>-.17***</td>
<td>-.16</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>.04</td>
<td>.04</td>
<td></td>
<td>.05</td>
</tr>
<tr>
<td>Attitude</td>
<td>.19</td>
<td>.04</td>
<td>.19***</td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td>.24</td>
<td>.05</td>
<td>.22***</td>
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<tr>
<td>$R^2$</td>
<td>.049</td>
<td></td>
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<td>.178</td>
</tr>
<tr>
<td>$F$-value</td>
<td>17.13***</td>
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<td>28.44***</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
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<td></td>
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<td>.128***</td>
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</tbody>
</table>

Note: *p < .05; **p < .01; ***p < .001

Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.
Model 1: $F (2, 661) = 17.13, p < .001, \hat{R}^2 = .049$; Model 2: $F (5, 658) = 28.44, p < .001, \hat{R}^2 = .178$
Table 4-30

**Summary of Hierarchical Regression Analysis for Three Construct of TPB Predicting Comprehension: H8**

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th></th>
<th>Model 2</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>B(SE)</td>
<td>β</td>
<td></td>
<td>B</td>
<td>B(SE)</td>
</tr>
<tr>
<td>Identity1 (Korean)</td>
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<td>-.31***</td>
<td>-.48</td>
<td>.08</td>
<td>-.21***</td>
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<tr>
<td>Identity2 (Chinese)</td>
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<td>Attitude</td>
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<td>.04</td>
<td>.23***</td>
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<tr>
<td>PBC</td>
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<tr>
<td>( R^2 )</td>
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<tr>
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*Note:* *p < .05; **p < .01; ***p < .001

Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.

Model 1: \( F (2, 661) = 35.14, p < .001, R^2 = .096; \) Model 2: \( F (5, 658) = 42.54, p < .001, R^2 = .244 \)
### Table 4-31

**Summary of Hierarchical Regression Analysis for Three Construct of TPB Predicting Perceived Message Effectiveness: H8**

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**Note:** *p < .05; **p < .01; ***p < .001
Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.
Model 1: $F (2, 661) = 6.29, p < .001, R^2 = .019$; Model 2: $F (5, 658) = 34.63, p < .001, R^2 = .208$
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Note: **$p < .01$; ***$p < .001$
Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.
Model 1: $F (2, 661) = 31.94, p < .001, R^2 = .088$; Model 2: $F (5, 658) = 20.90, p < .001, R^2 = .137$
**Research question 13.** Research question 13 asked if participants’ individual characteristics (narrative tendencies, spirituality, intrinsic/extrinsic religiosity, paranormal belief, and genetic essentialism) are associated with the outcomes (perceived message quality, perceived message effectiveness, comprehension, and resistance to counter-arguing) of family health history narrative processing, and behavioral intentions. For this research question, bivariate correlations analyses and several hierarchical regression analyses were performed to examine participants’ individual characteristics as predictors of each outcome of family health history narrative processing by controlling for participants’ cultural identity.

To explore RQ 13, first of all, bivariate Pearson correlations (Table 4-33) were run. The results show several variables of individual characteristics were significantly correlated with their perceived message quality (narrative tendencies, $r = .35, p < .001$; spirituality, $r = .12, p < .01$), comprehension (narrative tendencies, $r = .39, p < .001$; spirituality, $r = .13, p < .01$; paranormal belief, $r = -.12, p < .01$; genetic essentialism, $r = .61, p < .001$), perceived message effectiveness (narrative tendencies, $r = .27, p < .001$; spirituality, $r = .17, p < .001$; intrinsic religiosity, $r = .17, p < .001$; extrinsic religiosity, $r = .09, p < .05$ paranormal belief, $r = .08, p < .05$ genetic essentialism, $r = .15, p < .001$), and resistance to counter-arguing (narrative tendencies, $r = .21, p < .001$; spirituality, $r = .13, p < .01$; intrinsic religiosity, $r = -.14, p < .001$; paranormal belief, $r = -.11, p < .01$; genetic essentialism, $r = -.21, p < .001$).
### Table 4-33

**Bivariate Correlation of Individual Characteristics and Message Outcomes: RQ13**

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<td>.17***</td>
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<td>.17***</td>
<td>.17***</td>
<td>.09*</td>
<td>.08*</td>
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<td>-.21***</td>
<td>.22***</td>
<td>.46***</td>
<td>.15***</td>
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*Note: *p < .05; **p < .01; ***p < .001*
To further investigate RQ 13, hierarchical regressions were conducted by entering dummy-coded cultural identities (Americans = 00; Koreans = 10; and Chinese = 01) in block 1, and subjective norms, attitude, and perceived behavioral control in block 2. According to the results of bivariate correlations, narrative tendencies were entered in block 1 as it was considered a covariate influencing the message outcomes.

Table 4-34 reports the statistics related to participants’ perceived message quality and shows that in both models, the variables together explained a significant amount of the variance of perceived message quality; Model 1: $F(3, 660) = 36.99, p < .001, R^2 = .144$; Model 2: $F(4, 659) = 28.71, p < .001, R^2 = .148$. According to the results of the second model, compared to American participants, Korean participants’ perception of message quality was significantly lower ($\beta = -.12, p < .01$), and participants’ narrative tendencies ($\beta = .32, p < .001$) significantly and positively influence participants’ perception of message quality.

Table 4-35 reports the statistics related to participants’ comprehension and reveals that in both models, the variables together explained a significant amount of the variance of comprehension; Model 1: Model 1: $F(3, 660) = 51.88, p < .001, R^2 = .191$; Model 2: $F(5, 658) = 34.03, p < .001, R^2 = .205$. According to the results of the second model, Korean participants’ comprehension was significantly lower than American participants’ comprehension ($\beta = -.21, p < .001$). In addition, narrative tendencies ($\beta = .32, p < .001$), spirituality ($\beta = .09, p < .05$) significantly and positively influenced participants’ comprehension, while the effect of paranormal belief was negative ($\beta = -.11, p < .01$).

Table 4-36 reports the statistics related to participants’ perception regarding message effectiveness and presents that in both models, the variables together explained a
significant amount of the variance of perceived message effectiveness; Model 1: \( F(3, 660) = 20.64, p < .001, R^2 = .086 \); Model 2: \( F(8, 655) = 14.55, p < .001, R^2 = .151 \).

According to the results of the second model, compared to American participants, Korean participants are less likely to perceive the effectiveness of the cultural narrative messages \((\beta = -.11, p < .01)\). Furthermore, narrative tendencies \((\beta = .26, p < .001)\), intrinsic religiosity \((\beta = .14, p < .01)\), and genetic essentialism \((\beta = .15, p < .001)\) significantly predict participants’ positive perception of the message effectiveness.

Table 4-37 reports the statistics related to participants’ resistance to counter-arguing and suggests that in both models, the variables together explained a significant amount of the variance of resistance to counter-arguing; Model 1: \( F(3, 660) = 25.04, p < .001, R^2 = .102 \); Model 2: \( F(7, 656) = 18.69, p < .001, R^2 = .166 \). According to the results of the second model, compared to American participants, both Korean \((\beta = -.13, p < .001)\) and Chinese \((\beta = -.15, p < .01)\) participants are less likely to resist to counter-arguing. In addition, narrative tendencies \((\beta = .10, p < .01)\) and spirituality \((\beta = .25, p < .001)\) significantly and positively predict participants’ resistance to counter-arguing, while intrinsic religiosity \((\beta = -.26, p < .001)\) and genetic essentialism \((\beta = -.10, p < .01)\) have negative effects on resistance to counter-arguing.
Table 4.34

**Summary of Hierarchical Regression Analysis for Individual Characteristics Predicting Perceived Message Quality: RQ13**

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<td>𝐵</td>
<td>𝐵(𝑆𝐸)</td>
<td>β</td>
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<td>-.07</td>
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*Note: *𝑝 < .05; **𝑝 < .01; ***𝑝 < .001
Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.
Model 1: 𝐹(3, 660) = 36.99, 𝑝 < .001, 𝑅² = .144; Model 2: 𝐹(4, 659) = 28.71, 𝑝 < .001, 𝑅² = .148
Table 4-35

Summary of Hierarchical Regression Analysis for Individual Characteristics Predicting Comprehension: RQ13

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Note: *p < .01; **p < .01; ***p < .001
Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.
Model 1: $F (3, 660) = 51.88, p < .001, R^2 = .191$; Model 2: $F (5, 658) = 34.03, p < .001, R^2 = .205$
Table 4-36

**Summary of Hierarchical Regression Analysis for Individual Characteristics Predicting Perceived Message Effectiveness: RQ13**

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*Note:* $^*p < .01; **p < .01; ***p < .001$

Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.

Model 1: $F(3, 660) = 20.64, p < .001, R^2 = .086$; Model 2: $F(8, 655) = 14.55, p < .001, R^2 = .151$
## Table 4-37

### Summary of Hierarchical Regression Analysis for Individual Characteristics Predicting Resistance to Counter-arguing: RQ13

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**Note:** *$p < .05$; **$p < .01$; ***$p < .001$*

Identity was coded as Americans = 00; Koreans = 10; Chinese = 01.

Model 1: $F (3, 660) = 25.04, p < .001, R^2 = .102$; Model 2: $F (7, 656) = 18.69, p < .001, R^2 = .166$
The Effect of Message Processing on the Message Outcomes and Behavioral Intentions

**Hypothesis 9.** Hypothesis 9 predicts that engagement and identification will be positively associated with perceivers’ counter-arguing, comprehension, perceived evidence quality, perceived message effectiveness, and behavioral intentions. To test this hypothesis, first of all, bivariate Pearson correlations (Table 4-38) were run.

The results show identification is significantly correlated with perceived message quality \(r = .12, p < .01\), perceived message effectiveness \(r = .39, p < .001\), resistance to counter-arguing \(r = -.25, p < .001\), and behavioral intention \(r = .50, p < .001\).

Engagement is also significantly correlated with perceived message quality \(r = .30, p < .001\), comprehension \(r = .16, p < .001\), perceived message effectiveness \(r = .56, p < .001\), resistance to counter-arguing \(r = -.10, p < .05\), and behavioral intention \(r = .60, p < .001\).

Identification and engagement are highly correlated to each other \(r = .75, p < 001\), thus structural equation modeling was used to test this hypothesis by co-varying these two variables in the model including the variables of message processing (identification and engagement), and message outcomes (comprehension, perceived message effectiveness, perceived message quality, and resistance to counter-arguing), and behavioral intention to communicate family health history. Current family health history communication was controlled for in this model.
Table 4-38

Correlation of Current FHH Communication, Message Processing, Message Outcomes, and Behavioral Intention: H9 & H10

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<tr>
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<td>.75***</td>
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<td></td>
</tr>
<tr>
<td>Quality</td>
<td>.05</td>
<td>.12**</td>
<td>.30***</td>
<td>1</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Comprehension</td>
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<td>-.04</td>
<td>.16***</td>
<td>.61***</td>
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<td></td>
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<tr>
<td>Effectiveness</td>
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<td>.39***</td>
<td>.56***</td>
<td>.51***</td>
<td>.45***</td>
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<td></td>
<td></td>
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<tr>
<td>Resistance to counter-arguing</td>
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<td>-.25***</td>
<td>-.10*</td>
<td>.22***</td>
<td>.46***</td>
<td>.15***</td>
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<tr>
<td>Behavioral intention</td>
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<td>.50***</td>
<td>.60***</td>
<td>.27***</td>
<td>.21***</td>
<td>.52***</td>
<td>.07</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: *p < .05; **p < .01; ***p < .001
Figure 4.8 Extended Elaboration Likelihood Model for Narrative Evidence Processing (Standardized, H9 & H10)
Fit Indices: CMIN/DF = 2.79, RMSESEA = .05, SRMR = .08, CFI = .96
As revealed in figure 4.8, looking at the standardized estimates, identification significantly and positively predicts engagement ($\beta = .87, p < .001$), and engagement significantly and positively predicts perceived message effectiveness ($\beta = .57, p < .001$), comprehension ($\beta = .29, p < .001$), perceived message quality ($\beta = .13, p < .001$), and behavioral intention ($\beta = .42, p < .001$) and negatively influenced resistance to counter-arguing ($\beta = -.10, p < .01$). In addition, resistance to counter-arguing significantly and positively predicts comprehension ($\beta = .45, p < .001$), and comprehension also has a significant and positive effect on perceived message quality ($\beta = .68, p < .001$). Furthermore, of the four message outcome variables, perceived message effectiveness was the only significant predictor of behavioral intention to communicate family health history ($\beta = .29, p < .001$).

**Research question 14.** Research question 14 asks whether the associations between message processing (engagement and identification) and message outcomes (perceived message quality, perceived message effectiveness, comprehension, and resistance to counter-arguing) are moderated by the type of cultural narrative and participants’ identity. To answer this research question, Hayes’ PROCESS macro in SPSS was used because this research question includes two moderator variables, one of which functions as a variable (message type) moderating the moderating effect of the other variable (identity). A basic outline of the analysis is illustrated in Figure 4.1 (i.e., Model 3 in PROCESS) (Hayes, 2013). A bootstrapping method with 5000 samples and bias-corrected 95% confidence intervals were used.

According to the results, however, although the regression models were significant, the associations between message processing (engagement & identification) and message outcomes including comprehension, perceived message quality, and resistance to counter-arguing were not moderated by the types of cultural
narrative and participants’ identity: 1) comprehension: identification, $F(7, 656) = 9.84$, $R^2 = .10$, $p < .001$, $\Delta R^2$ due to 3-way interaction = .001, $p = .54$; and engagement, $F(7, 656) = 12.74$, $R^2 = .12$, $p < .001$, $\Delta R^2$ due to 3-way interaction = .000, $p = .69$; 2) perceived message quality: identification, $F(7, 656) = 7.14$, $R^2 = .07$, $p < .001$, $\Delta R^2$ due to 3-way interaction = .001, $p = .35$; and engagement, $F(7, 656) = 15.76$, $R^2 = .14$, $p < .001$, $\Delta R^2$ due to 3-way interaction = .002, $p = .27$; and 3) resistance to counter-arguing: identification, $F(7, 656) = 19.15$, $R^2 = .17$, $p < .001$, $\Delta R^2$ due to 3-way interaction = .001, $p = .47$; and engagement, $F(7, 656) = 12.70$, $R^2 = .12$, $p < .001$, $\Delta R^2$ due to 3-way interaction = .00, $p = .65$.

