

HEALTH BELIEF MODEL IN AN INTERACTIVE AGE

By

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HEALTH BELIEF MODEL IN AN INTERACTIVE AGE

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As more health information seekers turn to the Internet to get answers to their health questions, it becomes evident that research is needed to test traditional health communication models in the new medium. Using the constructs of the Health Belief Model (HBM), this study attempted to test the model's relevance in a new Interactive Age. Additionally, this study reviewed the relevance of culture, an often missing aspect of Health Belief Model research, to determine if participants are more likely to engage in preventive health behavior based on messages culturally tailored or if exposed to a message in a culturally matched level of interactivity.

Participants in this study (n = 204) were recruited from journalism, business, and computer classes at the University of Florida. Participants completed a series of surveys in which they indicated 1) Shands at the University of Florida source credibility, 2) their cultural tendencies, 3) demographic information, and a 4) retention quiz. Participants were exposed to a message about West Nile Virus. The message was written to target

specific cultures and delivered in either a brochure (static) or through a Web page (interactive).

Five culture factors emerged from the data. The strongest cultural scores (40/20/40) for each factor (n = 163) were tested to see if there was an interaction between a matched message or matched level of interactivity, resulting in behavior.

The first hypothesis in this study proposed that participants who receive culturally matched messages are more likely to adopt the suggested PHB. This hypothesis was tested through a crosstab chi square and produced no significant results. The second hypothesis proposed that participants who receive messages in a culturally matched level of interactivity are more likely to adopt the suggested PHB. This hypothesis was tested through a crosstab chi square and produced no significant results.

While neither of the hypotheses were supported in this study, source credibility and recall came to play an important role. Participants who scored source credibility Trustworthiness low, but received a matched level of interactivity in the Family Integrity factor, had a remarkably high retention score. In fact, the score was higher than those who felt the source was highly Trustworthy. Additionally, there was a main effect in the Closeness from Ingroups factor in which a matched message correlated with high recall.

CHAPTER 1 AN INTERACTIVE AGE

Throughout time, new technologies have affected the way people communicate. Communication helps build relationships, convey information, and persuade others. One important type of communication that both conveys information and persuades is health communication. Health communication often is centered on the goal to inform about and move people to participate in healthy behaviors and lifestyles. Health communication messages can be effective in face-to-face communication (Reagan & Collins, 1987; Johnson et al., 1992), print (Hofstetter et al., 1992), television, and even radio (Izenburg & Lieberman, 1998b; Hofstetter et al., 1992; Eastin, 2001). Recent research finds that people now are turning to the Internet to find information about medical diseases and conditions (Napoli, 2001).

In the past decade, the use of the Internet has grown substantially (Pew Research Center, 2000a; Pew Research Center, 2001). The Internet has become known as the information superhighway, where a world of information can be found at the user's fingertips. The Internet has grown to be a dynamic encyclopedia of knowledge and information where the information seeker is in the driver's seat. It is different from traditional communication vehicles in that users, rather than message producers, set the course of information discovery.

For the first time, information tailored to the user's needs and desires is available instantaneously. This idea of specialized information in the form of "what you want, when you want it," has taken root in other communication arenas as well. Cable

television is now replete with small niche channels. Channels specializing in food, home and gardens, sports, or health are now available and beamed straight into living rooms.

The Internet is an increasingly popular method for patients to seek information about health. Nearly one quarter of all Internet search engine requests revolve around health-information seeking queries (Ferguson, 1997). According to a recent Pew Internet and American Life Project study (Pew Research Center, 2000a), more than 52 million Americans, or 55% of Americans with Internet access, have used the Web to investigate health matters. The U. S. Census Bureau estimates that the number of people globally using the Internet to seek health care information will rise from 95.4 million in 1999 to more than 350 million by 2003 (Harris & Associates, 1999). People are not just turning to the Web for general library-type resources: they also are using the information they find to make specific health decisions, including self-diagnosis, whether or not to visit a doctor, and what specific facility to visit (Pew Research Center, 2000a). The research shows that people use the Internet to find information on staying healthy as well as to obtain more information about existing conditions.

Other now-traditional vehicles of communication have been studied in regard to the extent of their effectiveness in delivering health messages (Hawkins et al., 1987; Napoli, 2001; Hofstetter et al., 1992; Witte et al., 1993; Izenburg & Lieberman, 1998b; Hofstetter et al., 1992). In addition to the effectiveness of media for health messages, culture is another variable. Steers et al. (1996) investigated this premise based on the belief that the relationship between health behaviors and beliefs differs for people of different ethnicity. Now that more people are turning to the Internet as a first source of health information, it is evident that study of message effectiveness must be done to explore this new

international medium. The research in this thesis seeks to investigate message delivery vehicles and cultural responses to the message. It examines different approaches to a health message and its delivery in order to determine the most effective means of conveying certain health messages to specific cultures. This research is important because it tests whether people subscribe to their traditional culture-types while on the Internet or if they abandon their cultural ways for an “Internet culture.”

CHAPTER 2 REVIEW OF LITERATURE

This literature review will discuss the Health Belief Model (HBM; Rosenstock, 1974; Janz & Becker, 1984), the body of research on the HBM, the theoretical assumptions and limitations, and theories complementary to the HBM. Additionally, this chapter will introduce the culture types used in this study and examine Internet research.

Health Belief Model

The HBM seeks to explain the link between exposure to persuasive health messages and behavior. Based on psychological and behavioral theory, the model hinges on the individual's desire to be healthy, the personal value he or she places on a particular health goal, and what he or she thinks is the likelihood of achieving that goal (Janz & Becker, 1984). This model is well-researched and accepted as being effective in promoting preventive health behaviors (Janz & Becker, 1984). For the purposes of this study, the HBM and its constructs will be used to predict intended behavior change. The study will also test for the variations in effectiveness due to culturally targeted messages and level of interactivity.

The model has five constructs: perceived severity, perceived susceptibility, benefits, barriers, and cues to action. To understand the theory, which is basically an additive one, one can think of these constructs as components of an arithmetic formula, where adding the degree of perceived susceptibility, severity, and cues and subtracting the difference between benefits and barriers should equal the likelihood of taking the recommended

health behavior (Rosenstock, 1974). Many social science research studies have been conducted on the HBM, furthering and elaborating it.

Perceived severity refers to the receiver's beliefs about the seriousness of the health problem about which you are communicating. Severity becomes important to the individual as he or she faces the possibility of contracting a disease or the dangers of leaving it untreated (Janz & Becker, 1984). Research finds that messages describing and concentrating on the severity of a health problem are most effective when used for dire illnesses and diseases, such as AIDS (Povinelli et al., 1996).

Perceived susceptibility refers to one's beliefs about the likelihood of contracting or developing a health problem. The more likely the person believes he or she is to develop a health problem, the more effective the message will be in persuading its recipient to the desired health action or behavior. According to Janz and Becker (1984), "this dimension refers to one's subjective perception of the risk of contracting a condition" (p.2).

The benefits in the HBM refer to the perceived benefits an individual would enjoy if he or she participated in the positive health behavior. This construct lends itself well to preventative health messages, urging consumers to brush or floss their teeth regularly (Kegeles, 1963a). Research finds that the benefits variable is effective in predicting health behaviors when combined with other variables, especially susceptibility (Rosenstock, 1974).