Table 4.39

*Moderation Effects of the Type of Cultural Narrative and Participants’ Identity on the Associations between Identification (X) and Perceived Message Effectiveness (Y)*

<table>
<thead>
<tr>
<th></th>
<th>$b$</th>
<th>$b( SE)$</th>
<th>$t$</th>
<th>Sig.(p)</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification (ID)</td>
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<td>.10</td>
<td>2.61</td>
<td>.01**</td>
<td>.07</td>
<td>.46</td>
</tr>
<tr>
<td>Identity (Id)</td>
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<td>.53</td>
<td>-.170</td>
<td>.09</td>
<td>-1.93</td>
<td>.14</td>
</tr>
<tr>
<td>Message type</td>
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<td>-1.35</td>
<td>.18</td>
<td>-1.55</td>
<td>.28</td>
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<td>.16</td>
<td>-.07</td>
<td>.43</td>
</tr>
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<td>ID * Mg</td>
<td>.17</td>
<td>.12</td>
<td>1.46</td>
<td>.15</td>
<td>-.06</td>
<td>.40</td>
</tr>
<tr>
<td>Id * Mg</td>
<td>1.05</td>
<td>.64</td>
<td>1.65</td>
<td>.10</td>
<td>-.20</td>
<td>2.31</td>
</tr>
<tr>
<td>ID * Id * Mg</td>
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<td>.15</td>
<td>-1.81</td>
<td>.07</td>
<td>-.58</td>
<td>.02</td>
</tr>
</tbody>
</table>

*Note:* Identity: Asian = 1, American = 0; Message type: Social-embeddedness message = 1, Autonomy control message = 0 $F(7, 656) = 18.23$, $R^2 = .16$, $p < .001$; $\Delta R^2$ due to 3-way interaction = .004, $p = .07$ $*p < .05$; **$p < .01$; ***$p < .001$
Table 4-40

*Conditional effect of Identification (X) on Perceived Message Effectiveness (Y) at Values of the Moderators*

<table>
<thead>
<tr>
<th>Message</th>
<th>Identity</th>
<th>Effect</th>
<th>SE</th>
<th>t</th>
<th>Sig.(p)</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>.26</td>
<td>.10</td>
<td>2.61</td>
<td>.01**</td>
<td>.07</td>
<td>.46</td>
</tr>
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<td>.08</td>
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<td>.00***</td>
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<td>1</td>
<td>0</td>
<td>.43</td>
<td>.06</td>
<td>7.61</td>
<td>.00***</td>
<td>.32</td>
<td>.54</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>.33</td>
<td>.06</td>
<td>5.23</td>
<td>.00***</td>
<td>.21</td>
<td>.46</td>
</tr>
</tbody>
</table>

*Note: Identity: Asian = 1, American = 0*

Message type: Social-embeddedness message = 1, Autonomy control message = 0

*p < .05; **p < .01; ***p < .001

Although the associations between message processing (engagement and identification) and message outcomes including comprehension, perceived message quality, and resistance to counter-arguing were not moderated by the types of cultural narrative and participants’ identity, as Tables 4-39 and 40 reveal, the relationship between identification and perceived message effectiveness was marginally significantly moderated by the type of cultural narrative and participants’ identity; $F(7, 656) = 18.23, R^2 = .16, p < .001; \Delta R^2$ due to 3-way interaction = .004, $p = .07$ while the three-way interaction effect of message type, participants’ cultural identity and engagement did not significantly influence the association between engagement and perceived message effectiveness; $F(7, 656) = 44.80, R^2 = .32, p < .001; \Delta R^2$ due to 3-way interaction = .002, $p = .20$. As the table 4-44 reveals, when the participants were exposed to culturally distant messages (i.e., when Asian participants read autonomy control messages, or American participants read social-embeddedness messages), the conditional effect of identification on perceived message effectiveness was significantly higher than when the participants read culturally closer messages.
(i.e., when Asian participants read social-embeddedness messages, or American participants read autonomy control messages).

**Hypothesis 10.** Hypothesis 10 posits that the cognitive outcomes of family health history narrative processing will be positively associated with behavioral intentions to communicate family health history. To test this hypothesis, a multiple regression analysis was performed by controlling for current family health history communication.

### Table 4-41

<table>
<thead>
<tr>
<th>Predictors of Behavioral Intention to Communicate Family Health History</th>
<th>B</th>
<th>B(SE)</th>
<th>β</th>
<th>t</th>
<th>Sig.(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Message Quality</td>
<td>.03</td>
<td>.05</td>
<td>.03</td>
<td>.58</td>
<td>.56</td>
</tr>
<tr>
<td>Comprehension</td>
<td>-.03</td>
<td>.06</td>
<td>-.02</td>
<td>-.41</td>
<td>.68</td>
</tr>
<tr>
<td>Perceived Message Effectiveness</td>
<td>.58</td>
<td>.05</td>
<td>.47</td>
<td>12.29</td>
<td>.00***</td>
</tr>
<tr>
<td>Resistance to Counter-arguing</td>
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<td>.04</td>
<td>-.00</td>
<td>-.07</td>
<td>.94</td>
</tr>
<tr>
<td>Current FHH communication</td>
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<td>.03</td>
<td>.26</td>
<td>8.12</td>
<td>.00***</td>
</tr>
</tbody>
</table>

*Note:* ***p < .001

\[ F(5, 658) = 68.45, \text{Adjusted } R^2 = .34, p < .001 \]

As hypothesized, the result reveals that the outcomes of the narrative message processing explain a significant amount of the variance of behavioral intention to communicate family health history, \( F(5, 658) = 68.45, \text{Adjusted } R^2 = .34, p < .001 \). Table 4-41 shows perceived message effectiveness significantly predicts participants’ behavioral intention to communicate family health history (\( \beta = .47, p < .001 \)) while
other outcome variables didn’t influence their behavioral intention. Therefore, hypothesis 10 was partially supported. Furthermore, according to the Extended Elaboration Likelihood Model for Narrative Evidence Processing (figure 4.8), of the four message outcome variables, perceived message effectiveness was the only significant predictor of behavioral intention to communicate family health history ($\beta = .29, p < .001$).

**Research question 15.** Research question 15 asked if the associations between message outcomes (perceived message quality, perceived message effectiveness, comprehension, and resistance to counter-arguing) and participants’ behavioral intention to communicate family health history are moderated by the type of cultural narrative and participants’ identity. To answer this research question, Hayes’ PROCESS macro in SPSS was used because this research question includes two moderator variables, one of which functions as a variable (message type) moderating the moderating effect of the other variable (identity). A basic outline of the analysis is illustrated in Figure 4-1 (i.e., Model 3 in PROCESS) (Hayes, 2013). A bootstrapping method with 5000 samples and bias-corrected 95% confidence intervals were used.

According to the results, although the regression models are mostly significant, the associations between message outcomes including comprehension, perceived message quality, resistance to counter-arguing and behavioral intention to communicate family health history are not moderated by the types of cultural narrative and participants’ identity: 1) comprehension, $F(7, 656) = 2.74$, $R^2 = .06$, $p < .001$, $\Delta R^2$ due to 3-way interaction = .001, $p = .42$; 2) perceived message quality, $F(7, 656) = 9.04$, $R^2 = .09$, $p < .001$, $\Delta R^2$ due to 3-way interaction = .000, $p = .68$; and 3) resistance to counter-arguing, $F(7, 656) = 9.04$, $R^2 = .09$, $p < .001$, $\Delta R^2$ due to 3-
way interaction = .000, \( p = .78 \).

The three-way interaction effect of the types of cultural narrative, participants’ cultural identity, and perceived message effectiveness on their behavioral intention was significant; \( F(7, 656) = 38.60, R^2 = .29, p < .001; \Delta R^2 \) due to 3-way interaction = .008, \( p < .01 \). Table 4-43 shows the conditional indirect effects at the values of the moderators. As the table 4-43 reveals, when the participants’ were exposed to culturally distant messages (i.e., when Asian participants read autonomy control messages, or American participants read social-embeddedness messages), the conditional effect of perceived message effectiveness on behavioral intention to communicate family health history was significantly higher than when the participants read culturally closer messages (i.e., when Asian participants read social-embeddedness messages, or American participants read autonomy control messages).

Table 4-42

**Moderation Effects of the Type of Cultural Narrative and Participants’ Identity on the Associations between Perceived Effectiveness (X) and Behavioral Intention (Y)**

<table>
<thead>
<tr>
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<th>( b(SE) )</th>
<th>( t )</th>
<th>( \text{Sig.}(p) )</th>
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</thead>
<tbody>
<tr>
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<td>4.11</td>
<td>.00***</td>
<td>.24</td>
<td>.69</td>
</tr>
<tr>
<td>Identity</td>
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<td>-1.40</td>
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<td>-2.68</td>
<td>.45</td>
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<td>.04</td>
<td>-2.82</td>
<td>-.05</td>
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<td>.09</td>
<td>-.04</td>
<td>.55</td>
</tr>
<tr>
<td>PME * Mg</td>
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<td>.13</td>
<td>2.31</td>
<td>.02</td>
<td>.04</td>
<td>.56</td>
</tr>
<tr>
<td>Id * Mg</td>
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<td>.95</td>
<td>2.57</td>
<td>.01*</td>
<td>.57</td>
<td>4.30</td>
</tr>
<tr>
<td>PME * Id * Mg</td>
<td>-.47</td>
<td>.18</td>
<td>-2.65</td>
<td>.01**</td>
<td>-.82</td>
<td>-.12</td>
</tr>
</tbody>
</table>

*Note: Identity: Asian = 1, American = 0; Message type: Social-embeddedness message = 1, Autonomy control message = 0

\( F(7, 656) = 38.60, R^2 = .29, p < .001; \Delta R^2 \) due to 3-way interaction = .008, \( p < .01 \)

\*\( p < .05 \); \**\( p < .01 \); \***\( p < .001 \)
Table 4-43

Conditional effect of Perceived Message Effectiveness (X) on Behavioral Intention (Y) at Values of the Moderators

<table>
<thead>
<tr>
<th>Message</th>
<th>Identity</th>
<th>Effect</th>
<th>SE</th>
<th>t</th>
<th>Sig.(p)</th>
<th>LLCI</th>
<th>ULCI</th>
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<td>.11</td>
<td>4.11</td>
<td>.00***</td>
<td>.24</td>
<td>.69</td>
</tr>
<tr>
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<td>.00***</td>
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<td>.89</td>
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<td>7.87</td>
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<td>.69</td>
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</table>

Note: Identity: Asian = 1, American = 0
Message type: Social-embeddedness message = 1, Autonomy control message = 0
*p < .05; **p < .01; ***p < .001

Summary of Study 3 (Randomized Trial) Results

First, the results of randomized trial suggest that there are differences in family communication and knowledge about family health history across cultures. Specifically, Korean participants’ knowledge and communication about their family health history was significantly lower than American and Chinese participants’ knowledge and communication before exposure to the study message.

This study hypothesized participants would experience more engagement and identification, and greater message outcomes with the narrative message aligned with their cultural background. According to the test of 3x3 multivariate analysis of covariance (MANCOVA), there were no significant effects for narrative message type and no interaction between narrative type and identity condition. However, according to the tests of between-subjects effects, narrative message type had a significant effect on resistance to counter-arguing, such that, Korean participants’ resistance to counter-arguing was significantly higher in Korean social-embeddedness condition than
Chinese social-embeddedness and Euro-American Autonomy control conditions. However, there was no message effect found in other identity conditions.

The results of randomized trial reveal there are differences in cultural norms including power dynamics and stigma about family health history across cultures, such that 1) American participants’ subjective norms were significantly higher than Korean participants’ and Chinese participants’ subjective norms regarding family health history communication, 2) Chinese participants’ perceived quantity and frequency of family conflicts were significantly higher than Korean participants’ and American participants’ perceived conflicts, 3) American participants’ perceived stigma about their family health history was significantly lower than Korean participants’ and Chinese participants’ perceived stigma, and Korean participants’ perceived stigma was also significantly lower than Chinese participants’ perceived stigma. Furthermore, family health history communication was significantly associated with perceived stigma about family health history, subjective norm, and cultural identity. Subjective and/or cultural norms explained a significant amount of the variance of engagement and identification as well.

In addition, results suggest that the perceived boundary of “family” differs between cultures. Specifically, overall American participants’ perceived family boundary was significantly wider than Korean and Chinese participants’ perceived family boundary. At the same time, family boundary relating to cultural and/or subjective norms to communicate family health history also differed across cultures (U.S. > China > Korea). Furthermore, the analyses of this study reveal that cultural norms regarding age, and gender didn’t have significant effects on current family health history communication while cultural norms relating to gender had a significant effect on message processing. The effect of perceived family boundary was
tested as a covariate, and the result reveals that participants’ perceived family
boundary significantly affect their current communication, and message processing.

Furthermore, the results of randomized trials suggest that the three components
(perceived behavioral control, motivation to comply, and attitude) of Theory of
Planned Behavior (Ajzen, 1991) and several individual characteristics such as
narrative tendencies, genetic essentialism, spirituality, intrinsic religiosity, and
paranormal belief had significant effects on current communication, message
processing and outcomes. According to the results, there were cultural differences in
these variables, such that 1) American participants’ positive attitude was significantly
higher than Korean and Chinese participants’ positive attitude, 2) American
participants’ perceived behavioral control was significantly higher than Korean and
Chinese participants’ perceived behavioral control, 3) Chinese participants’
spirituality was significantly lower than Korean and American participants’
spirituality, 4) Korean participants’ intrinsic religiosity was significantly higher than
American and Chinese participants’ intrinsic religiosity, while Chinese participants’
extrinsic religiosity was significantly higher than American and Korean participants’
extrinsic religiosity, 5) Chinese participants’ paranormal belief was significantly
higher than American and Korean participants’ paranormal belief, and 6) American
participants’ genetic essentialist belief was significantly lower than Korean and
Chinese participants’ genetic essentialist belief.

According to the results, the effects of each variable varied across the
components of message processing as well as the outcomes of processing cultural
narrative messages. In sum, subjective norms significantly predict current family
health history communication, identification, engagement, and perceived message
effectiveness. Attitude significantly predicts participants’ engagement,
comprehension, and perceived message effectiveness. Perceived behavioral control significantly influences perceived message quality, comprehension, and resistance to counter-arguing. Spirituality, paranormal belief, and intrinsic religiosity also significantly influence several variables of message processing and outcomes. Genetic essentialism significantly influences current communication, identification, engagement, perceived message effectiveness, and resistance to counter-arguing.

Furthermore, to explore differences in the effects of moderated mediation across message and identity conditions, an integrated mediation model was developed based on Ajzen’s (1991) Theory of Planned behavior and Slater’s (2002b) Extended Elaboration Likelihood Model and tested in each message condition of social-embeddedness message and autonomy control message with two groups of Asians and Americans. As a result, the pairwise comparison analysis shows that several significant differences in the path coefficients exist between the models in different message conditions.

Figure 4.9 presents the differences in path-coefficients between Asians and Americans who read Autonomy control narrative within the TPB-EELM Integration Model. As presented in the figure, A1, B1, C1, D1, E1, F1, G1, and H1 significantly differ from A2, B2, C2, D2, E2, F2, G2, and H2. As discussed in the overall outcome of the TPB-EELM model, two paths from engagement and attitude predict behavioral intention. Significant differences were found between the path coefficients for the paths between subjective norms and PBC (A), between subjective norms and attitude (B), between subjective norms and identification (C), between attitude and identification (D), between identification and engagement (E), between subjective norms and engagement (F), and between attitude and behavioral intention (G).
Figure 4.9 TPB-EELM Integration Model – Autonomy control Condition
In the social-embeddedness condition, as presented in figure 4-10, A1 and B1 significantly differ from A2 and B2, which means that the effect of American participants’ engagement on their behavioral intention was significantly stronger than the effect of Asians participants’ engagement.

Although American participants’ identification with the autonomy control message was not significantly influenced by any of the TPB constructs, Asian participants’ identification was significantly influenced by their existing subjective norms about family health history communication. In addition, the effects of Asian participants’ subjective norms as well as attitude on their identification with the message were significantly stronger than the effect of American participants’ subjective norms and attitude. Furthermore, the effects of Asian participants’ attitude and current family health history communication on behavioral intention were significantly stronger than the effects of American participants’ attitude and current communication.

In the social-embeddedness condition, the association between subjective norm and attitude is significantly stronger in the American condition than the Asian condition. In addition, although Asian participants’ engagement in the social embeddedness narrative message was not significantly influenced by their existing subjective norms, American participants’ engagement was greatly affected by the existing norms.
Figure 4.10 TPB-EELM Integration Model – Social-embeddedness Condition
Lastly, according to the theoretical model developed to investigate the relationship between narrative evidence processing, message outcomes, and behavioral intention, identification significantly and positively predicts engagement, and engagement is positively associated with perceived message quality, comprehension, perceived message effectiveness, and behavioral intention to communicate family health history. Furthermore, of the four message outcome variables, perceived message effectiveness was the only significant predictor of behavioral intention to communicate family health history.

![Diagram](image)

**Figure 4-11 EELM for Narrative Evidence Processing**
In addition, the three-way interaction effect of cultural narrative types, participants’ cultural identity, and perceived message effectiveness on their behavioral intention was significant. Interestingly, when the participants’ were exposed to culturally distant messages, the conditional effect of perceived message effectiveness on behavioral intention to communicate family health history was significantly higher than when the participants read culturally closer messages.
CHAPTER FIVE

DISCUSSION

The original purpose of this study was to investigate the role of culture embedded in culturally-common stories (Schank & Berman, 2002) or cultural narratives (Gordon & Paci, 1997) in persuading audiences with different cultural backgrounds. This research explores the potential strengths of cultural narrative for message processing related to narrative outcomes and behavioral intentions in the context of family health history communication via employing three cultural narrative messages (South Korean Social-embeddedness, Chinese Social-embeddedness, and European American Autonomy control) with three cultural/ethnic groups (Chinese, South Korean, & European American).

As the study continues, the original goal was subdivided into multiple goals: 1) investigating the effect of cultural narrative messages and the processing of narrative evidence in relation to cultural and individual characteristics and the three variable of Theory of Planned Behavior, 2) figuring out the relationship among the variables of narrative processing and the outcomes of narrative processing, and 3) finding theoretical and practical implications by applying the results and the models to the specific context of family health history communication.

The growing importance of family health history communication, drastic increases in Chinese and Korean population in the US, and their low exposure to this specific issue make it an urgent need for health communicators to begin assessing ways to promote family health history communication in these cultural groups. Therefore, this present study investigated the effectiveness of cultural narrative as an evidence of the necessity of family health history communication. For this goal, this research study employed college students whose self-reported identities are Korean,
Chinese, or American. Yet, considering the high Chinese and Korean emigrants’ settlement rates in the US (Migration Policy Institute, 2014; 2015), employing college student samples is a great strategy to reach the current and/or future Korean and Chinese American citizens.

Especially, findings related to research question 1 and 2 indicate that Korean people’s knowledge and experience about family health history are significantly lower than American and Chinese people’s knowledge and experiences, and Chinese people’s knowledge is also significantly lower than American people’s knowledge. In addition, Korean and Chinese people’s perceived family boundary guiding intentions to communicate family health history is indeed different than American participants, and thus cultural narrative evidence may be an effective way to increase their family health history communication by influencing the message processing, outcomes, and behavioral intention. Furthermore, although better than Korean participants, American and Chinese participants also revealed low likelihood of having communicated family health history as well, with means below the midpoint on the 7-point scale. Therefore, it seems urgent to develop appropriate cultural narrative messages targeting each cultural group.

As a result, this present study offers several theoretical and practical implications and directions for future research regarding the processing and the outcomes of narrative evidence and the use of cultural narrative in a wide variety of health communication contexts in addition to family health history communication. Therefore, this chapter will discuss the implications relating to the results and the findings of this present study for health communication scholars and practitioners designing health interventions as well as the limitations to be overcome in the future studies.
Developing and Testing Cultural Narrative Messages within the Context of Family Health History Communication

Developing Cultural Narrative Messages based on Formative Research

This research was developed according to the assumption that culture influences the effectiveness of narrative. Although narrative is an effective strategy to include cultural values in message content, few studies have investigated the discursive or socio-linguistic aspects of narrative messages and their roles in health communication. In communication more broadly and health communication specifically, narrative has generated a voluminous amount of research, largely relating to the use of narrative inquiry as a methodology to reveal individual life stories (see Charmaz, 1987; 1991; 1999; 2001). Furthermore, although several studies have focused on the effect of narrative message processing on behavioral intention or change, less research has focused on the message features associated with the use of narrative as a form of evidence that contributes to positive or negative outcomes (see Volkman & Parrott, 2012; Niederdeppe et al., 2014). Therefore, the present study tried to integrate the existing multiple branches of narrative research and inquiries into a research study regarding the use of narrative as a form of evidence contributing positive or negative outcomes in the context of family health history communication.

Studies utilizing narrative inquiry as a methodology to reveal individual life stories have focused on the dichotomy of narrative structure and emotion in the context of narrative medicine (Charon, 2006; 2009). For example, Harter (2009) focuses on dialogic performances and aesthetic accomplishment, and Bleakley (2005) discusses that the tension between analysis of narrative structure and empathic involvement. Furthermore, Langellier (2009) discusses the role of “performance,” which implies the co-construction of the story or reauthoring process to deconstruct
and challenge cultural assumptions about the family’s problems (Monk, 1997). Trees, Koenig-Kellas, and Roche (2010) state, the family’s story about genetics or health history must often be restructured by the practitioner in order to emphasize relevant aspects. According to Bleakley (2005) and Langellier’s (2010) perspectives, it seems that “reauthoring family health history” can be considered positive co-construction of the stories or objectification of disease risks by challenging cultural assumptions.

The production of cultural narrative messages can be processed by capturing the target audiences’ raw narratives while the reception of the narratives can be explored by analyzing the participants’ evaluation of the messages and their changes in their beliefs or behavioral intention in relation to their socio-cultural and individual characteristics. Ochs and Capps (1996) state that narratives connect self with society by constituting a crucial resource for socializing emotions, attitudes, and identities, developing interpersonal relationships, and constituting membership in a community.

Of course, developing cultural narrative messages is not an exactly same procedure as positive co-construction of the stories or objectifying family health history. However, the capturing process cannot be detached from the co-constructive and performative nature of narrative medicine because the captured raw narratives may reflect the target audience’s understanding, beliefs, and norms about the issue, and thus help them change their beliefs and behaviors. Therefore, in the present study, raw family health narratives, which are communicated within Korean and Chinese families, were employed as the source of cultural narrative evidence. Furthermore, in terms of the reception of health messages, the audiences’ appreciations and interpretations of health narratives may vary in accordance with their socio-cultural and personal contexts. Therefore, this reception process can also be regarded as the
co-construction of narratives between the source of the message and the audiences that can influence the processing and outcomes of the narrative evidence.

Although the production and reception of health narratives, which are based on audiences’ attitudes, beliefs, and behaviors, have positive implications for the processing and effects of health messages according to culture-centric framework (Larkey & Hecht, 2009), few studies have explored the outcomes of the narrative evidence based on audiences’ direct evaluation and appreciation of the narrative messages developed in accordance with familiar stories reflecting their socio-cultural experiences. Therefore, in the present study, several cultural narratives or culturally common stories were developed based on the results of the formative study including several cultural archetypes reflecting Korean and Chinese people’s collective cultural experiences about family health history communication to investigate the processing and the outcomes of the cultural narrative messages. The three types of cultural narrative messages include Korean social-embeddedness message, Chinese social-embeddedness message, and Euro-American autonomy control message.

The Effect of Cultural Narrative Messages

The first goal of the empirical study was to investigate the effect of cultural narratives on the processing and the outcomes of each message. Yet, although self-identified cultural identity had significant effects on all the variables relating to message processing, outcomes, and behavioral intention, direct effects of cultural narrative message was significant only on one outcome variable, resistance to counter-arguing. Specifically, Korean participants’ resistance to counter-arguing was significantly higher in Korean social-embeddedness condition than Chinese social-embeddedness and Euro-American Autonomy control conditions. Counter-arguing usually increases the discrepancy between the message and the audience’s attitudes
(Slater, 2002a). Since decreases in counter-arguing or cognitive resistance should enhance persuasive effects (Slater, 1999 & 2002a; Wheeler, Green, & Brook., 1999; Prentice, Gerrig, & Bailis, 1997), this one significant effect should not be considered trivial.

According to entertainment-education scholars (Green, 2006; Kreuter, Green, Cappella, Slater et al., 2007; Moyer-Guse, 2008; Slater & Rouner, 2002), narrative communication can reach resistant audiences better. Employing a narrative message is an effective strategy to preclude counter-arguing caused by predisposed beliefs (Slater, 2002a; Slater & Rouner, 2002), and especially Kreuter et al. (2007) state that overcoming resistance is one of the four distinctive capabilities, which can be created by engagement into a narrative cancer prevention message. However, these studies in the context of entertainment education (e.g., Lane, Polednak, & Burg1989; Brown & Potosky 1990; Slater & Rouner, 2002) mostly have focused on other variables (e.g., goal congruence, interest in celebrity etc.) through which they could assume audiences’ level of resistance. Therefore, it appears that the studies in the E-E contexts didn’t adequately reveal the direct effect of narrative messages on audiences’ resistance to counter-arguing as an outcome of narrative evidence.

Theoretically, it seems that the existing narrative studies in the E-E contexts have mostly investigated the processing of narrative messages by following the peripheral route (Petty & Cacioppo, 1986) or heuristic processing (Chaiken, 1980; Eagly & Chaiken, 1993). The rationale behind this trend is the E-E scholars’ overvaluation of or obsession with narrative effect that exists outside audiences’ cognitive or rational thinking process. Several E-E scholars (Brooke, 1995; Piotrow et al., 1997; Singhal & Rogers, 1999) have said that successful entertainment-education messages gain audiences’ attention not because of persuasive contents in them, but
because of their attractive drama. Finally, Slater and Rouner (2002) argue that the intentional persuasive effects of entertainment-education are similar processes to the incidental persuasive effects suggested by cultivation theory (Gerbner, Gross, Morgan, & Signorielli, 1994). This claim provides a good reason why the extended ELM can be understood as a model solely theorizing the peripheral or heuristic processing of narrative messages.

At the same time, it seems that the existing E-E studies tend to underestimate audiences’ ability to evaluate and interpret narrative messages. The clear border between central route and peripheral route, or systematic processing and heuristic processing is decided by audiences’ involvement with the issue, motivation to process, and ability to think about the persuasive message. However, in terms of the narrative messages, the pre-requisite conditions can be replaced by identification and engagement as Slater and Rouner (2002) suggest. In addition, although the effectiveness of narrative processing is mostly decided by audiences’ identification with the characters and engagement in the narrative, this process doesn’t necessarily need to be incompatible with their rationality or perception about message quality or effectiveness. In the previous studies about narrative messages, identification and engagement have been the final mediators predicting attitudinal or behavioral outcomes. Yet, identification and engagement may positively or negatively influence audiences’ judgment about the messages through deep processing and elaboration, and resistance to counter-arguing can be understood as one of those message outcomes.

Although the effectiveness of narrative on resistant audience has been long discussed in the context of entertainment-education, audiences’ actual resistance was rarely measured in those E-E studies focusing on the heuristic or peripheral
processing. Unlike these previous studies, the present study directly measured participants’ resistance to counter-arguing as a message outcome, but the result seems consistent with the previous E-E scholars’ arguments. Although no interaction effect between message type and identity condition was found, the results reveal that resistance to counter-arguing might be more sensitive to the type of cultural narrative evidence than other outcomes such as comprehension and perceived effectiveness that may request deeper or more systematic processing.

In spite of the significant differences found among Korean participants, hypotheses 1-1, 1-2, 2-1, 2-2, 7-1, 7-2, 7-3, and 7-4, which posited that participants from the cultural background closer to the cultural narrative message they read would experience more identification and engagement, more positive message outcomes, and greater behavioral intention to communicate family health history, were not supported. It seems that there are several potential reasons that may be able to explain these failures. First of all, while the cultural narratives used in this study were based on in-depth interviews that revealed cultural archetypes for use in the messages, some similarities between Chinese and Korean archetypes were found. As a result, several contents used for both social-embeddedness messages were the same when addressing these issues, and may have limited the likelihood that differences would be found between the two social-embeddedness messages for the two groups. Furthermore, there might be cultural differences between participants belonging to the same cultural group. For example, in the pilot study, some Korean and Chinese students agreed with the narrator’s perspective regarding the issue of communicating with his/her father, and found the message was effective to them, but other students were negative toward the content because they didn’t experience those communication problems in their lives.
In addition to the use of the archetypes, emphasizing agency was not found in the pilot study to invoke perceptions of autonomy versus social embeddedness. This contributed to significant revision for the randomized trial, including nearly eliminating the social-embeddedness index [your family] in the autonomy message and nearly eliminating the autonomy index [you] in the social embeddedness messages. Still, the manipulation check made it clear that the intended perception was not nearly as strong as was hoped for in redesigning the stimulus messages. It may be that the whole theoretical arena of autonomy and social-embeddedness is fraught with theoretical ambiguity. This theoretical ambiguity may be caused by the complexity of linguistic and/or grammatical structure that contributes to the unclear categorization of socially-embedded agency and autonomous agency. For example, according to the context of each narrative, ‘you’ can be regarded as both socially-embedded agency (your family) and autonomous agency (yourself).

Thirdly, it may be that the message included too little content to make the reader feel that they had gained the skills or insights to personally, in the case of the autonomy messages, or via the group, in the case of the social-embeddedness messages achieve the behavior being promoted. While the social-embeddedness messages offered a strategy to address talking to one’s father about a sensitive and generally off limits topic (‘tell him that you still love and respect him’), this may simply have been too little and hard for the reader to imagine enacting. Due to these reasons, the messages may have failed because the messages did not include sufficient factual statements to enhance understanding. Or, all the messages may have been perceived equally effective because they contained the same factual evidence statements about family health history communication, which took priority over the cultural content.
Furthermore, the problem related to the lack of content can be also easily combined with the issue of participants’ low health literacy regarding family health history and genetics. Especially, considering Korean and Chinese participants’ relatively lower level of knowledge about their family health history, their level of health literacy to comprehend the messages may be affected by the insufficient knowledge about their family health history. According to the individual interviews conducted for the formative study, it appears that in Korea, lay public is not familiar with the term ‘family health history,’ and genetic testing for disease prevention is not popular yet. In addition, the overall low level of family health history communication experiences in the three cultural groups may be reflective of participants’ level of health literacy insufficient for effective message processing as well as positive message outcomes.

Lastly, there might be differences between culturally closer messages and more effective messages. In the pilot study, several Korean and Chinese participants indicated that Euro-American autonomy control message was most effective because they thought most college students preferred numbers as evidence to other types of contents. However, many of them acknowledged the other types of messages (i.e., Chinese or Korean social –embeddedness narratives) might better fit their cultural background although a few students still thought narrative evidence based on numbers and statistics would be most effective in their culture. The participants’ opinions might support the results relating to the moderated moderation effect of message conditions and identity conditions on the associations between message processing and perceived effectiveness, and between perceived effectiveness and behavioral intention investigated in research questions 14 and 15. Further implications will be discussed later in this chapter.
The Effect of the Three Variables of Theory of Planned Behavior and Individual Characteristics on Family Health History Communication, Message Processing, Message Outcomes

The next goal of the present research study was to investigate the processing and outcomes of the cultural narrative evidence and current family health history communication in relation to individual characteristics and three variables of Theory of Planned Behavior.

The Effect of Subjective Norms on Family Health History Communication and Message Processing

Subjective norms. The results of research question 3 revealed that American participants’ subjective norm about family health history communication was significantly higher than Korean and Chinese participants’ subjective norms. In addition, its effects on the processing and outcomes were not trivial. This research study (H3-1 and 3-2) hypothesized subjective norms regarding family health history communication would be positively associated with increases in the outcomes of family health history narrative processing. According to study results, as hypothesized, participants’ subjective norms successfully predicted their family health history communication, identification with, and engagement in the cultural narrative messages. While individual and/or cultural norms such as stigma beliefs and perceived family power structure refer to specific prescriptions regarding individual actions to be followed in a given situation (Williams, 1960), subjective norms are defined as the perceived social pressure with regard to performing a specific behavior (Ajzen, 1991). Therefore, the results of present study suggest that participant’s perceived social pressure may have significant effects on their actual communication behaviors as well as their engagement in the narrative messages.
**Family power conflicts.** The results of research question 4-1 revealed that Chinese participants' perceived frequency of family conflict was significantly higher than Korean and American participants’ perceived conflicts. However, interestingly, according the results of research questions 4-2 and 4-3, although the frequency of power conflicts in a family didn’t affect family health history communication and participants’ engagement, it significantly increased their identification with the cultural narrative messages. Power conflicts reflect members’ perceptions of struggles for control and dominance within the group (Keller, 2009). Therefore, it is possible that participants’ perception about power issues in their families might have increased their interest in the contents regarding family communication based on social-embeddedness vs. individual autonomy revealed in the cultural narrative messages. Nevertheless, its effect was not consistent in engagement.