Barriers refers to the perception of potential barriers one will face when attempting to perform the healthy behavior. For example, it may be necessary to mention that certain health behaviors can only be performed by visiting a doctor, for which a person would have to make an appointment, take time off from work, have insurance or other means of

payment, etc. Barriers that stand in the way of the positive health behavior are an important consideration for health communicators. Because the message recipient is likely to do a “cost-benefit” analysis (Janz & Becker, 1984), weighing the benefits over the barrier, communicators are charged with removing or diluting barriers as much as possible.

Cues to action refer to various messages the individual receives interpersonally and through the media. For example, cues to action can come in many forms, from public service announcements to news media reports. Additionally, cues to action can come directly from the person’s physician as he or she makes health recommendations. While it is difficult to point out a direct causal relationship between message exposure and desired health behavior, cues to actions are considered very important because they offer reminders to the patient. When another variable is combined with cues to action, individuals are more likely to engage in health behaviors (Janz & Becker, 1984).

HBM studies can be categorized into three health behavior categories: preventive-health behavior (PHB), sick-role behaviors (SRB), and clinic visits (Janz & Becker, 1984). PHB studies seek to explore the early motivations surrounding health screenings and other behaviors meant to discover or prevent disease or illness. PHB studies have shown that the roles of benefits and susceptibility are key in motivating such behaviors. SRB refers to the actions one takes after the diagnosis of a disease or condition. The SRB dimension also can refer to the actions taken in hopes of stalling development of an existing disease or condition. Lastly, clinic visits have been studied as behavior using the HBM.

For the purposes of this study, this body of research will concentrate solely on PHB studies. This study will investigate intent to participate in positive PHB due to message exposure. Later research will be needed to build on the findings of this study by investigating actual behaviors, such as clinic visits, resulting from such PHB messages as discussed in this study.

History of the Health Belief Model

The HBM (Rosenstock, 1974; Janz & Becker, 1984) was originally devised in the 1950s to explain how health educators could encourage preventive health behavior and health screenings for tuberculosis (Rosenstock, 1974). A group of U.S. Public Health Service social scientists developed the model to explain the trends of masses failing to participate in early health screening behaviors (Janz & Becker, 1984).

Hochbaum performed the first HBM study, which dealt with X-rays to detect tuberculosis in 1952 (Hochbaum, 1958; Rosenstock, 1974). Hochbaum investigated the effects of perceived susceptibility and benefits of early detection for tuberculosis. Hockbaum reported that perceived susceptibility to the disease was the greatest motivation for obtaining health screenings (1958). This research laid the groundwork for two of the later five constructs that make up the HBM.

The next formative HBM study concentrated on perceived susceptibility and severity, benefits, and barriers to preventive dental care (Kegeles, 1963a; Rosenstock, 1974). While Kegeles' findings have been criticized because of the extremely small sample size, high drop-out rate, and the availability of free or inexpensive dental care for the study (Rosenstock, 1974), the investigation found a positive correlation between preventive dental visits and number of supportive HBM construct beliefs. A later study (Kegeles,

1963b) found that perceived severity and benefits could not predict subsequent preventive dental care visits.

A 1963 study (Rosenstock, 1974) found that a combination of HBM variables improved the prediction power of the model. For example, perceived benefits of a positive health behavior alone may not be enough to persuade a message recipient to action. Perceived benefits added to perceived susceptibility increase the prediction power in the HBM. Adding another variable to that same example, such as low barriers, increases the message's effectiveness (Rosenstock, 1974; Janz & Becker, 1984; Steers et al., 1996). While the contradiction of these findings to those of Kegeles (1963b) was not formally addressed in the discussion of the research findings, some researchers attribute the success of the earlier studies to the presence of media information or patient education materials. This idea of external information later became the final construct of the HBM: cues to action.

Since its formation, the HBM has enabled social scientists to identify the most effective ways to frame positive health messages. Using its five constructs, the HBM has been found effective in developing health messages concerning testicular cancer education (Wohl & Kane, 1997), breast cancer screening (Fulton et al., 1991), reduction in cholesterol intake (McIntosh, 1996), and AIDS (Bakker et al., 1997), among others.

Preventive Health Behavior Research

Preventive-health behavior research investigates the effectiveness of messages that encourage people to take proactive, preventative measures to safeguard health.

Preventive health can come in the form of clinic visits, vaccinations, or taking vitamins.

The purpose of a preventative health message is to inform and persuade someone what

they can do to keep themselves from contracting the medical condition mentioned in the message.

Breast self-examinations (BSE) are key screening functions that enable women to discover a possibly cancerous growth. Research regarding BSEs found that when health communicators explain the benefits of BSEs and the susceptibility of the cancerous tumors, women are significantly more likely to undertake BSEs (Hallal, 1982).

In the past two decades, much research has been conducted to determine effective means of motivating at-risk people to be tested for HIV. One study found that homosexual and bisexual youths were most motivated for the screening by decreasing barriers to the testing and increasing cues to action (Povinelli et al., 1996).

A folate and grain intake study was conducted among indigent pregnant, minority women. The study found that when the mothers-to-be were advised on the importance of folate in neonatal development, they increased their folate intake level (Kloeblen, 1999). This data supports the HBM, in that the perception of both the benefits of having a healthy baby and reducing the barriers (such as cost by distributing free vitamins) motivated women to engage in PHB.

A 1996 study using the HBM found benefits, costs, and physician advice the most effective in predicting reductions in fat and cholesterol intake (McIntosh et al., 1996). Findings suggest that cues to action, especially from a respected source such as a physician, play an important role in encouraging PHB. Researchers thus suggest that to increase the immediacy, physicians should pair effective cues and advice with the delivery of cholesterol results.

Assumptions of the Health Belief Model

The HBM's main assumption is that the people receiving the health message are motivated and interested in the message and its content (Rosenstock, 1974). 1) People who do not place value on their health are not predicted to engage in PHB, according to the model. 2) The individual must place merit or value on the message and 3) the goal expressed in the message, which determines his or her likeliness to engage in PHB. 4) An important element is that the health message must be meaningful and 5) persuasive. 6) The individual must believe that engaging in the PHB will allow him or her to reach the health outcome or goal (McIntosh et al., 1996).

An additional assumption is that the PHB message reaches the recipient. For an effect to be found due directly to the message, the message must be properly transmitted and comprehended. Thus, if the message were to come in the form of a television public service announcement and the power were to go out when the spot airs, PHB cannot be related to the televised message because the message would not have been received. Message delivery can come in many forms, such as through comprehension of posters, fliers, television or radio public service announcements, billboards, and other media delivery methods.

Complementary Theories

Cognitive dissonance theory (Festinger, 1957) provides an additional framework of support for the HBM. The theory of cognitive dissonance posits that when people are faced with a belief that runs contrary to their action or behavior, mental dissonance arises. This dissonance becomes so unpleasant that a choice must be made in favor of one or the other in order to reduce the dissonance. Research indicates that most people chose to alter their beliefs to restore consistency with behaviors.

According to the theory of cognitive dissonance, people seek out information in which they are interested (Festinger, 1957). As previously mentioned, the HBM assumes that recipients are interested in the message in order for it to be effective. It is easy to apply both of these theoretical frameworks to Internet information seeking because a majority of people who use the Internet will use search engines or other mechanisms to actively search for specific information, when interested in a topic (Pew Research Center, 2000a). This type of motivation means that most people will not seek information that does not benefit them or if there is not any motivation for cognition. Festinger (1957) finds this important because if there is no perceived future need for information, then the information seeker will disregard the opportunity to engage in the process of gaining knowledge.