**Stigma.** For research question 5-1, first I examined the effect of stigma beliefs on participants’ family health history communication and message processing. The results revealed that American participants’ stigma perception about family health history was significantly lower than Korean and Chinese participants’ perceived sigma, and Korean participants’ stigma perception was also significantly lower than Chinese participants’ perception. This result is consistent with the findings of formative study, and thus confirmed that the strategy of the present study was correct. One of the cultural archetypes (i.e., Health is not an appropriate issue for open discussion), which was found in the formative interviews, was inserted to both Chinese and Korean social-embeddedness narratives. This could be another explanation of why the messages were not more persuasive. Although the Korean and Chinese social-embeddedness messages slightly address stigma issues (e.g., family health history is not something to hide or to be ashamed of; your family may think it
is difficult to talk about these kinds of private issues with your more distant relatives),
the stigmatizing nature of family health history communication was not explicitly
addressed in those messages. In addition, although cultural determinism of stigma has
been creating controversy among scholars (see Douglas, 1966, species (Hebb &
Thompson, 1968; Wilson, 1975; Jones et al., 1984; Neuberg et al., 2000), the result
suggests that stigma perception may be partially influenced by culture.

In addition, according to the results of randomized trial (RQ 5-2 and 5-3),
stigma belief significantly predicted family health history communication,
identification, and engagement. Stigma beliefs relating to family health history can
contribute to people’s decision making about sharing family health information by
affecting social pressures and norms for disclosure or non-disclosure between family
members. Furthermore, participants’ stigma beliefs may reveal their serious
consideration of the intended family members to share their family health history
(Kreuter et al., 2007), and thus participants’ perception of family boundary may come
into play in those decision-making processes. Therefore, the positive effects of stigma
belief on current family health history communication, identification and engagement
may be reflective of participants’ intention to share family health history with specific
family members based on their perception of family boundary. However, as table 4-5
suggests, finally participants’ stigma beliefs are negatively correlated with three types
of message outcomes (perceived message quality, comprehension, and resistance to
counter-arguing). These results reveal that although participants’ current family health
history communication and message processing could be positively influenced by
their stigma beliefs due to some reasons, it was hard for the participants with strong
stigma beliefs to evaluate the messages in a positive way. This can be explained by
the discrepancies between the ideas embedded in their stigma beliefs and the content included in each cultural narrative message.

**Perceived family boundary.** In the present study, the influences of perceived family boundary (RQ6-1), age and gender (RQ6-2), which are dependent on culture, were investigated to better understand the effect of cultural narratives as health messages in the context of family health history. As seen in the studies on genetic risk communication, the results revealed significant differences in perceived family boundaries, age and gender between three cultures in terms of reference groups that guide intention and motivation to comply. However, perceived family boundary was the most significant predictor of current communication and message processing. The results showed that American participants’ perceived family boundary was significantly wider than Korean and Chinese participants’ perceived family boundary. According to the results of LSD comparison for perceived family boundary (Table 4-10), the wider the perceived family boundary is, the bigger the mean differences between US and Korea and between US and China become. It’s hard to differentiate Korean and Chinese’s perceptions about their family boundaries in this table, the results regarding family boundaries to communicate family health history (Table 4-11) reveal that Chinese participants are more likely to talk about family health history with their distant relatives than Korean participants. In addition, the third item of chi-square test (Table 4-11) also reveals a clear order of U.S (24.9%), China (16.9%) and South Korea (11.2%) in the family boundaries of reference groups that guide intention to communicate family health history. Furthermore, according to several chi-square results, Chinese people are more likely to communicate family health history with older and female members. These results support Galvin and Young’s (2010) claim
that the decision making regarding family health history and genetic risk communication varies across cultures (Galvin & Young, 2010).

As discussed in the rationale, the traditional division between individualistic vs. collectivistic cultures might not be able to adequately explain this cultural difference. The distinction between (nuclear) families vs. (distant) relatives might better reflect Korean and Chinese young adults’ understanding about the social conceptualization of family relationship. Although both Korea and China are classified as collectivistic cultures, it appears that the narrow boundary of an in-group/family also needs to be considered to fully explain each culture’s collectivism. In addition, the cultural boundary of family can be understood through privacy management theory as well. According to Petronio and Gaff (2010), communication privacy management provides a predictive, conceptual framework to understand the privacy rules families and individuals have for sharing information. Therefore, the psychosocial boundary of collectivistic in-group/family can play a key role in terms of the ownership of privacy information about family health history. The implicit rules can be understood in the vein of family’s values reflecting each culture.

In the South Korean society, the norms in a nuclear family based on selfish familism (Kong, 1992) might influence the information management regarding family health history, which may keep the information from being shared and communicated with distant relatives. According to communication privacy management theory, co-owners of privacy information have to treat the information by following the desires of the original owner and learn the expectations by negotiating privacy rules (Petronio & Gaff, 2010). However, people in a highly competitive society such as Korea and China may want positive self-management or face-maintenance even between
relatives, and thus might not be willing to negotiate and mutually control the privacy information.

This present study (RQ6-3) also investigated if participants’ cultural and/or subjective norms regarding family boundary, age and gender relate to family health history communication, and message processing. According to the results, participants’ current family health history communication was significantly influenced by their perceived family boundary. The influence of perceived family boundary on current communication makes sense because the participants’ perceived norms guiding their intention to communicate family health history can influence their current communication behavior by expanding or narrowing down their boundary of sharing the privacy information. In addition, as Kreuter et al. (2007) propose, since communicators should deliver the information to an intended audience in mind to avoid stigmatization, disclosure or non-disclosure of family health history can be influenced by the biological and/or perceived distance between relatives.

The Effect of Individual Characteristics on Family Health History Communication, Message Processing, and Message Outcomes

Narrative tendencies. According to the result of research question 7-1, participants didn’t vary in narrative tendencies. The Narrative tendencies can be understood as an individual predisposition to creating and finding narrative (Newman, 2005). People with high narrative tendencies are more likely to gather details about their experiences, weave the details into narrative script templates, and compare them with other templates stored in their memories (Newman, 2005). As hypothesized in hypothesis 4, narrative tendencies were positively associated with variables related to the processing (engagement), and the outcomes of cultural narrative messages (perceived message quality, comprehension, perceived message effectiveness, and
resistance to counter-arguing) were also positively influenced by narrative tendencies (RQ13). The results reveal that individual tendencies to understand life as a forms of narrative may increase the effect of narrative messages. However, the association between message processing and narrative tendencies was not moderated by the types of cultural narrative and participants’ identity (RQ7-2), which reveals that the effect falls short of the present study’s expectations.

**Spirituality, extrinsic/intrinsic religiosity, and paranormal belief.** To investigate participants’ religious tendencies and their effect on the message effects, spirituality, extrinsic/intrinsic religiosity, and paranormal belief were measured. As found in the previous studies comparing European Americans with African Americans (see Cohen, Fine, & Pergament, 1998; Landrine & Klonoff, 1996; Lozoff, Wolf, & Davis, 1984), there were significant cultural differences in these three constructs, according to the results of research question 8-1. Chinese participants’ spirituality was significantly lower than Korean and American participants’ spirituality. Korean participants’ intrinsic religiosity was significantly higher than American and Chinese participants’ intrinsic religiosity. Chinese participants’ extrinsic religiosity was significantly higher than American and Korean participants’ extrinsic religiosity. Chinese participants’ paranormal belief was significantly higher than American and Korean participants’ paranormal belief.

These results are well-aligned with the socio-cultural and historical background in each culture. As discussed in the rationale, in East Asia, traditional meaning of religion might be qualitatively different from the understanding of Western people. The major traditional Eastern religions such as Buddhism and Confucianism mostly focus on causal relations and materialistic beliefs, while in Christianity it is normative to explain things based on the teleology of God’s will.
Since spirituality and intrinsic religiosity better reflect values related to Christianity than Eastern religions, the differences in the two constructs may explain the differences in religious influences in the three cultures. At the same time, East Asia, especially South Korea has been exposed to the Western culture and religions for a long time and thus, Christianity including both Protestants and Catholics is the largest religious group in South Korea. The results reveal the significant influence of Christianity in that South Korean participants’ intrinsic religiosity is even higher than American participants.

The present study supposed that in terms of the context of family health history communication, beliefs related to religion may play significant roles in constructing people’s attitude toward the intention of communication, and thus may affect current family health history communication, the message processing and outcomes (RQ8-2, 8-3, & 13). Interestingly enough, although spirituality was positively correlated with participants’ engagement and current family health history communication, in regression models, spirituality had no effects on the current communication as well as the message processing. However, at the same time, spirituality was not only positively correlated with all the message outcomes, but also had positive and significant effects on participants’ comprehension and resistance to counter-arguing in regression models.

Since spirituality is commonly characterized as the experiences with God and existential aspirations relating to the meanings of life (see Egbert, Mickley, & Coeling, 2004; Kirkwood, 2004; Moberg, 2002; Thoresen, Harris, & Oma, 2001), spirituality may not help people’s communication about family health history and message processing. According to the existing literature about African Americans’ religious belief, African Americans are more likely to believe that diseases can be cured by
prayers (Landrine & Klonoff, 1996) or view diseases as God’s punishments (Cohen, Fine, & Pergament, 1998). Therefore, participants with high spirituality may believe that family health history communication is not helpful to prevent diseases, and thus might be skeptical about the messages. At the same time, it also makes sense that although the messages failed to be perceived effective to the participants with high spirituality, other outcomes relating to the content of the messages (i.e., comprehension and resistance to counter-arguing) could be significant.

To better explore religious influences, paranormal beliefs and extrinsic/intrinsic religiosity were also measured. Yet, interestingly enough, intrinsic religiosity and paranormal belief had reverse effects of spirituality on current communication about family health history, message processing and outcomes. While both had positive influences on current communication and message processing, paranormal belief had a negative effect on comprehension, and intrinsic religiosity also negatively predicted participants’ resistance to counter-arguing. However, the effect of intrinsic religiosity on perceived message effectiveness was positive. Extrinsic religiosity was not effective on all the variables relating to message processing and outcomes, but it significantly influenced participants’ identification with the message.

Considering the conceptual differences between intrinsic religiosity and paranormal belief and cultural differences in these two constructs, it is a very intriguing finding that these two constructs have similar effects on the processing and the outcomes of the cultural narrative messages. Especially, intrinsic religiosity is characterized as the attributes of mature religion, and negatively correlated with prejudice (see Allport & Ross 1967). However, although Korean participants’ intrinsic religiosity was significantly higher than American and Chinese participants’
intrinsic religiosity, at the same time, as discussed earlier Korean participants’ stigma belief was significantly higher than American participants. Furthermore, Chinese participants’ paranormal belief was significantly higher than American and Korean participants’ belief, but its influence on message processing and outcomes was similar to the influence of intrinsic religiosity in which Chinese participants were pretty low. Therefore, future studies will need to more systematically investigate each religious dimension or construct by considering cultural influences and differences, and their effects on the processing and outcomes of narrative messages relating to specific health issues or disease conditions.

Genetic essentialist belief. According to the results of research question 9-1, American participants’ genetic essentialist belief was significantly lower than Korean and Chinese participants’ genetic essentialist belief. This makes sense because the major traditional Eastern religions such as Buddhism and Confucianism mostly focus on causal relations and materialistic beliefs, which are close to scientific determinism. Although Christianity is South Korea’s biggest religious group, Korean people’s culture and lifestyle have been greatly influenced by these two religions. In addition, as Nelkin and Lindee (1995) discussed, genetic essentialism in the mass media helps make the ambiguity or uncertainty about genetic inheritance become a truth, and participants’ understanding of genetics cannot be detached from these lay influences or master narratives. In the South Korean media, news headlines titled ‘selfish gene’ can be easily found, and the expression is indeed a South Korean cliché describing the superiority (e.g., appearance, intelligence etc.) celebrity family members share.

This present study assumed that people’s communication about family health history might be also affected by lay beliefs about genetics (RQ9-2). Although genetic essentialist belief may negatively impact self-efficacy, as well as response efficacy
(Parrott, Silk, & Condit, 2003), the results reveal that current communication was positively affected by genetic determinism. Furthermore, according to the results of research questions 9-3 and 13, the essentialist belief positively influenced message processing and perceived message effectiveness, while its effect on resistance to counter-arguing was not positive. This makes sense in that individuals with higher essentialist belief may have more interests and higher levels of motivation related to family health history communication.

Sheer and Cline (1995) emphasize the importance of information exchange and message evaluation that reduces uncertainty in medical interactions. The theory of lay epistemics (Kruglanski, 1989) suggests that individuals acquire and interpret information yet may still feel uncertainty about the results based on their stores of previous knowledge, belief or experiences. Participants with high genetic essentialist belief may communicate more about family health history because they believe in the significant influence of genes. In addition, they may be more identified with and engaged in the message because they might already feel the necessity of talking about family health history based on their genetic essentialist belief. At the same time, however, participants’ high essentialist belief was not effective on resistance to counter-arguing. To explain the termination of epistemic sequence, the construct of one’s need for cognitive closure has been identified as an important psychological motive influencing information-processing (Kruglanski & Webster, 1996). From the perspective of lay epistemics theory and need for cognitive closure, people with high genetic determinism may perceive and interpret the messages based on their current belief, and evaluate them in a positive way not to tolerate ambiguity and uncertainty, and thus their actual reception of the message may not well-aligned with the goal of the message.
The Effect of the Three Variables of TPB on Family Health History Communication, Message Processing, Message Outcomes

**Attitude.** The results of research question 10 revealed that American participants’ attitude toward family health history communication was significantly more positive than Korean and Chinese participants.’ In addition, as expected, participants’ attitude was significantly correlated with current communication, message processing and outcomes (H5-1, H5-2, & H8).

This result supports Slater and Rouner’s (2002) argument that message processing might be predicted by major variables of social cognitive theory (Bandura, 1986). In the existing literature on the relationship between attitude and behavior or behavioral intention, attitude has been mostly considered as the predictor of behavior in the linear process of behavior change (e.g., McGuire, 1964; 1985). In this context, the function of persuasive messages has been investigated in regards to changing the existing attitude and constructing a new attitude. By focusing on the changes persuasive message may cause, the previous studies rarely have explored the effect of pre-existing attitudes on the processing and outcomes of the persuasive messages.

According to the theory of lay epistemics (Kruglanski, 1989), however, individual knowledge including attitudes, opinions, beliefs, causal attributions is related to the person’s cognition and affect. Therefore, individuals acquire and interpret information yet may still evaluate the messages based on their stores of previous knowledge, attitude, and beliefs. Since the attitude reveals a person’s favorable or unfavorable appraisal of the behavior in question (Ajzen, 1991), it appears that the results support the essential aspect of the lay epistemic theory by emphasizing both potential change and stability at the same time. In addition, it also makes sense that positive attitude increases family health history communication
because positive attitude as an evaluative belief based on previous experiences may positively affect the participants’ communication behavior.