After the subject has sought and gained new information, dissonance occurs if two clusters of information clash (Festinger, 1957). However, if competing ideas existed and the information was sought in order to clear up confusion, the new information gained will validate one of the earlier beliefs. Applying this idea to health communication, a health-information-seeker would continue to seek out answers to validate pre-determined ideas about health behaviors. Thus, when exposed to conflicting health messages the health-information-seeker is likely to adopt the behavior that becomes validated. This validation occurs at the first exposure to one of the originally conflicting information.

Limitations of the Health Belief Model

One of most important limitations of the HBM is the assumption that all people who are exposed to preventive health messages have equal opportunities, resources, and barriers to act upon the health message (Rosenstock, 1974).

Along these lines, researchers have found that while the HBM correctly predicts health behavior for European-Americans, it is not as successful for some other ethnic groups. In a study devised to ascertain preventive HIV behaviors in college students, Steers et al. (1996) found that the HBM model did not correctly predict PHB in Asian-American, African-American, or Hispanic-American populations. The body of research concluded that the HBM is effective in predicting European-American behavior because the culture is concentrated on the self, whereas members of the other minority cultures often associate themselves with their sub-culture (Steers et al., 1996) or ingroup. Thus, messages that promote health for the good of oneself are not as effective for these cultures as messages that would promote personal health for the good of the group. The researchers went on to say, “health beliefs that concern the individual self (e.g., susceptibility) may be more likely to influence the behavior of Euro-Americans than those of other groups, whereas health beliefs that concern a group may be more likely to influence other ethnic groups’ behaviors than Euro-Americans” (p. 108). These findings could be attributed to the lack of cultural appropriateness for minority groups as the researcher suggested, or that the messages simply didn’t resonate with the individuals.

These cultural differences are well-known and accounted for in other information dissemination campaigns, such as the 2000 United States Census (Sutten, 2000). In a campaign to create effective action cues, the government devised a series of slogans targeted toward specific cultural groups. A Caucasian-targeted slogan of “This is your future. Don’t leave it blank” was changed to an African-American targeted slogan of “This is our future. Don’t leave it blank” or the Native American slogan of “Generations are counting on this. Don’t leave it blank” (Sutten, 2000). This campaign resulted in

higher participation of minority non-civic-minded citizens in the 2000 national Census than in previous Censuses (Sutten, 2000).

While decades of research have found that the HBM is quite effective in predicting health behaviors related to specific diseases and illnesses, it is less useful when applied to vague health behaviors, such as annual physical examinations (Janz & Becker, 1984).

Without specific and immediate calls to action, the person exposed to the health message does not have the opportunity to receive immediate gratification.

Alternate Theories to the Health Belief Model

Social Learning

The theory of social learning suggests that people learn behaviors directly from observing the behavior of others. Thus, social learning provides cues to action, so that one might say that people learn a PHB by seeing others exhibit the behavior. Lindsay and Rainey (1997) posit that for adolescents, the act of smoking predisposes them to become more accepting of drugs, resulting in later use. Other researchers find that cigarette smoking involves a number of skills that provide an opportunity to embrace the wrong behaviors with other substances (Flemings et al., 1989). For example, a young smoker becomes used to the harshness of tobacco smoke, the feeling of a cigarette in his or her hands, and the nausea associated with the first cigarette smoking experiences making the first use of marijuana a familiar experience. The researchers posit that these experiences provide a “gateway” into the use of more serious drugs.

Gain- and Loss-Framed Messages

Gain- and loss-framed messages are very similar to the HBM’s constructs of benefits and barriers/severity. Loss-framed messages are effective in conveying the ideas of PHB for screening or disease-detection results and gain-framed behaviors are most effective

for promoting healthy prevention-type behaviors (Rothman et al., 1999). In a study devised to test the effectiveness of gain- and loss-framed messages, researchers created a fictitious disease and supplemental patient education material (Rothman et al., 1999). Results indicated that the participants who were exposed to the loss-frame message, communicating the costs and dangers of not participating in the PHB, reported that they were more likely to exhibit PHB and be screened than those exposed to the gain-framed message (Rothman et al., 1999).

Other message framing studies have investigated the ideas of negative or loss-framed messages. One study, based on prospect theory, investigated the idea that people will choose a risky (but certain) behavior and subsequent outcome over an uncertain behavior but possibly positive outcome (Rothman et al., 1993). Results indicated that negatively framed health messages cause concern about one's present health status (Rothman et al., 1993). According to the authors' interpretation of prospect theory, PHBs, such as disease screenings, are risky in that the patient could discover that he or she has the ailment; thus, negatively framed messages are more effective for promoting such PHBs as BSE.

Cultural Types

This study focuses on the differences between two well-researched cultural groups: collective and individualistic cultures. An individualistic culture is one in which people place high value on the self. Members of collective culture place high value on the group to which they belong. Individualistic cultures are common in Britain and British-influenced cultures such as the United States and Australia (Hofstede, 1980). Collective cultures are predominant in Africa, Latin America, Asia, Southern Italy; and with traditional Greek, Chinese, and Far Eastern minorities; and among people from these subcultures who now reside in the United States (Bontempo et al., 1990). A list of

attributes (see Appendix A) was developed to identify the attitudinal differences between the two culture types (Triandis, McCusker, & Hui, 1990). Research finds that people from individualistic cultures make decisions based on evaluations of personal goals (Bontempo et al., 1990). Those from collective cultures place the highest values on the ingroup, and tend to make decisions based on what is best for the group.

Research finds that members of collective cultures treat others in the ingroup with more intimacy and have higher levels of self-disclosure than those from individualistic cultures (Triandis et al., 1990). Because of this, individualists have a lower ability to deal with intimate encounters than collectivists but are more skilled at entering and leaving ingroups than collectivists (Triandis et al., 1990).

Within these two cultural types lie the “parallel variations” (Bontempo et al., 1990) of allocentric and idiocentric individuals. Allocentric people are more in line with the collective culture and “pay more attention to ingroups than to their personal goals” (p. 202); and idiocentric individuals are more closely aligned to individualistic ideals and “emphasize personal goals over loyalty to ingroups” (p. 202).

According to Bontempo et al. (1990), idiocentric people

1. Have a higher need for achievement
2. Are more likely to report feeling lonely
3. Place high value on competition

According to Henry and Stephens (1977), idiocentric people:

1. Weigh advantages and disadvantages to the ingroup when making important prosocial decisions
2. Are more likely to need health care because of the effects of high stress levels

3. According to Bontempo et al. (1990), allocentric people:
4. Tend to have happier marriages
5. Deal with life changes/stress better because of the social support systems which are in place in their lives
6. Safeguard their health
7. Place less value on competition or on individual fame
8. Are persistent to achieve goals against adverse conditions when it is for the good of the ingroup
9. Highly value cooperation, equality, honesty, and self-sacrifice for the good of the ingroup
10. Respond automatically in favor of their ingroups when faced with making decisions that call upon beliefs and values

In a study to test prosocial behaviors and behavioral intentions of idiocentric and allocentric individuals, researchers found that, regardless of the level of anonymity, allocentric individuals seem to make the same prosocial choices (Bontempo et al., 1990). Idiocentric individuals tended to stray from prosocial, ingroup behaviors as the subject's identity became masked. When anonymous, results indicated that idiocentric individuals felt free to behave in a manner that was best suited for them, as opposed to being tied down by social pressures. This finding is in line with the idea that allocentric individuals do not choose what is best for themselves but consistently and automatically make decisions and act so as to benefit the ingroup (Bontempo et al., 1990). Idiocentric individuals will choose behaviors that are most beneficial to themselves, regardless of the benefits or costs to the ingroup.