As revealed in tables 4-23 and 4-24, however, when attitude was entered in a regression model with other variables of TPB, its effect on current family health history communication and identification were not significant. It seems the effect of subjective norms significantly overlaps with the effect of attitude. In addition, although there was no hypothesis or research question about the relationship between stigma and attitude, I looked at the correlation between the two to explain the positive influence of stigma belief on family health history communication. Interestingly, unlike the correlation between stigma belief and current family health history communication ($r = -.21, p < .001$), they were negatively correlated. Therefore, the relationships among attitude, current communication, and stigma belief should be further investigated in future studies.

**Perceived behavioral control.** The results of research question 11 suggested that American participants’ perceived behavioral control toward family health history communication was significantly higher than Korean and Chinese participants’ PBC. This makes sense because perceived behavioral control about sharing family health history as a collective decision might not be free from cultural influences. In addition, as hypothesized in hypotheses 6-1, 6-2 and 8, participants’ perceived behavioral control was significantly correlated with current communication, message processing, and most of message outcomes. This result also supports Slater and Rouner’s (2002) argument as well as the theory of lay epistemics (Kruglanski, 1989).

Nevertheless, in the regression models, participants’ perceived behavioral control didn’t have a significant effect on current communication, identification, engagement, and message effectiveness. It seems that this can be explained enough by
the relevance between participants’ perceived behavioral control and the goal of the message. Since the individuals with higher PBC are already confident that they can communicate family health history with their family members, it is possible that their perceived message effectiveness, which reflects the successful goal achievement of the message, might not be significantly influenced by the message. Furthermore, the participants with high PBC may not be able to identify with or engage in the messages including persuasive contents because of their existing confidence.

**Subjective norms.** Although subjective norms were investigated for research question 3, this construct of TPB was explored again with other two constructs, attitude and perceived behavioral control. In hierarchical regression models (Tables 4-23, 4-24, & 4-25), the effects of subjective norms on current communication and message processing were the greatest among the effects of the three constructs of TPB. However, according to tables 4-29-32, perceived message effectiveness was the only outcome variable that is significantly influenced by participants’ subjective norms while attitude and perceived behavioral control significantly affect most of the outcome variables. This makes sense in that the perceived effectiveness of message can be greater when participants’ social cognitive perceptions about significant others is successfully reflected in the message while other outcomes reflecting the characteristics of message itself such as comprehension and quality less relate to participants’ subjective norms.

**Building a Theory of Narrative Evidence Processing for the New Direction of Theory of Planned Behavior: TPB-EELM Integration Model**

Research question 12 asked how the three major constructs in TPB (attitude, subjective norms, and perceived behavioral control) relate to the processing (identification and engagement) of family health history narrative evidence predicting
behavioral intention to communicate family health history, and what the differences between cultures and/or between message conditions are. To investigate this complicated research question, Theory of Planned Behavior-Extended ELM Integration Model (TPB-EELM Integration Model) was developed by integrating two important models in communication science. According to Ajzen’s (1991) Theory of planned behavior, which is based on Bandura’s (1977; 1986) social cognitive theory, the more favorable the attitude and the subjective norm toward a behavior are and the greater the behavioral control becomes, the stronger the intention to adopt a behavior should be. Although this theory successfully explains the relationship between the three variable of TPB and behavioral outcomes, in reality, there are a wide variety of chances that intervene in the process and help or hinder people to adopt the behavior, and the effect of a narrative health message might be one of them. Therefore, the TPB-EELM integration model suggests a new direction for the application of Theory of Planned Behavior in communication science.

Figure 5.1 Overall Results of the Proposed Mediation Models
Figure 5.2 Overall Processing and Outcomes of TPB-EELM Integration Model

As figure 5.1 presents, although participants’ subjective norm positively influenced their identification with characters, their attitude toward family health history communication and perception about behavioral control didn’t affect the processing of message. However, like engagement, attitude directly influenced behavioral intention not being mediated by other variables. In addition, subjective norm was the only construct of TPB that had a significant effect on participants’ engagement in the message. In this integration model, two major routes to behavior intention can be summarized as 1) the route from engagement being influenced by subjective norm and identification to behavioral intention and 2) the route from attitude being affected by subjective norm and PBC to behavioral intention. As explained by entertainment-education scholars (Basil, 1995; Rubin et al., 1985; Zillmann & Bryant, 1994), identification as the major predictor of engagement may...
reflect participants’ needs related to vicarious social relationships and experiences through the cultural narratives. In addition, according to the integration model including dummy-coded identity (figure 4.3), interestingly, overall American participants are more likely to engage in the message than Asian participants and Asian participants identify with the message more than American participants. Although there is no theoretical reason that can explain this result, this is something that should be further investigated in the future studies with regard to other relevant characteristics of cultural narrative messages.

**Investigating the Function of Cultural Narrative Message within the TPB-EELM Integration Model**

To investigate the processing and outcome of a culturally narrative messages about family health history communication, Structural equation modeling (SEM) was performed to test the TPB-EELM integration model, and pairwise comparison was conducted to test the differences or conditional effects between message conditions (social-embeddedness message vs. autonomy control message), and identity conditions (American vs. Asian).

As presented in chapter 4, the models show several differences in path-coefficients according to the type of cultural narrative and the identity condition. It appears the differences of path-coefficients in each condition reveal theoretical as well as practical implications for future health communication campaigns employing cultural narrative messages. In addition, as Ajzen (1991) highlights the relative importance of the three components in TPB varying across situations, testing the models in each identity condition will be also helpful for the thorough exploration of socio-cultural influence on each construct as well as the processing of cultural
narrative. In the TPB-EELM integration model, each cultural narrative message (Autonomy control vs. Social-embeddedness) was tested in the two identity conditions (Asian vs. American) to thoroughly investigate the effects of three constructs of TPB on the message processing and behavioral intention in each culture.

**Autonomy control narrative condition.** Pairwise comparison results between Asian participants and American participants in the Autonomy control condition were provided in chapter 4. Significant differences were found between the path coefficients for the paths between subjective norms and PBC, between subjective norms and attitude, between subjective norms and identification, between attitude and identification, between identification and engagement, between subjective norms and engagement, and between attitude and behavioral intention.

In the autonomy control condition, both Asian and American participants’ engagement, which was significantly influenced by identification, had a significant effect on behavioral intention. However, the effect of American participants’ engagement on their behavioral intention was significantly stronger than the effect of Asians participants’ engagement. Although American participants’ engagement had a stronger effect on behavioral intention, their identification with the autonomy control message was not significantly influenced by any of the TPB constructs. However, Asian participants’ identification was significantly influenced by their existing subjective norms about family health history communication. In addition, the effects of Asian participants’ subjective norms as well as attitude on their identification with the message were significantly stronger than the effect of American participants’ subjective norms and attitude. Furthermore, the effects of Asian participants’ attitude and current family health history communication on their behavioral intention were
significantly stronger than the effects of American participants’ attitude and current communication.

The differences in those paths suggest that in the autonomy control condition American participants’ behavioral intention can be only influenced by their engagement in the cultural narrative messages, which is affected by their identification with the message and existing subjective norms. However, Asian participants’ behavioral intention can be influenced by both their engagement in the narrative message and existing attitude toward family health history communication, and the effects of existing subjective norms and attitude are significantly greater on Asian participants’ identification. Therefore, it can be concluded that the pure effect of autonomy control narrative message can be maximized with American participants.

**Social-embeddedness narrative condition.** The differences in path-coefficients between Asians and Americans who read Social-embeddedness narrative within the TPB-EELM Integration Model were presented in chapter 4.

In the social-embeddedness condition, the association between subjective norm and attitude is significantly stronger in the American condition than the Asian condition. While in both identity conditions, participants’ identification was significantly influenced by their subjective norms regarding family health history communication, the effect of subjective norms on participants’ engagement significantly varied across conditions. Although Asian participants’ engagement in the social embeddedness narrative message was not significantly influenced by their existing subjective norms, American participants’ engagement was greatly affected by the existing norms.

Consistent with the autonomy control condition, the differences in those paths suggest that social-embeddedness narrative might be more efficient or effective for
Asian participants to maximize the pure effect of engagement on their behavioral intention. However, the effect of existing norms can be weaker for Asian participants when they are exposed to a social-embeddedness narrative message.

In conclusion, considering that American participant’s values better reflect autonomy control than social-embeddedness and vice-versa, the differences in these moderated mediation models across conditions makes sense enough.

**Relationships among Message Processing, Message Outcomes, And Behavioral Intention to Communicate Family Health History**

**Exploring the Effect of Message Processing on the Outcomes: Extended Elaboration Likelihood Model for Narrative Evidence Processing**

The present study hypothesized engagement and identification would be positively associated with perceivers’ counter-arguing, comprehension, perceived evidence quality, and perceived message effectiveness (H9). To investigate this hypothesis, Extended Elaboration Likelihood Model for Narrative Evidence Processing was developed, and tested for hypotheses 9 and 10. However, interestingly enough, the overall effects of identification on the message outcomes were not significant, and thus they were not included in the model while participants’ engagement in the message positively affected perceived message effectiveness, perceived message quality, comprehension, and behavioral intention. This result is meaningful because previous literature has mostly focused on the positive relationship between identification (identification as a mediator predicting engagement or vice versa) and engagement, and rarely investigated the differences in these two important constructs of message processing.

Identification can be defined as a process of temporarily adopting a character’s perspective (Zillmann, 1994; Cohen, 2001). This psychological process includes
being transformed into empathic emotion (Zillmann, 1994) and viewing through an alternative social reality (Cohen, 2001) transcending cognitive thoughts and rational evaluation. Therefore, the absence of identification effects on the cognitive outcomes make sense in that the two ends of message processing (identification vs. cognitive evaluation) might be the results of different processing routes, as heuristic-systematic model (Chaiken, 1980) and elaboration likelihood model Petty & Cacioppo, 1986) suggest.

While in the traditional issue-related messages, engagement with the message depends on the degree to which audience’s interest fit with the message topic, Slater and Rouner (2002) insist that the salient intent of the message may fail the persuasive effort of narrative because the extent of engagement with the narrative can be determined by how well the narrative satisfies audience’s needs and goals such as vicarious social relationships and experiences (Slater, 2002a). However, the goal of narrative evidence is relatively more manifest than other types of narrative because usually evidence supports a claim (Toulmin, 1958).

Narrative evidence is evidence in a form of narrative contributing to the goals of message. Therefore, this type of evidence should be evaluated as narrative as well as evidence, and thus exploring narrative evidence with existing models of narrative processing might not be appropriate. According to Chaiken (1987), heuristic processing and systematic processing can occur simultaneously. Therefore, narrative processing models reflecting solely heuristic or peripheral processing are not realistic or practical. The absence of identification effects on message outcomes seem to be well-aligned with the trend found in the existing literature on narrative processing, and thus can be well-explained by the heuristic processing. Yet, it seems that engagement needs to be understood in a more systematic way because it significantly
and positively influences cognitive outcomes as opposed to the effects of identification.

The Effect of Message Processing and Outcomes on Behavioral Intention

The present study hypothesized engagement and identification perceivers’ counter-arguing, comprehension, perceived evidence quality, and perceived message effectiveness would be positively associated with behavioral intention to communicate family health history (H10). According to the results, participants’ engagement and perceived message effectiveness significantly predicted their behavioral intention to communicate family health history with their family members. This result is consistent with the existing literature (see Shrank & Engels, 1981; Larkey & Hecht, 2009; Slater & Rouner, 2002; Kreuter et al. 2007).

In addition, as Extended Elaboration Likelihood Model for Narrative Evidence Processing shows, overall message outcomes didn’t influence behavioral intention in a significant way. One exception was perceived message effectiveness, and this makes sense because participants’ perception of effectiveness can justify their intention to communication family health history. However, the results reveal participants’ perception about message quality and comprehension of the message don’t relate to the behavioral outcomes or the goal of message.

The Moderated Moderation Effect of Message Type and Cultural Identity on the Associations between Identification, Perceived Message Effectiveness, and Behavioral Intention

The present study investigated how the associations between the message processing (identification and engagement) and message outcomes (perceived message quality, perceived message effectiveness, comprehension, and resistance to counter-arguing) and between message outcomes and participants’ behavioral
intention to communication family health history are moderated by the type of cultural narrative message and participants’ cultural identity (RQ14 & RQ15).

In both analyses, perceived message effectiveness as an independent variable and an outcome variable revealed significant 3-way interaction effects (although marginally significant for the association between identification and perceived message effectiveness). That is, the associations between identification and perceived message effectiveness and between perceived message effectiveness and behavioral intention were significantly moderated by the type of cultural narrative message and participants’ cultural identity. However, as Tables 4-40 and 4-43 show, the direction of moderations was the reversal of expectation. Both the effect of identification on perceived message effectiveness and the effect of perceived message effectiveness on behavioral intention were more significant when the participant’s cultural identity didn’t fit with the agency of control and cultural archetypes embedded in the narrative message he or she read. There are several potential reasons why this happened. For example, participants may lack cultural knowledge, or prefer more novel effects than cultural-closeness. Furthermore, as discussed previously in terms of message effects, there might be differences between culturally closer messages and more effective messages.

In conclusion, the consistent results regarding perceived message effectiveness suggest a direction for future research. If cultural closeness is not the answer for participants’ better perception of message effectiveness, it is necessary to consider another variable called ‘novelty’ or ‘unfamiliarity.’ In addition, since this effect was not observed in other outcome variables, specifically the relationship between unfamiliar story and perceived message effectiveness should be clarified in the future studies.


**Strength, Limitation and Future Research**

To provide ideas for future research in developing and testing cultural narrative messages, it is important to acknowledge the limitations of this research. The following section will discuss the strengths and limitations of this present research study and provide a plan for future search.

**Strengths**

The major strength of this present study is that it investigates cultural narratives as narrative evidence in persuasive health communication. Although both culture and narrative have been applied to several persuasive communication contexts, to my knowledge, cultural narrative has never been explored as evidence in the health communication context. In addition, this research develops and tests two different models of narrative evidence processing within the context of family health history communication. With regard to this process, my dissertation provides several theoretical, methodological, and practical implications.

First of all, this research study theorizes cultural narrative evidence in the health communication context. I adopted the concepts of culturally common story (Schank, 1009; Schank & Berman, 2002) and cultural narrative (Gordon & Paci, 1997) to develop cultural narrative evidence contributing positive or negative message outcomes. Both studies and insights provided me with solid foundations on which I could develop social-enbeddedness narrative and autonomy control narrative in the context of family health history communication. This effort is also well-aligned with Slater’s (2009) relatively new approach in message effect called re framing, reinterpreting an advocated health behavior in terms consistent with the identity of target audience. Although marginally significant, the cultural narrative evidences were effective on the message outcome, specifically participants’ counter-arguing.
This result is also consistent with entertainment-education scholar’s findings and arguments on narrative processing and effects. In addition, the effects and functions of cultural narrative as evidence can be applied to a wide variety of health contexts as well as cultural archetypes reflecting social-cultural values and norms related to the particular health context.

Secondly, this present study is innovative because an integrative models of message processing was developed, tested, and finally it offers important theoretical implications and directions for future research. TPB-EELM (Theory of Planned Behavior – Extended ELM) integration model is groundbreaking in that it combines Ajzen’s (1991) Theory of planned behavior with the mechanism of narrative evidence processing suggesting a new direction for the uses of Theory of Planned Behavior in communication science. This model is also meaningful because the structure of audiences’ beliefs and norms embedded in their social and cultural identity was measured, and their effects on the message processing and outcomes were investigated. To my knowledge, this is another innovative effort that has been rarely explored.