Some minorities feel at greater risk to public health concerns than Caucasians. Research finds that American collectivist minorities are more likely to feel susceptible and “at risk” for levels of lead in their water than Caucasians (Griffin & Dunwody, 2000). The study reviewed a public service health information campaign regarding lead in tap water in Minneapolis and investigated knowledge gap hypotheses. This could be due to the fact that Caucasians were more likely to report knowing the preventative measures to be taken to ensure safe drinking water, resulting in a lower feeling of perceived susceptibility.

Both idiocentric and allocentric groups use the Internet as a resource for information and communication purposes. Later in this paper, the Internet usage habits of each group will be discussed in depth. However, first it is important to look at the Internet as a health information resource and understand in what ways the Internet is being used.

The Internet as a Health Information Source

The Internet is an increasingly popular source for information on a variety of topics, including information on health. A recent study estimated that in 1998 more than 800 hospitals hosted Web sites and the content of more than 25,000 Web sites concerned health (Izenberg & Lieberman, 1998a). According to Mittman and Cain (2001), the Internet is conducive to informing or educating the general public about its health because the Internet is 1) inexpensive, 2) easy to use, 3) democratic, meaning there is equal opportunity for diverse messages, 4) long distance, meaning health care information seekers can acquire information across large geographical distances, and 5) increasingly functional, meaning the technology is growing and adapting to allow for more sophisticated delivery of messages through new coding programs, such as Java.

Age, education, and income also play a predictive role in the likelihood of someone to use the Web to research health issues. According to a recent U.S. Department of Commerce report (2002), people aged 55 or older are more likely to use the Internet as a resource for health information, there is a correlation of household Internet usage with the level of education reached by a member of the household, and people who earn more than \$75,000 a year were more likely than any other income group to use the Internet to seek health information.

Internet Source Credibility

Internet source credibility is an important issue for Web surfers. Just as Mittman and Cain (2001) point out democracy as a benefit to seeking health care information, meaning that all groups with diverse messages have an opportunity to post messages on the Internet, that benefit also serves as a barrier because it can be difficult for the novice user to distinguish between a credible source and non-credible one. This credibility issue makes source branding more important on the Internet (Mittman & Cain, 2001). A 1998 study reported that only 48% of the medical resources reviewed were hosted by a credible source (Izenburg & Lieberman, 1998b). This alarming fact has not been lost on the public. Fears of finding misinformation and bad health advice on the Internet abound (Napoli, 2001). According to Mittman and Cain (2001), the Internet “at its best can equip consumers to lead healthier lifestyles, detect potential medical problems early, work more collaboratively with physicians to treat illness, and learn of effective treatments to which a local provider may not have access” (p. 57). Researchers also warn, “at its worst, however, the information can undermine health objectives” (p. 57).

As information seekers uncover information, they must decipher the credibility of the source. For a message to have maximum effectiveness, the recipient must trust the

credibility of the message and its source (Johnson & Meischke, 1993). To address the issue of credibility of health information online, many measures have been developed by health organizations. There are online health information rating/grading systems available through uninterested third parties (Mittman & Cain, 2001). Source expertise is found to increase credibility in the eyes of the online health seeker (Eastman, 2001).

When online health information seekers can find information from a reputable health care organization, the organization's branding lends credibility to the message (Mittman and Cain, 2001). Researchers argue that as health information flourishes on the Internet, consumers will seek out well-known brands for health information. Complementary reports indicate that people are able to distinguish between reputable health information sources on the Internet and those that are not (Widman & Tong, 1997), but more research must be done in this area to fully substantiate this claim.

A recent exploration into the source credibility of health information on the Internet yielded results that indicated that regardless of the level of familiarity of the information, highly credible sources increased the effect of the health message (Eastin, 2001). The study tested three different levels of source credibility, varying from a doctor, to a widow of a diseased victim, to a high school student. While the hypothesis of the study was not supported, important findings resulted from the study. Eastin (2001) found that there was a difference between message recipients' review of the information/effect of message if the topic was something with which they were not familiar and the information was attributed to a credible source. It appears that when learning something new from a source the recipient finds credible, the online health message has a greater effect on the recipient. Additionally, Eastin (2001) reported that the variance in credibility could result

from a number of unexplored variables, such as the page layout and design or the dynamics or interactivity.

Barriers to Using the Internet as a Health Information Source

The main barriers to relying on health information delivered through the Internet are: 1) Source credibility, 2) Security of transmitting personal health data, and 3) Single message for diverse audience. Determining source credibility remains one of the biggest obstacles Internet health-information seekers face (Napoli, 2001). This is because Web page publishing is so simple and cheap that anyone can create a Web site. In order to combat this barrier, some health information Web sites have begun posting seals of approval indicating that the content on the has been reviewed and rated as credible (Aspden et al., 2001). Health information always has been regarded as confidential and private to the patient and the organization administering care. As Mittman and Cain (2001) point out, ensuring that electronic transmission of personal health data is done securely remains a priority to organizations and patients. The final barrier, the message itself, remains an important issue to communicators. The Internet reaches a limitless international audience, and the difficulties of crafting one single message that will be equally effective across each culture are challenging. Health communicators who attempt to tailor messages to specific audiences may find this form of mass communication difficult to effectively manage.

Gathering health information over the Internet has definite benefits in that it can be anonymous. This increased privacy becomes key because security concerns are paramount when it comes to transmitting health information via the Internet. However, some advanced health information seekers may be interested in interacting with a message source. Some users may be interested in receiving personalized medical advice,

social support, etc. There are a number of reasons why an online health information seeker would share personal medical information/data with others via the Internet. For health care institutions, the security of this information as it is being transmitted is paramount (Mittman & Cain, 2001). Organizations, such as hospitals with Web sites, are making strides to protect their health care consumers by implementing secure, password-protected databases and firewalls, and ensuring the confidentiality of Internet messages transmitted to them (Mittman & Cain, 2001). While there is still room for improvement, the industry is setting standards for information security which protect the patient and the health care organization.

Typical Internet Health-Seekers

For the purpose of this study, a health information seeker is one who purposely seeks out information about a health condition, disease, or topic. The information seeker desires to fill a void of knowledge and typically has a variety of channels he or she may use to find answers to his or her questions. Mittman and Cain (2001) found security, information quality and information quantity to be important issues across demographic groups. Research concerning how people deal with gaps in knowledge shows that people turn to the most convenient or closest information source (Dervin, 1989). After obtaining initial health information, people typically continue to search for additional sources. For example, pregnant women may rely on information from their doctor, husband, mother, or on television and print sources (Daniels & Parrott, 1996; Kyrouz et al., 1998), but do not rely on a single source to fill in knowledge gaps (DePietro & Clark, 1984). This method allows the information seeker to assign a level of credibility to the information gained, as he or she can compare the various pieces of information against one another for validation.