Thirdly, my dissertation provides several methodological contributions to health communication and persuasion research. Unlike previous research on narrative message processing, this research study directly measures message outcomes with measurement scales. Particularly, in the existing research on entertainment-education and narrative processing, counter-arguing was mostly measured by participants’ cognitive thoughts, or assumed through other variables such as goal congruence. To my knowledge, this dissertation is one of few research studies that measures both message processing and outcomes and tests the associations among them. Furthermore, this dissertation employed structural
equation modeling and pairwise tests of path coefficients to investigate the conditional indirect effects (Preacher, Rucker, & Hayes, 2007) for the variables relating to narrative processing, message outcomes, and behavioral intention to communicate family health history with multi-group analyses (Byrne, 2001). To my knowledge, investigating conditional indirect effects or moderated mediation via pairwise comparison method is uncommon in communication research.

Lastly, in this present study, there are several practical implications for the future family health history communication campaign and research. First, this dissertation suggests a future direction in regards to the uses of cultural narrative in public health communication interventions. The findings reveal that cultural narrative as evidence can be applied to a wide variety of health communication interventions targeting particular cultural groups by reflecting the target audiences’ cultural archetypes and values related to their health context. Secondly, this study investigated several individual characteristics and cultural beliefs relating to family health history communication, and their effects on family health history communication, message processing and outcomes. Especially, findings regarding perceived family boundary, spirituality, paranormal belief, genetic essentialism, attitude, and stigma suggest both cultural and practical implications for future research as well as health communication interventions for family health history communication.

**Limitations**

Although this research study provides several interesting findings and implications, in offering future research and next steps exploring narrative evidence and family health history communication, it is important to acknowledge limitations related to the narrative evidence used, the measurement and the samples of this study, and the effect size of the results.
**Narrative evidence.** In this research study, cultural narratives were developed based upon the formative research conducted with twelve Chinese and Korean graduate students while the participants of the randomized trial were undergraduate students. Although there wasn’t a critical difference in terms of cognitive growth (see Fischer, Yan, & Stewart, 2003), the socio-cultural backgrounds of the two student groups may differ according to their experiences and years in the US. This may have led to less effective processing and outcomes of the cultural narrative messages developed according to the results of formative interviews. In addition, the cultural narrative messages may include concerns and contexts that are specific to Chinese and Korean students at the Pennsylvania State University. This limits the generalizability of the findings to general Chinese and Korean populations in the US.

Furthermore, in the pilot study where I surveyed and interviewed at the same time, there were several discrepancies between the most effective message and the message that best reflected the participant’s cultural background. However, to be faithful to the original research questions of this dissertation, I focused on the messages that best reflected the participants’ culture from their perspectives. This suggest that there might be differences between the most effective message and the most familiar message to audience from a specific cultural background, and future research would need to address and further investigate this issue.

Lastly, according to the result of manipulation checks, there was no difference between Korean and Chinese messages. The qualitative results of pilot study also reveal the difficulty of developing two clear-cut messages reflecting Chinese culture or Korean culture only. Yet, regardless of the similarities, the results regarding several individual characteristics based on socio-cultural values in each culture suggest that there are a wide variety of cultural differences between the two culture, which should
be addressed in the future study and applied to future health communication intervention targeting the two cultures.

**Measurement.** There were a few measurement issues that future research would need to address. Most notably, since several measures and scales were developed for this dissertation, although most of the measurement properties were good, there were issues regarding the measurements of the manipulation checks for this study. Specifically, since this dissertation investigates cultural narratives as evidence by developing two types of cultural narrative messages (social-embeddedness message & autonomy control message), initially two different scales were developed to measure the participants’ perceived social-embeddedness and autonomy control separately. As discussed previously in the method section, however, in the third study, the randomized trial, each scale failed to provide significant results. After much consideration, I found social-embeddedness and autonomy control might be continuous and need to be measure as a continuum because social-embeddedness and autonomy control need to be understood relative to each other. Therefore, I re-analyzed the effect of two types of messages on the perceived autonomy – social-embeddedness continuum, and finally obtained significant results. Although this measurement issue can be understood as a necessary procedure for scale developments in new areas, it can be also viewed as a limitation of the present study in that the theorization of the scales changed after measurement.

Furthermore, although the relationships among individual characteristics, three constructs of TPB, message processing, outcomes and behavioral intention could be grasped successfully through this research study, the interpretation of the findings may be limited due to the lack of pre-message condition. That is, it is impossible to figure out if participants’ behavioral intention to communicate family health history
significantly increased or decreased after exposure to cultural narrative messages. Therefore, future research should measure pre-message intention as well as post-message intention by conducting a two-phase study based on a time lapse. In addition, in the two-phase study the three variables of TPB (subjective norm, perceived behavioral control, and attitude) would be able to be measured in the both conditions.

**Procedures and sample.** In each culture as well as society in general, the generalization of the findings may be limited by the sample characteristics. I developed cultural narrative messages via interviewing Korean and Chinese graduate students and conducted a randomized trial mostly with college students studying at The Pennsylvania State University. Therefore, overall the sample used in this dissertation was educated, and generally from a moderate to high socioeconomic class. Thus, my findings may only apply to similar populations. Especially, Chinese and Korean international students studying in the US are mostly from relatively higher socioeconomic class in each country. This limits the generalizability of the findings to all Chinese and Korean populations living in the US, China, and South Korea.

**Future Research**

Despite these limitations, considering the findings of this dissertation, there are several new avenues for health communication and persuasion scholars to pursue. In this dissertation, I developed cultural narrative messages in the context of family health history communication and tested the processing and the effect of cultural narrative messages via two models of narrative evidence processing developed for this research study.

Therefore, future research should continue to develop and test cultural narrative messages in a wide variety of health as well as cultural contexts by finding
and including relevant cultural archetypes, norm, linguistic factors, etc. Especially, as discussed in this dissertation, participants’ message processing, effects, and behavioral intention were significantly influenced by their previously-held beliefs and cultural norms. Therefore, the future research would need to address more on this, especially by conducting multi-phase studies as discussed in this chapter. In addition, when it comes to the context of family health history communication, considering that family health history is related to uncertainty and probability, future research will be able to combine participants’ perceived risk and uncertainty management to the processing and outcomes of family health history narratives.

Furthermore, the EELM-TPB Integration Model developed for this dissertation should be further investigated in the future search. Since the model reveals the effects of previously held beliefs, and norms on message processing and outcomes, future research will be able to further address the more detailed procedures of narrative message processing. Especially, according to the EELM for Narrative Evidence Processing, although the relationship between identification and engagement was positive, their effect on message outcomes significantly varied. As discussed in this chapter, this is a very intriguing finding suggesting the dual mechanism embedded in the function of participants’ identification and engagement. Therefore, future research should continue to explore and find specific mechanisms and procedures in each processing route by developing an integrative mediation model including the dual mechanism. In doing so, as in this dissertation, future research will be able to focus on the differences in the routes of narrative message processing based on the effect of moderated mediation.

This research will not only help provide guidelines to develop cultural narrative messages for health communication interventions, but it will help
researchers and practitioners theoretically and efficiently evaluate the effects of cultural narrative messages in the campaigns or interventions. In the above discussion of my study findings, strengths, and limitations, I discussed several areas for future research. In conclusion, overall, cultural narrative messages and the newly developed models of narrative evidence processing (EELM-TPB Integration Model & EELM for Narrative Evidence Processing) will be able to contribute to theoretical as well as practical progress in the field of communication research and persuasive health communication.

**Conclusion**

The research in this dissertation advocate for the uses of cultural narrative messages as evidence in persuasive health communication. In this dissertation, within the context of family health history communication, I developed three types of cultural narrative message (Korean social-embeddedness narrative, Chinese social-embeddedness narrative, & Euro-American autonomy control narrative) and tested the processing and outcomes of the cultural narrative messages by employing newly developed models named TPB-EELM integration model and EELM for narrative evidence processing. In addition, I empirically tested the role of attitude, subjective norm, perceived behavioral control, and other cultural norms and individual characteristics on the processing and outcomes of the cultural narrative messages and participants’ behavioral intention to communicate family health history. Although the interaction effect between identity condition and cultural narrative type was not significant, the findings from my research suggest that the uses of cultural narrative message in health communication intervention may influence target audience’s counter-arguing. This finding aligns with previous research on narrative effect in the context of entertainment education. Furthermore, the findings effectively present the
relationships among the three variable of TPB, subjective norms regarding family and family health history, individual characteristics, message processing, outcomes and behavioral intention, which suggest both theoretical and practical implications in the context of family health history communication. Most significantly, the findings of pairwise comparison tests, which were conducted based on TPB-EELM integration model, indicate that participants’ processing of cultural narrative messages may vary according to the interaction between the participants’ cultural identity and the type of cultural narrative message. Thus, in conclusion, this research offers several theoretical as well as practical implications for communication and persuasion scholarship and practice.
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Appendix A: Interview Questions for Study One

Project Title: Intercultural differences in the understanding and communication of family health history and genetics in Korean and Chinese families

Interview question list (semi-structured interview with open-ended questions)

1. Do you know what family health history is?
2. Do you think knowing your family health history is important? Why or why not?
3. Do your family members talk about family health history?
4. Can you share your experience in communicating your family health history with your family members?
5. What are the purpose and meaning of the talk/story?
6. Do you believe your genes influence your health? Why or why not?
7. How about your family members?
8. Do you have a health condition that you inherited?
9. Have you ever had a genetic test?
10. Have you had a college course in genetics?
11. Do you think there are other factors that determine or influence your and your family’s health other than genetic factors?
12. What do you think the possible factors are?
13. Why do you think the factors are important for your or your family’s health?
14. Did you find any differences in terms of beliefs about genetics and family health history between your culture and the US culture?
15. Have you ever experienced any changes in your beliefs about genetics and family health history in your life? Why and how?
Appendix B: Questionnaire for Study Two

INTRODUCTION: This research is interested in how we talk about family health history. Family health history relates to our biological family members. In this research, when we refer to family, we are referring to biological parents and siblings. If you do not talk with your biological parents, due to a situation such as divorce or death, but you do talk with your biological grandparents, aunts and uncles, or siblings—please still complete the survey. If you do not talk to any biological relatives (including your biological parents and siblings) at least a couple times a year, please do not complete the survey.

1. Which culture do you most identify with?
1) US 2) South Korea 3) China

2. Choose the best answer that describes yourself.
   1) I was born and mostly raised in the US
   2) I was born and mostly raised in South Korea
   3) I was born and mostly raised in China
   4) I immigrated from South Korea
   5) I immigrated from China
   6) What if other ( )

3. How long have you been in the US?
1) 1-3 years 2) 4-6 years 3) 7-10 years 4) 10-15 years 5) longer than 15

4. What is your TOFEL score (if you have)? ( )

5. What language do you mostly speak at home?
   1) English 2) Mandarin Chinese 3) Korean 4) what if other
   ( )

6. What language do you mostly count numbers in?
   1) English 2) Mandarin Chinese 3) Korean 4) what if other
   ( )

7. What language do you mostly read in?
   1) English 2) Mandarin Chinese 3) Korean 4) what if other
   ( )
Baseline health status

8. In general, would you say your health is,
Poor: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Excellent

9. Compared to one year ago, how would you rate your health in general now;
Poor: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Excellent

10. My health now limits my physical activities such as lifting heavy objects or pushing a vacuum cleaner;
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: strongly agree

11. During the past 4 weeks, I had problems with my work or other regular daily activities as a result of my physical health.
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: strongly agree

12. Has a doctor or other health care provider diagnosed you with any of the following conditions?
   1) Cancer  
   2) heart disease  
   3) stroke

Current knowledge about family health history

13. I know about my parents’ health history of cancer;
Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: very well

14. I know about my parents’ health history of stroke;
Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: very well

15. I know about my parents’ health history of heart disease;
Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: very well

16. I know about my grandparents’ health history of cancer.
Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: very well

17. I know about my grandparents’ health history of stroke.
Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: very well

18. I know about my grandparents’ health history of heart disease.
Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: very well

Current communication about family health history

19. I have talked with my family members about family history of cancer
Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently

20. I have talked with my parents about family history of cancer
Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
21. I have talked with my grandparents about family history of cancer
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
22. I have talked with my family members about family history of heart disease
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
23. I have talked with my parents about family history of heart disease
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
24. I have talked with my grandparents about family history of heart disease
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
25. I have talked with my family members about family history of stroke;
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
26. I have talked with my parents about family history of stroke;
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
27. I have talked with my grandparents about family history of stroke;
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
28. I have talked with my family members about whether to share the family health
   history of cancer with other family members;
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
29. I have talked with my parents about whether to share the family health history of
   cancer with other family members;
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
30. I have talked with my grandparents about whether to share the family health history
   of cancer with other family members;
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
31. I have talked with my family members about whether to share the family health
   history of heart disease with other family members;
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
32. I have talked with my parents about whether to share the family health history of
   heart disease with other family members;
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
33. I have talked with my grandparents about whether to share the family health history
   of heart disease with other family members;
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
34. I have talked with my family members about whether to share the family health
   history of stroke with other family members;
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
35. I have talked with my parents about whether to share the family health history of
   stroke with other family members;
   Not at all: ___1___: ___2___: ___3___: ___4___: ___5___: frequently
36. I have talked with my grandparents about whether to share the family health history
   of stroke with other family members;
Narrative tendencies

37. I enjoy hearing funny stories;
   Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree
38. I enjoy making people laugh with my stories;
   Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree
39. I do not enjoy a story with cliché plots or characters;
   Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree
40. I enjoy telling stories;
   Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree
41. My best stories are about things that happened to me;
   Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree
42. I often exaggerate to make my stories more entertaining.
   Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree

Integration into the US culture

43. I have several American friends;
   Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree
44. I have difficulties in taking an American perspective on the culture;
   Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree
45. I like going to American social gatherings;
   Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree
46. I enjoy American food;
   Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree
47. I have difficulties in understanding American family relationships;
   Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree
General attitude toward family health history communication

Communicating family health history with family members would be
48. bad: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: good
49. unpleasant: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: pleasant
50. unfavorable: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: favorable
51. harmful: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: beneficial

Genetic essentialism

52. Genes are the most important factor in determining a person's health;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
53. Genes are more important than one's own behavior in determining one's health;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
54. The genes one is born with determine how healthy one will be throughout life;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
55. Genes determine the effects of one's own behavior in determining one's health;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
56. Genes determine whether medication works;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
57. Genes are the most important contributor to human health.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Transpersonal and paranormal belief

58. I expect there may be some gifted psychics with unusual powers (e.g., communicating with persons who have died).
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree
59. I believe some may indeed experience real memories from a past life lived before this one.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree
60. During altered states, such as sleep or trances, a person’s soul or spirit may indeed be able to briefly depart from the body.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree
61. Human beings have no capacity whatsoever to develop magical powers or abilities.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree

62. I believe the human body has energy fields beyond known physics.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree

63. I’m quite receptive to supernatural experiences.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree

64. I tend to believe Karma does exist—one’s present actions determine one’s destiny in a future reincarnation.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree

**Spirituality**

65. My beliefs about the world are completely atheistic.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree

66. I doubt our universe has any intended purpose by any form of "higher" force or being.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree

67. I tend to reject all spiritual interpretations of things.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree

68. I’m attracted to spiritual perspectives on life.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree

69. I tend to have spiritual beliefs that are important to me.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree

70. I tend to think of myself as spiritually-oriented.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__: strongly agree

**Extrinsic religious orientation**

71. Although I believe in my religion, I feel there are many more important things in my life.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

72. It doesn’t matter so much what I believe so long as I lead a moral life.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

73. The primary purpose of prayer is to gain relief and protection.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

74. The church is most important as a place to formulate good social relationships.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
75. What religion offers me most is comfort when sorrow and misfortune strike.  
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree  
76. I pray chiefly because I have been taught to pray.  
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree  
77. Although I am a religious person I refuse to let religious considerations influence my everyday affairs.  
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree  
78. A primary reason for my interest in religion is that my church is a social activity.  
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree  
79. Occasionally I find it necessary to compromise my religious beliefs in order to protect my social well-being.  
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree  
80. One reason for my being a church member is that such membership helps to establish a person in the community.  
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Intrinsic religious orientation

81. It is not important for me to spend periods of time in private religious thought and meditation.  
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree  
82. I try hard to carry my religion over into all my other dealings in life.  
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree  
83. The prayers I say when I am alone carry as much meaning and personal emotion as those said by me during services.  
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree  
84. Quite often I have been keenly aware of the presence God or the Divine Being.  
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree  
85. My religious beliefs are really what lie behind my whole approach to life.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Subjective norms about family health history communication

86. Members of my family approve of my talking about family health history with family members;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

87. Members of my family have talked about family health history with other family members;
Unlikely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: likely

88. Members of my family expect me to talk about family health history with other family members
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Members of my family would consider my communicating about family health history with family members to be
89. foolish: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: wise
90. useless: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: useful
91. worthless: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: valuable
92. important: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: not important
93. necessary: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: not necessary
94. life-saving: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: not relevant

Normative belief & Motivation to comply

95. Members of my family think that I should do everything I can to communicate family health history with other family members.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

96. Members of my family think it would be a good idea for me to communicate family health history with other family members.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

97. Members of my family would want me to communicate family health history with other family members.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
98. When it comes to health, I want to do what members of my family want me to do.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

99. When it comes to health, I want to do what members of my family think I should do.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

100. When it comes to health, I would like to follow my family members’ wish for me.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

With regard to the 15 questions above, I think the family members I may communicate family health history with are (if all of my relatives are still alive),

101. 1) Parents and full siblings, 2) parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings, or 3) parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings, first-cousins, great-grandparents; OTHER? [if yes, who?]:

102. 1) older members, 2) younger members, 3) both, or 4) none

103. 1) female members, 2) male members, 3) both, or 4) none

Stigma beliefs

104. Most people would feel that having a family health history for heart disease is a sign of personal failure;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

105. Most people would feel that having a family health history for cancer is a sign of personal failure;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

106. Most people would feel that having a family health history for stroke is a sign of personal failure;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

107. Most people would not hire a person with family health history for heart disease to take care of their children, even if they have not shown symptoms;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

108. Most people would not hire a person with family health history for cancer to take care of their children, if they have shown symptoms.
Most people would not hire a person with family health history for stroke to take care of their children, if they have shown symptoms.

Most people will think less of a person with family health history for heart disease;

Most people will think less of a person with family health history for cancer;

Most people will think less of a person with family health history for stroke;

Most employers would pass over the application of a person with family health history for heart disease in favor of someone else;

Most employers would pass over the application of a person with family health history for cancer;

Most employers would pass over the application of a person with family health history for stroke;

Most people would be reluctant to date someone with family health history for heart disease;

Most people would be reluctant to date someone with family health history for cancer;

Most people would be reluctant to date someone with family health history for stroke;
119. Most people would not want their children to marry someone with family health history for heart disease;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
120. Most people would not want their children to marry someone with family health history for cancer;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
121. Most people would not want their children to marry someone with family health history for stroke;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
122. Once they know that someone has family health history for heart disease, most people will take his or her opinions less seriously.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
123. Once they know that someone has family health history for cancer, most people will take his or her opinions less seriously.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
124. Once they know that someone has family health history for stroke, most people will take his or her opinions less seriously.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Norms related to power dynamics in family

125. How much do you and your father get upset with or mad at each other?
None:___1__:___2__:___3__:___4__:___5__:___6__:___7__: The Most
126. How much do you and your mother get upset with or mad at each other?
None:___1__:___2__:___3__:___4__:___5__:___6__:___7__: The Most
127. How much do you and your father disagree and quarrel?
None:___1__:___2__:___3__:___4__:___5__:___6__:___7__: The Most
128. How much do you and your mother disagree and quarrel?
None:___1__:___2__:___3__:___4__:___5__:___6__:___7__: The Most
129. How much do you and your father argue with each other?
None:___1__:___2__:___3__:___4__:___5__:___6__:___7__: The Most
130. How much do you and your mother argue with each other?
None:___1__:___2__:___3__:___4__:___5__:___6__:___7__: The Most
131. How often are there power struggles among your family members
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Never: ___1__: ___2__: ___3__: ___4__: ___5__: ___6__: ___7__: Always

132. How often are family members domineering;
Never: ___1__: ___2__: ___3__: ___4__: ___5__: ___6__: ___7__: Always

133. How often are family members in a struggle over who is in control;
Never: ___1__: ___2__: ___3__: ___4__: ___5__: ___6__: ___7__: Always

134. How often do family members have trouble taking directions from someone else;
Never: ___1__: ___2__: ___3__: ___4__: ___5__: ___6__: ___7__: Always

135. How often do family members try to dominate others.
Never: ___1__: ___2__: ___3__: ___4__: ___5__: ___6__: ___7__: Always

136. Who tells the other person what to do more often, you or your father?
   1) Me       2) My father

137. Who tells the other person what to do more often, you or your mother?
   1) Me       2) My mother

138. Between you and your father, who tends to be the boss?
   1) Me       2) My father

139. Between you and your mother, who tends to be the boss?
   1) Me       2) My mother

140. In your relationship, who tends to take charge and decides what should be done?
   1) Me       2) My father       3) My mother       4) Other

Perceived family boundary

141. Choose one of the three choices; when you think about what family means to you, you usually think of
   (a) Your biological parents, siblings, or children
   (b) Your biological parents, siblings, children, grandparents, grandchildren, aunts, uncles, nephews, nieces or half-siblings,
   (c) Your biological parents, siblings, children, grandparents, grandchildren, aunts, uncles, nephews, nieces, half-siblings, first-cousins, great-grandparents or great grandchildren.

142. My family is composed of my biological parents, my sibling(s) and me.
   Strongly disagree: ___1__: ___2__: ___3__: ___4__: ___5__: ___6__: ___7__: strongly agree

143. I think of my biological grandparents as being included in my family.
   Strongly disagree: ___1__: ___2__: ___3__: ___4__: ___5__: ___6__: ___7__: strongly agree

144. I think of my biological aunts, uncles, nephews and nieces are included in my family.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

145. I think of my first-cousins are included in my family.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

**Perceived behavioral control toward family health history communication**

146. I am confident that I can communicate family health history with family members in next three months;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

147. My communicating family health history with family members in the next three months is up to me;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

148. Communicating family health history with family members would be easy.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

With regard to the three questions above, I think the family members I may communicate family health history with are (if all of my relatives are still alive),

149. 1) biological Parents and full siblings, 2) parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings, or 3) parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings, first-cousins, great-grandparents; OTHER? [if yes, who?] :

150. 1) older members, 2) younger members, 3) both, or 4) none

151. 1) Female members, 2) male members, 3) both, or 4) none

152. What is your ethnicity?
   1) European American
   2) Hispanic or Latino
   3) African American
   4) Asian: Korean
   5) Asian: Chinese
   6) Asian: other
   7) Native American or American Indian
   8) What if other (   )
153. What year are you in school?
   1) Freshman  2) Sophomore  3) Junior  4) Senior

154. What is your major? ( )

155. Is your biological mother living?  1) Yes  2) No
156. Is your biological father living?  
   1) Yes  2) No
157. Are either of your biological grandmothers living?  1) Yes  2) No
158. Are either of your biological grandfathers living?  1) Yes  2) No

Perceived evidence quality

I think the information in the message is:

159. accurate;
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

160. well-explained;
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

161. understandable;
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

162. supported;
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Comprehension

163. According to the message knowing family health history is significant for a family’s health.
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

164. According to the message, we inherit only genes from our family.
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

165. According to the message, family health history can help us make healthy choices to prevent diseases.
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

166. According to the message, it is necessary to update family health history on a regular basis
Strongly disagree: __1__: __2__: __3__: __4__: __5__: __6__: __7__: strongly agree

167. According to the message, talking about family health history with family members is not important:
Strongly disagree: __1__: __2__: __3__: __4__: __5__: __6__: __7__: strongly agree

168. According to the message, some genes increase our chances of developing certain diseases.
Strongly disagree: __1__: __2__: __3__: __4__: __5__: __6__: __7__: strongly agree

Perceived message effectiveness

I think the message I just read is
169. not persuasive: __1__: __2__: __3__: __4__: __5__: __6__: __7__: persuasive
170. ineffective: __1__: __2__: __3__: __4__: __5__: __6__: __7__: effective
171. not convincing: __1__: __2__: __3__: __4__: __5__: __6__: __7__: convincing
172. not compelling: __1__: __2__: __3__: __4__: __5__: __6__: __7__: compelling

Behavioral intention

173. I intend to get information about family health history for heart disease from my parents/grandparents/siblings/or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months;
Unlikely: __1__: __2__: __3__: __4__: __5__: __6__: __7__: likely

174. I intend to get information about family health history for cancer from my parents/grandparents/siblings/or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months;
Unlikely: __1__: __2__: __3__: __4__: __5__: __6__: __7__: likely

175. I intend to get information about family health history for stroke from my parents/grandparents/siblings/or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months;
Unlikely: __1__: __2__: __3__: __4__: __5__: __6__: __7__: likely

176. I intend to share information about family health history for heart disease with my parents/grandparents/siblings/ or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months;
Unlikely: __1__: __2__: __3__: __4__: __5__: __6__: __7__: likely
177. I intend to share information about family health history for cancer with my parents/grandparents/siblings/ or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months;
Unlikely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: likely
178. I intend to share information about family health history for stroke with my parents/grandparents/siblings/ or other biological relatives such as aunts, uncles, nephews, and nieces within the next three months;
Unlikely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: likely
179. I intend to talk with my family members about what kind of family's health history our family has
Unlikely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: likely
180. I intend to talk with my family members about changing behavior (such as drinking, eating, exercise, or smoking) to avoid health conditions related to our family health history.
Unlikely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: likely

Manipulation Checks

Social-embeddedness versus autonomy

181. Based on the message, it is my choice whether to talk about family health history
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
182. Talking about family health history is up to me;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
183. Talking about family health history with family members is for my benefit
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
184. Based on the message, talking to family members about family health history is for the benefit of the family as a whole
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
185. It is my family’s choice whether to talk about family health history;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
186. Talking about family health history is up to my family.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
Types of cultural archetypes

187. I'm familiar with the situations and stories in the message.
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Strongly agree

188. This message presents a situation that is an accurate reflection of my culture.
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Strongly agree

189. This message presents a situation that I have no understanding about based on my cultural background.
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Strongly agree

Engagement

190. While I was reading the message, I could easily visualize the events in it taking place.
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Strongly agree

191. While I was reading the message, I was distracted by activities going on in the room around me.
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Strongly agree

192. I could visualize myself in the scene of the events described in the message.
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Strongly agree

193. I was mentally involved in the message while reading it.
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Strongly agree

194. After finishing the message, I found it easy to put it out of my mind.
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Strongly agree

195. The message affected me emotionally.
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Strongly agree

196. The events in the message are relevant to my everyday life.
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Strongly agree

197. The events in the message have changed my life.
Strongly disagree : ___1___:___2___:___3___:___4___:___5___:___6___:___7___: Strongly agree

**Identification**

198. The speaker of the message reminds me of myself.
Strongly disagree : ___1___:___2___:___3___:___4___:___5___:___6___:___7___: Strongly agree

199. While reading the message, I could imagine the message-speaker.
Strongly disagree : ___1___:___2___:___3___:___4___:___5___:___6___:___7___: Strongly agree

200. The speaker of the message is someone like me.
Strongly disagree : ___1___:___2___:___3___:___4___:___5___:___6___:___7___: Strongly agree

201. I think the speaker of the message sounded like someone around my age.
Strongly disagree : ___1___:___2___:___3___:___4___:___5___:___6___:___7___: Strongly agree

**Resistance to counter-arguing**

202. Because family health history cannot perfectly predict the diseases that can be developed in the future, it is not important to communicate about family health history in my family.
Strongly disagree : ___1___:___2___:___3___:___4___:___5___:___6___:___7___: Strongly agree

203. It’s important to talk about family health history only if there is a specific health risk in my family.
Strongly disagree : ___1___:___2___:___3___:___4___:___5___:___6___:___7___: Strongly agree

204. It’s not necessary to talk about family health history before marriage.
Strongly disagree : ___1___:___2___:___3___:___4___:___5___:___6___:___7___: Strongly agree

205. It’s better to hide family health history.
Strongly disagree : ___1___:___2___:___3___:___4___:___5___:___6___:___7___: Strongly agree

206. It is not a good idea to discuss family health history with distant relatives (e.g., who??).
Strongly disagree : ___1___:___2___:___3___:___4___:___5___:___6___:___7___: Strongly agree
Appendix C: Questionnaire for Study Three

**INTRODUCTION**: This research is interested in how we talk about family health history. Family health history relates to our biological family members. In this research, when we refer to family, we are referring to biological parents and siblings. If you do not talk with your biological parents, due to a situation such as divorce or death, but you do talk with your biological grandparents, aunts and uncles, or siblings—please still complete the survey. If you do not talk to any biological relatives (including your biological parents and siblings) at least a couple times a year, please do not complete the survey.

1. Which culture do you most identify with?
   2) US   2) South Korea   3) China   4) Other?: [please indicate]

2. Choose the best answer that describes yourself.
   7) I was born and mostly raised in the US
   8) I was born and mostly raised in South Korea
   9) I was born and mostly raised in China
   10) I immigrated from South Korea
   11) I immigrated from China
   12) What if other (       )

3. How long have you been in the US?
   1) 1-3 years   2) 4-6 years   3) 7-10 years   4) 10-15 years   5) longer than 15

4. What is your TOFEL score (if you have)? (                     )

5. What language do you mostly speak at home?
   1) English   2) Mandarin Chinese   3) Korean   4) what if other (                  )

6. What language do you mostly count numbers in?
   1) English   2) Mandarin Chinese   3) Korean   4) what if other (                  )

7. What language do you mostly read in?
   1) English   2) Mandarin Chinese   3) Korean   4) what if other (                  )
Baseline health status

8. My health now limits my physical activities such as lifting heavy objects or pushing a vacuum cleaner;
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

9. During the past 4 weeks, I had problems with my work or other regular daily activities as a result of my physical health.
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

10. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?
    Extremely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: not at all

11. Has a doctor or other health care provider diagnosed you with any of the following conditions?
    2) Cancer    2) heart disease 3) none

Knowledge

12. I know whether my parents had health history of cancer;
    Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: very well

13. I know whether my parents had health history of heart disease;
    Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: very well

14. I know whether my grandparent had health history of cancer.
    Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: very well

15. I know whether my grandparents had health history of heart disease.
    Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: very well

Communication

16. I have talked with my family members about whether we have a family history of cancer
    Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: frequently

17. I have talked with my parents about whether we have a family history of cancer
    Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: frequently

18. I have talked with my grandparents about whether we have a family history of cancer
    Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: frequently

19. I have talked with my family members about whether we have a family history of heart disease
20. I have talked with my parents about whether we have a family history of heart disease
Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: frequently

21. I have talked with my grandparents about whether we have a family history of heart disease
Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: frequently

22. I have talked with my family members about whether to share the family health history of cancer with other family members;
Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: frequently

23. I have talked with my parents about whether to share the family health history of cancer with other family members;
Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: frequently

24. I have talked with my grandparents about whether to share the family health history of cancer with other family members;
Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: frequently

25. I have talked with my family members about whether to share the family health history of heart disease with other family members;
Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: frequently

26. I have talked with my parents about whether to share the family health history of heart disease with other family members;
Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: frequently

27. I have talked with my grandparents about whether to share the family health history of heart disease with other family members;
Not at all: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: frequently