The HBM assumption that PHB message-seekers are interested in and actively seek health information is believed to hold true for the typical Internet health information seeker. Most people accessing health information on the Internet do so through direct connection to reputable medical Web sites or through Internet-wide searches on a particular health issue (Pew Research Center, 2000a; Pezza, 1990). Of the health information seekers, those who have an “uncertainty orientation,” meaning they actively seek information to clarify questions they have about themselves, use the Internet to seek new information. Those with a “certainty orientation” seek only information that reinforces their previously held beliefs. This is an element of cognitive dissonance (Festinger, 1954) where people shut out information that would cause a cognitive rift in existing beliefs. This is important because it suggests that those seeking health information on the Internet have a purpose and are actively pursuing the information, as opposed to just discovering it unexpectedly.

Based on the data about the typical Internet health-seeker from the Pew Internet and American Life research (Pew Research Center, 2000a), people are turning to the Web to seek out information, as opposed to just falling upon it in cyberspace. This is an important distinction because it means that these health-seekers are already motivated and primed to be persuaded by the messages. Thus, the assumption of motivation in the HBM is met. Eighty-three percent of online health-seekers believe it is important to get information from the Internet that they cannot get from other sources (Pew Research Center, 2000a). Because health seeking can be done relatively anonymously online, patients are able to fully investigate a variety of health topics they may be embarrassed about discussing with a physician or other reputable resource.

Health topics and Internet/technology user level vary among online health information seekers. Similar to conventional health information seeking, women are more likely to log on to the Internet to research a health topic (Pew Research Center, 2000a; Pew Research Center, 2000b).

While the Pew Internet and American Life research revealed that most people are worried about the credibility of health information on the Internet (Pew Research Center, 2000a), other sources claim that novice users blindly accept the expertise of Internet messages (Jiang, 2000).

Research shows that messages on the Internet must be treated differently than traditional print messages (Nielsen, 2000). Web usability guru Jakob Nielsen found that people do not treat traditional print copy (such as pamphlets, brochures, ads, books, etc.) as they do words on a computer screen. Reading text from computer monitors slows down the reading process by 25 percent (Nielsen, 2000). Additionally, the Internet has become known to provide instant information-gratification. Thus, users become impatient more quickly and are accustomed to quickly obtaining information and clicking in search of the next page of information.

Nielsen's research suggests that people scan through the text, looking for bold words or words they associate with themselves (2000). Thus, many effective Web-based messages are formatted in simple, short sentences, use bolding features for key words, and use many bulleted lists. Nielsen tested a series of message wording techniques to find the most effective form of written communication for the Internet (2000). Taking a public relations-type tourism brochure that included information about a town, its history, what to do when visiting, and lodging information, Nielsen re-arranged the wording of

the text several times to find the most effective writing style. The research found that readers were often slowed by page length, layout, and exaggerating verbiage and descriptions. Nielsen assigned the original brochure text as a baseline with zero percent readability. Through a combination of changes to the text, Nielsen was able to improve the readability and reader comprehension level. When the message was condensed to concise text, displayed in a scalable layout, and edited to include neutral wording, readability increased by 124 percent (Nielsen, 2000). Nielsen's research, although not based specifically on Internet health information, is important because it reveals the way online information seekers use the medium, how to maximize messages through word choice, and how best to present messages in the Web page design.

Allocentric Web Surfers

For the purposes of this study, the following cultures and their American counterparts are assumed "allocentric": African, Asian, Hispanic, East Asian, and Middle Eastern (Triandis et al., 1986; Trinadis, McCusker, & Hui, 1990). It is assumed that due to the collectivist nature of these cultures and their tendency to associate themselves with the ingroup, these cultures are allocentric; this is not to say that all people from these cultures and subcultures are allocentric, but that for the most part they display allocentric tendencies.

Differences in Internet use by culture and ethnicity is found in a recent report published by the Pew Internet and American Life Project where the Web-use habits of African-Americans were explored (Pew Research Center, 2000b). According to the report, most African-Americans are going online to search for information and learn something new. African-Americans are more apt to investigate major life issues (find a job, place a to live, etc.) online than Caucasians (Pew Research Center, 2000b).

The Pew report speculates that the differences in Web-use habits between these two sub-populations occur for a variety of reasons. Caucasians have been using the Internet longer and are therefore more comfortable with the technology (Pew Research Center, 2000b). Because Caucasians have been on the Internet longer, it is a more integrated part of their life; subsequently, it can be inferred that Caucasians could be more likely to turn to the Internet for health information due to this higher comfort level (Pew Research Center, 2000b). The Pew research indicates that African-Americans tend to surf the Internet at work as opposed to Caucasians who access the Internet from home (Pew Research Center, 2000b). Home use and work use of the Internet can result in two different types surfing patterns (Pew Research Center, 2000b). For instance, the workplace is more likely to have a fast connection, which could explain why African-Americans report a higher consumption of online media and music. Caucasians are more likely to use the Internet for recreational gaming purposes, a function more easily performed at home rather than at work (Pew Research Center, 2000b). Additionally, Caucasians are more likely than African-Americans to go online after working hours (Pew Research Center, 2000b). Based on this Pew Internet data, it can be inferred that African-Americans would be less likely to investigate personal health issues as opposed to Caucasians who can seek health information without disruption in the comfort of their own homes, while African-Americans may have to do so at work.

Consistent with the characteristics of a collective culture, African-Americans report using the Internet as a means to keep in contact with friends and extended family (Pew Research Center, 2000b). While both African-Americans and Caucasians enjoy electronic mail about equally, the reasoning behind the enjoyment differs. According to

the Pew study, more than half of the African-Americans studied reported using electronic mail because it is quick and easy, while Caucasians report that the main reason to use electronic mail is the convenience of sending messages whenever they want.

When looking for health information, African-American females are more likely than African-American males to use the Internet as a research tool (Pew Research Center, 2000b). This finding is consistent with other subcultures, such as European-Americans (Pew Research Center, 2000b). However, when comparing health information seeking between the two races, African-American women are significantly more likely than Caucasian women to use the Internet to find health information (Pew Research Center, 2000b). This finding could be representative of the economic disparity between the two groups, Caucasians in the United States report a higher household income than African-Americans (Pew Research Center, 2000b), and thus are more likely to have direct access to good health insurance and health care treatment.

Asian-American Internet users are quite different than other American Web users (Pew Research Center, 2001). According to the Pew report, Asian-Americans have been online longer (in terms of years), they use the Web more in their daily life, they stay on the Web longer each time they access the Internet, and their gender usage patterns are quite different from their allocentric peers, such as African-Americans and Hispanics. Interestingly enough, while women are typically the online health information seekers in most American cultural groups (Pew Research Center, 2000a), this is not the case with Asian-Americans; in this culture group, Asian-American men are twice as more likely to seek out such health information on the Web (Pew Research Center, 2001).

Idiocentric Web Surfers

A growing number of Caucasians have been using the Internet for nearly a decade and thus are very familiar with the many uses of the technology (Pew Research Center, 2000b). Because this sub-population has been using the Internet for longer and is considered Internet veterans, its Web-use habits differ from those of novice users. As experience with the Internet grows, users are more likely to use it more often and are open to exploring new sites and information on the Internet (Pew Research Center, 2000b). Caucasians' response to questions regarding Web usage indicate that the technology is well-integrated into their lives, and 73% of users reported that they would miss the Internet if they no longer could access it, as opposed to only 62% of African-American users who reported the same sentiment (Pew Research Center, 2000b).

Due to this mainstreaming into their daily lives, Caucasians are much less skeptical of the Internet. Caucasians report divulging a greater amount of personal and financial information about themselves via the Internet to obtain objects or information (Pew Research Center, 2000b). African-Americans, on the other hand, are much less likely to input such information in exchange for access to information. In the Pew study, these differences are assumed based on experience with the Internet. However, other research finds these differences in desired delivery and level of personalization varies across ethnicity.

Internet Compared to Other Media

In the past decade, the Internet has grown exponentially. Since its inception, the Internet has been compared to various other media. Vehicles for mediated communication have different characteristics and benefits (Hawkins et al., 1987; Napoli, 2001). While early research notes where the Internet falls short in comparison to other

communication mediums, this researcher proposes that in basic PHB communication, the Internet can excel over other media because of the perceived anonymity and the information motivation that drives Internet health information searches. Additionally, as technology grows, the possibilities of improving Internet-delivered messages can increase as well.

The advantages of Internet-delivered health messages are that:

1. Messages can be delivered at any time, day or night.
2. The message recipient is in complete control of delivery time.
3. The message can be delivered anywhere, including specialized airport Internet terminals, across the globe in cyber-cafes, in public libraries, on personal digital assistants, Web-enabled cellular phones, and many more convenient locations.
4. Health care information seekers on the Internet are in charge of their own message destiny. While message recipients have many suggested options on health care Web sites, they are truly in control in that they may chart their own path in seeking the messages most appropriate to the information goal.
5. Research shows that Internet health information seekers are genuinely interested in the information and thus more susceptible to the persuasiveness in the message.
6. In interpersonal communication, the message carrier can have extremely high credibility.
7. Non-verbal cues can be interpreted more easily from high-context individuals.
8. Interpersonal communication in this form allows for a more emotional and
9. Personal experience.

Print health messages carry a high degree of credibility and are often cited as sources for health information by the public (Hofstetter et al., 1992) as opposed to passive media. Passive media are those that one can take in inactively, without requiring much mental

exertion. Assuming the reader has already decided to pay attention to the message, print messages force readers to expend more cognitive effort to understand the message due to the nature of reading (Chaiken & Eagly, 1974).

Research Gaps

The HBM is well-researched and supported (Rosenstock, 1974; Janz & Becker, 1984). Research finds that health messages can be powerfully and effectively disseminated to the masses through such mass media mediums as television (Chew, 1998). The Internet can be available to many more households than television broadcasts because it crosses country and region boundaries.

According to Tardy and Hale (1998), there has been little research on the topic of the significance of health information gathering. While the researchers note that some studies have been done on this, they criticize colleagues for lumping information seeking with other social support interactions. The researchers investigated the importance health information-seeking has on social support and the idea that such motivations lead to the formation of new social networks (Tardy & Hale, 1998). This idea that people are looking to new channels, such as the Internet, to fulfill not only informational but social needs opens the door to a new field of study. Building on the diffusion of innovations theory (Rodgers, 1983), the researchers identified a pathway of how health information seekers build support systems. This pathway is made of information from many different sources and leads to a more informed person as all of the information is synthesized.

Source credibility is another extremely important variable in regard to messages distributed on the Internet. While anecdotal evidence supports the idea that people are more willing to trust known medical institutions (such as hospital Web pages or

WebMD.com), the effectiveness of Internet PHB messages has not been studied on sources generally low in credibility (such as a personal Web page).

Based on the literature reviewed and the existing body of research, this researcher concludes that a study investigating the role of culture and its implications on interactively-delivered health messages is important. Research shows that select ethnic groups are more likely to prefer traditional means of communication for health messages. For instance, African-Americans are weary about Internet security and exchanging personalized information via the Internet (Pew Research Center, 2000b). Conversely, Caucasians are more comfortable with and prefer such tailored information (Pew Research Center, 2000b). Thus, this study will use two messages, one written for idiocentrics and one written for allocentrics and expose them to a health message in an attempt to persuade them to behavior. The messages will be delivered in an interactive (Web page) format and a static (brochure) format. The study will investigate if a matching message or a matching level of interactivity, based on assumptions made from previous research, hold true for the Health Belief Model in this Interactive Age. These assumptions about “matching” and compatibility are based on previous research regarding cultures (Triandis et al., 1986) and Internet use (Pew Research Center, 2000b).

The following hypotheses are proposed:

H1: Respondents who receive culturally matched messages are more likely to adopt the suggested PHB.

H2: Respondents who receive messages in a culturally matched level of interactivity are more likely to adopt the suggested PHB.

CHAPTER 3 METHODS

By using the heavily researched Health Belief Model (HBM; Rosenstock, 1974; Janz & Becker, 1984) as a basis for this study, this body of research can investigate the power and effectiveness of Web-based health messages across different cultures. Additionally, it is important to review a culture's reaction to interactivity in regard to personalizing health messages. A review of relevant HBM literature has not found a single piece of published research investigating the power of the Internet using the predictions of the HBM for online health-seekers. There is very little data on PHB message tailored for maximized effectiveness across culture.

Variables

Several conditions and assumptions were held to be true for this research study. Because the HBM has been widely investigated in the past three decades, the assumptions and predictions of the HBM were held to be true. In particular, the research finding that messages promoting the perceived benefits and perceived susceptibility of a health condition are most effective in producing a positive health behavior change for preventive health behavior (PHB) messages is held to be true.

Message source was also held constant. All of the messages used in this study were presented as informational health pieces from a reputable academic health center in the Southeast United States. Participants of the study had basic knowledge of the teaching hospital from which the health messages were presented as having originated. This is important, considering that source credibility is such an important issue to online health-

information seekers (Pew Research Center, 2000a). Thus, it was assumed that source credibility would be high enough for all participants to not interfere with the results of this study.

The following hypotheses are proposed:

H1: Respondents who receive culturally matched messages are more likely to adopt the suggested PHB.

H2: Respondents who receive messages in a culturally matched level of interactivity are more likely to adopt the suggested PHB.

Independent Variables

As the research hypotheses point out, the two independent variables are level of interactivity and cultural message. Interactivity is broken down into two levels: interactive and static.

Interactive (computer-mediated) preventive health messages are messages accessed through a computer connected to an Internet Web page. A “Web page” refers to information found on the Internet, formatted through hypertext markup language or other such Internet programming language. Internet Web pages are searchable, contain low-resolution reproductions of photographs, and often contain hyperlinks allowing the user to explore a term or topic more fully. Much research has investigated how different ethnic groups are using the Internet in general and how they use it for health information seeking (Pew Research Center, 2000b; Pew Research Center, 2000a).

Caucasians would be more likely to be comfortable with the interactively-delivered message. The message became interactive at the end of the text where participants had an opportunity to choose (“Yes, I want to be contacted” or “No, I don’t want to be contacted”) and submit their intended behavior electronically.

Static preventive health messages involve no interactivity. This static preventive health message in this study is delivered through the form of a brochure. Based on earlier research of how different ethnic groups use the Internet for health information seeking, African-Americans and Hispanics would be more likely to be comfortable with the static message. Research shows that these ethnic groups are not comfortable with submitting personal information through the Internet because of Internet security and trust issues (Pew Research Center, 2000a). At the end of the brochure, participants were able to check a box on the brochure regarding intended behavior (“Yes, I want to be contacted” or “No, I don’t want to be contacted”).

Cultural message is broken down into two types: allocentric and idiocentric.