Narrative tendency

28. I enjoy hearing funny stories;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

29. I enjoy making people laugh with my stories;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

30. I enjoy telling stories;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

31. My best stories are about things that happened to me;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

32. I often exaggerate to make my stories more entertaining.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

33. I enjoy silence.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

34. I think telling stories is a waste of time.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Integration into US culture

35. I have several American friends;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

36. I have difficulties in taking an American perspective on the culture;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

37. I like going to American social gatherings;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

38. I enjoy American food;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

39. I have difficulties in understanding American family relationships;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Attitude

Communicating about family health history with my family members would be

40. foolish: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: wise
41. useless: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: useful
42. worthless: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: valuable
43. important: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: not important
44. necessary: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: not necessary
45. life-saving: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: not relevant
46. A bad idea: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: a good idea
47. unpleasant: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: pleasant
48. unfavorable: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: favorable
49. harmful: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: beneficial
50. helpful: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: not helpful

**Genetic essentialism**

51. Genes are the most important factor in determining a person’s health;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

52. Genes are more important than one's own behavior in determining one's health;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

53. The genes one is born with determine how healthy one will be throughout life;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

54. Genes determine the effects of one's own behavior in determining one's health;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

55. Genes are the most important contributor to human health.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

**Paranormal beliefs**

56. I expect there may be some gifted psychics with unusual powers (e.g., communicating with persons who have died).
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

57. I believe some may indeed experience real memories from a past life lived before this one.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

58. During altered states, such as sleep or trances, a person’s soul or spirit may indeed be able to briefly depart from the body.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

59. Human beings have no capacity whatsoever to develop magical powers or abilities.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

60. I believe the human body has energy fields beyond known physics.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
61. I’m quite receptive to supernatural experiences.  
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: strongly agree

62. I tend to believe Karma does exist—one’s present actions determine one’s destiny in a future reincarnation.  
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: strongly agree

**Spirituality**

63. My beliefs about the world are completely atheistic (not believing in God).  
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: strongly agree

64. I doubt our universe has any intended purpose by any form of "higher" force or being.  
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: strongly agree

65. I tend to reject all spiritual interpretations of things.  
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: strongly agree

66. I’m attracted to spiritual perspectives on life.  
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: strongly agree

67. I tend to have spiritual beliefs that are important to me.  
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: strongly agree

68. I tend to think of myself as spiritually-oriented.  
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: strongly agree

**Extrinsic religiosity**

69. Although I believe in my religion, I feel there are many more important things in my life.  
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: strongly agree

70. What religion offers me most is comfort when sorrow and misfortune strike.  
Strongly disagree: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: strongly agree

71. Although I am a religious person I refuse to let religious considerations influence my everyday affairs.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

72. Occasionally I find it necessary to compromise my religious beliefs in order to protect my social well-being.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

73. One reason for my being a church member is that such membership helps to establish a person in the community.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Intrinsic religiosity

74. It is important for me to spend periods of time in private religious thought and meditation.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

75. I try hard to carry my religion over into all my other dealings in life.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

76. The prayers I say when I am alone carry as much meaning and personal emotion as those said by me during services.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

77. Quite often I have been keenly aware of the presence God or the Divine Being.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

78. My religious beliefs are really what lie behind my whole approach to life.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Subjective norms

79. Members of my family approve of my talking about family health history with family members;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

80. Members of my family have talked about family health history with other family members;
Unlikely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: likely
81. Members of my family expect me to talk about family health history with other family members.

Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree

Members of my family would consider my communicating about family health history with family members to be

82. foolish: ___1___2___3___4___5___6___7___: wise
83. useless: ___1___2___3___4___5___6___7___: useful
84. worthless: ___1___2___3___4___5___6___7___: valuable
85. important: ___1___2___3___4___5___6___7___: not important
86. necessary: ___1___2___3___4___5___6___7___: not necessary
87. life-saving: ___1___2___3___4___5___6___7___: not relevant
88. A bad idea: ___1___2___3___4___5___6___7___: a good idea
89. unpleasant: ___1___2___3___4___5___6___7___: pleasant
90. unfavorable: ___1___2___3___4___5___6___7___: favorable
91. harmful: ___1___2___3___4___5___6___7___: beneficial
92. helpful: ___1___2___3___4___5___6___7___: not helpful

Normative belief

93. Members of my family think that I should do everything I can to communicate family health history with other family members.

Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree

94. Members of my family think it would be a good idea for me to communicate family health history with other family members.

Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree

95. Members of my family would want me to communicate family health history with other family members.

Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree

Motivation to comply

96. When it comes to health, I want to do what members of my family want me to do.

Strongly disagree: ___1___2___3___4___5___6___7___: strongly agree
97. When it comes to health, I want to do what members of my family think I should do.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
98. When it comes to health, I would like to follow my family members’ wish for me.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

With regard to the 20 questions above, I think the family members I may communicate family health history with are (if all of my relatives are still alive),

99. 1) Parents and full siblings, 2) parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings, or 3) parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings, first-cousins, great-grandparents; OTHER? [if yes, who?]:
100. 1) older members, 2) younger members, 3) both, or 4) none
101. 1) female members, 2) male members, 3) both, or 4) none

Stigma

102. Most people would feel that having a family health history for heart disease is a sign of personal failure;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
103. Most people would feel that having a family health history for cancer is a sign of personal failure;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
104. Most employers would pass over the application of a person with family health history for heart disease;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
105. Most employers would pass over the application of a person with family health history for cancer;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
106. Most people would not want their children to marry someone with family health history for heart disease;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
107. Most people would not want their children to marry someone with family health history for cancer;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

108. Once they know that someone has family health history for heart disease, most people will take his or her opinions less seriously.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

109. Once they know that someone has family health history for cancer, most people will take his or her opinions less seriously.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

*Family conflict*

110. How much do you and your father get upset with or mad at each other?
None:___1__:___2__:___3__:___4__:___5__:___6__:___7__: The Most

111. How much do you and your mother get upset with or mad at each other?
None:___1__:___2__:___3__:___4__:___5__:___6__:___7__: The Most

112. How much do you and your father disagree and quarrel?
None:___1__:___2__:___3__:___4__:___5__:___6__:___7__: The Most

113. How much do you and your mother disagree and quarrel?
None:___1__:___2__:___3__:___4__:___5__:___6__:___7__: The Most

*Family conflict frequency*

114. How often are there power struggles among your family members
Never:___1__:___2__:___3__:___4__:___5__:___6__:___7__: Always

115. How often are family members in a struggle over who is in control;
Never:___1__:___2__:___3__:___4__:___5__:___6__:___7__: Always

116. How often do family members have trouble taking directions from someone else;
Never:___1__:___2__:___3__:___4__:___5__:___6__:___7__: Always

117. How often do family members try to dominate others
Never:___1__:___2__:___3__:___4__:___5__:___6__:___7__: Always

*Relative power*

118. Who tells the other person what to do more often, you or your father?
1) Me 2) My father

119. Who tells the other person what to do more often, you or your mother?
1) Me 2) My mother

120. Between you and your father, who tends to be the boss?
   2) Me 2) My father

121. Between you and your mother, who tends to be the boss?
   2) Me 2) My mother

122. In your relationship, who tends to take charge and decides what should be done?
   2) Me 2) My father 3) My mother 4) Other

Perceived family boundary

123. Choose one of the three choices; when you think about what family means to you, you usually think of
   (d) Your biological parents, siblings, or children
   (e) Your biological parents, siblings, children, grandparents, grandchildren, aunts, uncles, nephews, nieces or half-siblings,
   (f) Your biological parents, siblings, children, grandparents, grandchildren, aunts, uncles, nephews, nieces, half-siblings, first-cousins, great-grandparents or great-grandchildren.

124. My family is composed of my biological parents, my sibling(s) and me.
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

125. I think of my biological grandparents as being included in my family.
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

126. I think of my biological aunts, uncles, nephews and nieces are included in my family.
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

127. I think of my first-cousins are included in my family.
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Perceived control

128. I am confident that I can talk about family health history with family members in next three months.
   Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

129. I control whether I talk about family health history with other family members.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

130. My family controls whether I talk about family health history with other family members.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

131. I think talking about family health history with family members in the next three months is up to me;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

132. Talking about family health history with family members would be easy.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

133. I have control over my ability to talk about family health history with family members.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

134. If I want to, I can talk about family health history with my family members.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7___: strongly agree

With regard to the 7 questions above, I think the family members I may communicate family health history with are (if all of my relatives are still alive),

135. 1) biological Parents and full siblings, 2) parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings, or 3) parents, full siblings, grandparents, aunts, uncles, nephews, nieces or half-siblings, first-cousins, great-grandparents; OTHER? [if yes, who?):

136. 1) older members, 2) younger members, 3) both, or 4) none

137. 1) Female members, 2) male members, 3) both, or 4) none

138. How old are you? (       )

139. What is your gender?

140. What is your ethnicity?
   9) European American
   10) Hispanic or Latino
   11) African American
   12) Asian: Korean
   13) Asian: Chinese
14) Asian: other
15) Native American or American Indian
16) What if other (   )

141. What year are you in school?
   2) Freshman 2) Sophomore 3) Junior 4) Senior

142. What is your religion?
   1) Buddhist 2) Catholic 3) Christian 4) Muslim 5) no religion 6) other
   13) What if other

143. What is your major? (   )

144. Is your biological mother living? 1) Yes 2) No
145. Is your biological father living? 1) Yes 2) No
146. Are either of your biological grandmothers living? 1) Yes 2) No
147. Are either of your biological grandfathers living? 1) Yes 2) No

On the next page, you will read a newspaper article about a college football player. Please read the article carefully and indicate your opinion about the issue.

Read the following message.

Please read this article on the university bulletin carefully. When you finish reading the article, please click the button below to go to the next questions.

After read the message, answer the following questions.

Perceived message quality

I think the information in the message is:
148. accurate;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
149. well-explained;
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
150. understandable;
Strongly disagree: ___1___:___2___:___3___:___4___:___5___:___6___:___7___: strongly agree

151. supported;

Strongly disagree: ___1___:___2___:___3___:___4___:___5___:___6___:___7___: strongly agree

**Comprehension**

152. According to the message knowing family health history is significant for a family’s health.

Strongly disagree: ___1___:___2___:___3___:___4___:___5___:___6___:___7___: strongly agree

153. According to the message, we inherit genes from our family.

Strongly disagree: ___1___:___2___:___3___:___4___:___5___:___6___:___7___: strongly agree

154. According to the message, family health history can help us make healthy choices to prevent diseases.

Strongly disagree: ___1___:___2___:___3___:___4___:___5___:___6___:___7___: strongly agree

155. According to the message, it is necessary to update family health history on a regular basis.

Strongly disagree: ___1___:___2___:___3___:___4___:___5___:___6___:___7___: strongly agree

156. According to the message, talking about family health history with family members is not important:

Strongly disagree: ___1___:___2___:___3___:___4___:___5___:___6___:___7___: strongly agree

157. According to the message, some genes increase our chances of developing certain diseases.

Strongly disagree: ___1___:___2___:___3___:___4___:___5___:___6___:___7___: strongly agree

**Perceived message effectiveness**

I think the message I just read is

158. not persuasive: ___1___:___2___:___3___:___4___:___5___:___6___:___7___: persuasive

159. ineffective: ___1___:___2___:___3___:___4___:___5___:___6___:___7___: effective

160. not convincing: ___1___:___2___:___3___:___4___:___5___:___6___:___7___: convincing
161. not compelling: ___1__:___2__:___3__:___4__:___5__:___6__:___7__:
compelling

Behavioral intention

162. I intend to get information about family health history for heart disease from my
parents/grandparents/siblings/or other biological relatives such as aunts, uncles,
nephews, and nieces within the next three months;
Unlikely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__:
likely
163. I intend to get information about family health history for cancer from my
parents/grandparents/siblings/or other biological relatives such as aunts, uncles,
nephews, and nieces within the next three months;
Unlikely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__:
likely
164. I intend to share information about family health history for heart disease with my
parents/grandparents/siblings/or other biological relatives such as aunts, uncles,
nephews, and nieces within the next three months;
Unlikely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__:
likely
165. I intend to share information about family health history for cancer with my
parents/grandparents/siblings/or other biological relatives such as aunts, uncles,
nephews, and nieces within the next three months;
Unlikely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__:
likely
166. I intend to talk with my family members about what kind of family’s health
history our family has
Unlikely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__:
likely
167. I intend to talk with my family members about changing behavior (such as
drinking, eating, exercise, or smoking) to avoid health conditions related to our
family health history.
Unlikely: ___1__:___2__:___3__:___4__:___5__:___6__:___7__:
likely

Autonomy

168. According to the message, it is up to me to decide whether to talk about family
health history
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__:
strongly agree
169. According to the message, talking about family health history is my choice.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__:
strongly agree
170. According to the message, talking about family health history with family
members will benefit my health.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Social-embeddedness

171. According to the message, it up to my family to decide whether to talk about family health history
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
172. According to the message, whether to talk about family health history is a choice my family makes
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree
173. According to the message, talking about family health history with family members will benefit my whole family’s health.
Strongly disagree: ___1__:___2__:___3__:___4__:___5__:___6__:___7__: strongly agree

Cultural closeness

174. I’m familiar with the situations and stories in the message
Strongly disagree :___1__:___2__:___3__:___4__:___5__:___6__:___7__: Strongly agree
175. This message presents a situation that is an accurate reflection of my culture.
Strongly disagree :___1__:___2__:___3__:___4__:___5__:___6__:___7__: Strongly agree
176. This message presents a situation that I can understand very well based on my cultural background.
Strongly disagree :___1__:___2__:___3__:___4__:___5__:___6__:___7__: Strongly agree

Engagement

177. While I was reading the message, I could easily visualize the events in it taking place.
Strongly disagree :___1__:___2__:___3__:___4__:___5__:___6__:___7__: Strongly agree
178. I could visualize myself in the scene of the events described in the message.
Strongly disagree :___1__:___2__:___3__:___4__:___5__:___6__:___7__: Strongly agree
179. I was mentally involved in the message while reading it.
Strongly disagree :___1__:_2_:___3__:_4_:___5_:___6_:___7___: Strongly agree

180. The message affected me emotionally.
Strongly disagree :___1__:_2_:___3__:_4_:___5_:___6_:___7___: Strongly agree

181. The events in the message are relevant to my everyday life.
Strongly disagree :___1__:_2_:___3__:_4_:___5_:___6_:___7___: Strongly agree

182. The events in the message have changed my life.
Strongly disagree :___1__:_2_:___3__:_4_:___5_:___6_:___7___: Strongly agree

Identification

183. The speaker of the message reminds me of myself.
Strongly disagree :___1__:_2_:___3__:_4_:___5_:___6_:___7___: Strongly agree

184. While reading the message, I could imagine the message-speaker.
Strongly disagree :___1__:_2_:___3__:_4_:___5_:___6_:___7___: Strongly agree

185. The speaker of the message is someone like me.
Strongly disagree :___1__:_2_:___3__:_4_:___5_:___6_:___7___: Strongly agree

186. I think the speaker of the message sounded like someone around my age.
Strongly disagree :___1__:_2_:___3__:_4_:___5_:___6_:___7___: Strongly agree

Resistance to counter-arguing

187. It’s not necessary to talk about family health history before marriage.
Strongly disagree :___1__:_2_:___3__:_4_:___5_:___6_:___7___: Strongly agree

188. It’s better to hide family health history.
Strongly disagree :___1__:_2_:___3__:_4_:___5_:___6_:___7___: Strongly agree

189. It is not a good idea to discuss family health history with distant relatives.
Strongly disagree :___1__:_2_:___3__:_4_:___5_:___6_:___7___: Strongly agree
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