Allocentric, or community-oriented collective cultures, place high value on the good of the group. Such cultures are altruistic and are often moved to action by a message that promotes the well being of the community. Historically, the HBM has not been effective in persuading this cultural group because most tested HBM messages are based on self-prosperity for health. The allocentric message centers on the dangers posed to the community, people like him or her, and the measures one could take to avoid contracting the disease.

Self-oriented or idiocentric culture places value on the individual. Historically, the HBM has been proven most successful in persuading this cultural group to participate in positive health behaviors. The idiocentric message communicates the susceptibility to the recipient and identifies the reader directly through language using second person, denoting specificity (Parrot, 1995). By speaking directly to the message recipient and

conveying the dangers of the disease, an idiocentric person is more likely to be persuaded to work toward the health goal.

Dependent Variable

The dependent variable for this study was intended behavior. A message was said to be “effective” when the respondent signs up to receive more information.

Message

Some health messages are better communicated through the constructs of the HBM. Health communicators traditionally find success in communicating goal-oriented behaviors, such as the importance of inoculations. This research study will use three HBM constructs (perceived susceptibility, perceived severity, and benefits) to create a health message. The health message topic for this study was West Nile Virus. West Nile Virus has become a growing health concern in recent summers (Rutledge, 2001). Since its introduction into the United States in 1999, reports of the virus have spread from New York City to the northeast states and later to Florida (Rutledge, 2001). The virus, mostly found in birds and horses, can be transmitted to humans by mosquitoes. West Nile Virus is dangerous if undetected because it can lead to encephalitis, or swelling of the brain. The virus was chosen as the health message subject for this research because perceived susceptibility to contracting the virus and perceived benefits of preventative measures can easily be communicated. The virus is not a condition that one cultural group would be more likely to contract and the perceived barriers to adopting the PHBs are low; also, the precautionary steps are easy to implement, as they do not require clinic visits or inhibit any normal behaviors.

The message or stimulus used in this research discussed the West Nile Virus and indicated that University of Florida researchers were developing a human vaccine.

Florida's summer climate makes the state vulnerable to the disease because of the 1) many bodies of water such as swamps in which mosquitoes breed, 2) a large horse population, and 3) warm weather, which draws people outside during times of increased threat of contraction. There is a vaccine available for horses at this time, but not for humans. West Nile Virus is not discriminating, meaning that no cultural group is biologically or culturally pre-disposed for contraction, nor does preventive behavior compromise any cultural behaviors and/or beliefs.

Symptoms of the virus include headache, fever, muscle spasms and mental degradation and can lead to encephalitis, i.e., swelling of the brain. Chances of contracting the virus can be reduced by not going outdoors during dusk when mosquito populations are high, wearing insect repellent with at least 30 percent DEET to ward off bug bites, reducing the presence of stagnant water where mosquitoes breed, and fixing loose windows and screens in the home to keep mosquitoes out.

Prior to the time this study was conducted, there was a heightened media awareness of West Nile Virus. For the first time, the virus had been found in the state of Florida, and three people in the state were reported to have contracted the virus. This researcher felt this media attention aided in providing media cues to participants of the study. However, because of the media attention, the researcher had to take extra measures in order to ensure that the stimulus was indeed inducing behavior as opposed to previous messages. To do so, the preventive health message indicated that University of Florida researchers were developing a vaccine for humans. This ensured respondents' first exposure to the information about the availability of such preventative measures which eliminated possible media cues to action that would influence their likelihood to sign up for the

vaccination. This allowed this researcher the ability to measure actual behavior (signing up for the information), rather than behavioral intention (planning to wearing bug spray when outdoors). Immediately after exposure to the message, participants were given the opportunity to register for information about the West Nile Virus vaccine after it had been developed. At the end of the experiment, each participant was debriefed and told that University of Florida researchers were not working on such a vaccination, nor would they be contacted if one were developed for humans. Each participant was able to take the debrief flier home with them, which had contact information for the principle investigator, in case any questions or concerns arose after leaving the experiment.

Using the basic principles of successful preventive health messages through the HBM, each message began by exposing the subject to a personal level of susceptibility. The first paragraph of each of the messages started with a series of questions that implied a level of risk and susceptibility if the subject answered “yes.” The messages then explained preventive measures, created a minimal level of barriers, and outlined the benefits to the PHB. Each message offered information about the vaccine in development and an opportunity to register to be contacted once it was completely developed.

Based on previous literature, Parrott (1995) created a set of guidelines for producing quality health communication messages to increase the effectiveness of the message. The author suggests that the use of novel settings and media aid in effectively communicating the message. In the interactive condition, this research study used such novelty through a health-risk quiz that personalized the subject’s susceptibility to West Nile Virus. Both messages were written to incorporate spatial immediacy (Wiener & Mehrabian, 1968)

through words such as “this” and “here” rather than “that” and “there,” temporal immediacy (Wiener & Mehrabian, 1968) through active verbs as opposed to passive language, and the deletion of qualifiers (Wiener & Mehrabian, 1968), or words such as “may” and “possibly” that leave room for doubt. Each message was accompanied with a form that respondents could fill out in order to sign up for information about the vaccine upon its completion. The form could be submitted electronically in the interactive group or by returning the filled out form to the study facilitator for the static group.

Design

Using a 2 X 2 factorial design (see Table 3-1), this study tested static and interactively delivered messages that were considered either a match or a non-match for the cultural group. The matched group received either a static or interactive message written for the highest effectiveness for that culture. For example, allocentric/collective messages were written emphasizing the ingroup and the benefits the ingroup would reap from adopting the proposed behaviors and receiving the vaccination. This set of messages was written to reach the community-oriented cultural group through the use of the third-person, a more formal writing style. The idiocentric group’s message emphasized individualism and the benefits one would incur from adopting the proposed behaviors of the message. This set of messages was written to reach the self-oriented cultural group by personally referring to the reader in the first and second person (words such as “I” and “you”). Each culture group also presented a non-matching message.

Table 3-1. Research Design

Variable –					
Person Culture		Idiocentric			Allocentric
Message		Idiocentric	Allocentric		Idiocentric Allocentric
Variable 3 –					
Level - Interactive	Match	Unmatch		Unmatch	Unmatch
- Static	Unmatch	Unmatch		Unmatch	Match

The match and unmatch messages for each group (allocentric and idiocentric) were tested against the two levels of interactivity (static and interactive). The groups were tested on message effectiveness across these levels of interactivity. The static message was presented as a brochure on West Nile Virus, which appeared to be produced by Shands at the University of Florida. Research shows that groups who traditionally thought of as allocentric are apprehensive in interactive conditions (Pew Research Center, 2000a). Thus, the static condition would be a matched level of interactivity with allocentrics. The interactive message was presented as a Web page which appeared to be produced by Shands at the University of Florida. Research shows that groups who are traditionally thought of as idiocentric prefer interactive conditions and tailored messages based on personal data (Pew Research Center, 2000a). Thus, the interactive condition would be a matched level of interactivity with idiocentrics. Based on this, each participant had the opportunity to match or not match in two conditions: message and level of interactivity. It is possible for a participant to match in both condition, match in

only one condition, or not match in any condition. The content of each of the idiocentric and allocentric messages was identical.

Source Credibility

Marketing data collected by the Shands at the University of Florida prior to this study aided in the identification and selection of this institution as a credible source of health information. The hospital's market research found Shands at the University of Florida's branding efforts resulted in 1) moderate association of quality health care without prompting, meaning that participants named Shands at the University of Florida first when asked to name a high-quality hospital, 2) high association of quality health care with prompting, meaning that participants chose Shands at the University of Florida when given choices of hospitals, 3) participants' perception of academic medical centers or teaching hospitals is positive, and 4) the Shands HealthCare and the University of Florida branding efforts are nearly equally powerful.

Each subject responded to a series of semantic differential questions weighing the authority of Shands at the University of Florida and its health care providers at the hospital. A modified version of McCroskey's Source Credibility scale (McCroskey, 1966) measured the perceived credibility of Shands at the University of Florida. The instrument measures the subject's perception of the source's authority and character. This instrument is an often-used measure, as it has been used in more than 100 other studies to measure source credibility since its publication in 1966 (Rubin et al., 1994). The reliability of the variables measured by the scale varies from .85 to .98 alpha scores (Rubin et al., 1994). The validity of the scale is limited, as different studies have investigated a variety of constructs of source credibility (Rubin et al., 1994).

Culture

Culture was tested through the Family Integrity factor, a variation on a scale developed to measure individualism-collectivism, known as INDCOL (Triandis et al., 1986). The survey asks respondents to indicate their level of agreement using a 7-point Likert scale ranging from *very strongly agree* to *very strongly disagree*. The responses are coded to represent individual or collective orientation. The Family Integrity factor measures self-reliance, family integrity, interdependence, and distance from in-groups. The scale has proven reliable in previous research (Triandis et al., 1986; Triandis et al., 1990). Previous research suggests that the instrument finds collectivists rate higher on interdependence than individualists and lower on distance from in-groups (Triandis et al., 1990).

Demographics

Each participant was asked to complete a basic demographic and Internet use questionnaire and report their gender, race, age, year in college, reasons for Internet use, frequency of Internet use, and frequency of contact with a family member. The frequency of contact with family was measured in two levels: when at home and when at school.

Recall and Retention

Participants were tested as to comprehension and retention of information from the stimulus message. This measure included a manipulation check to ensure that the message, which the respondents were exposed to, appealed to the self (idiocentric) or others like the respondent (allocentric).

Procedures

All participants were briefed on their rights and responsibilities prior to participating in the study. Participants signed a consent form indicating that they agreed to participate in the study (see Appendix B). Participants first scored the source credibility for Shands at the University of Florida (see Appendix C). Then, participants completed the Family Integrity factor, which revealed their culture type (see Appendix D). Participants then were exposed to the preventive health message/stimulus (see Appendix E). After exposure to the message (presented in a matched or non-matched form across two levels of interactivity), participants were given the opportunity to sign up for the information on the vaccination after it has been developed.

Next, participants were asked to fill out a basic questionnaire asking demographic and Internet usage information (see Appendix F). After completing the questionnaire, participants were measured for information retention concerning the stimulus (see Appendix G).

Finally, participants were immediately debriefed as to the general purpose of the study (see Appendix H). The debriefing informed respondents that University of Florida researchers were not working on a vaccination for West Nile Virus nor would the respondents who wanted information about such a vaccination be contacted if one were to become available. Participants were given a debriefing flier to take home with them (see Appendix H) which included information on contacting the researcher if further questions about the study arose.

CHAPTER 4 RESULTS

Data for this study were collected between October 8 and October 30, 2001, from students at the University of Florida. This was less than 30 days after the terrorist attacks of Sept. 11. This study was an experiment.

Participants

Participants were recruited from University of Florida undergraduate and graduate communication and public relations courses, and computer network and software courses in the Computer and Information Science and Engineering Department at the University of Florida. Each course from which this researcher recruited the 204 participants was chosen because of the diverse make-up of the students. Several of the courses from which the researcher recruited had a diverse student body, including computer science, business, journalism, and engineering students. Participants self-reported their race (see Table 4-1), which was: 60.8% Caucasian, 9.3% African-American, 11.8% Hispanic, 9.3% Asian, and 6.4% Middle-Easterner; 2.5% of the participants selected “other.” Subject’s self-reported their age, which ranged from 18 to 50 years, with 73.8% of the participants were between the ages of 18 and 21. Participants in this study were both undergraduate (84.8%) and graduate (15.2%) students.

Table 4-1. Self Reported Race of Participants

Race	Percent	<u>N</u>
Caucasian	60.8%	124
Hispanic	11.8	24
African-American	9.3	19
Asian	9.3	19
Middle-Eastern	6.4	13
Other	2.5	5
	100%	204

Males represented 29.4% of the participants and females represented 70.6% of the subject. Communication with family while at school ranged from: several times a day for 14.2% of the participants, at least once a day for 22.1% of the participants, several times a week for 28.4% of the participants, at least once a week for 24.0% of the participants, at least once a month for 6.9% of the participants, rarely for 3.4% of the participants, and to never communicating with anyone in the family for 1% of the participants (see Table 4-2). Additionally, participants were asked about the frequency of contact with a family member when at home. Participants indicated that while at home they communicated with their family: several times a day (76%), at least once a day (7.8%), several times a week (1.5%), at least once a week (3.9%), at least once a month (1%), rarely (1.5%), and never communicate with anyone in the family ($\underline{n} = 8.3\%$) (see Table 4-3).

Table 4-2. Participants' Communication with a Member of the Family When at School

	Percent	<u>N</u>
I don't communicate with anyone in my family	1.0%	2
Rarely	3.4	7
At least once a month	6.9	14
At least once a week	24	49
Several times a week	28.4	58
At least once a day	22.1	45
Several times a day	14.2	29
Total	100%	204

Table 4-3. Participants' Communication with a Member of the Family When at Home

	Percent	<u>N</u>
I don't communicate with anyone in my family	8.3%	17
Rarely	1.5	3
At least once a month	1	2
At least once a week	3.9	8
Several times a week	1.5	3
At least once a day	7.8	16
Several times a day	76	155
Total	100	204

Credibility

Each participant was tested as to whether or not Shands at the University of Florida was thought to be a credible health information source. This test of credibility was important because Shands at the University of Florida was the attributed source of the health message used in this study.

Participants completed a modified version of McCroskey's source credibility scale. The 12-item scale (see Table 4-4) featured semantic differential items to gauge the subject's perceptions of Shands at the University of Florida. Each item was weighed on a 7-point scale. The 12-item source credibility index, using the scale as a one-dimension

construct, yielded a Cronbach's alpha of .89. This is consistent with prior research using this scale. An initial factor analysis (principal axis factoring, oblimin rotation) revealed a three-factor solution through the scree plot method. Weighted factor scores were used to create three measures representing Liking, Expertise, and Trustworthiness, again consistent with most source credibility research.

Table 4-4. Means, Standard Deviations, Factor Loadings, and Cronbach Alpha for Source Credibility—Shands at the University of Florida

Item ^a	Factor Loading	Mean	SD	Item if Alpha Deleted
Liking				
Shands Nice	.77	5.5	1.1	.87
Shands Unselfish	.73	5.0	1.3	.88
* Shands (Im) Moral	.63	5.3	1.3	.87
* Shands (Un)Pleasant	.61	5.1	1.3	.88
Shands Friendly	.59	5.2	1.2	.88
* Shands (Dis)Honest	.40	5.4	1.3	.87
Expertise				
Shands Qualified	-.97	6.0	1.9	.88
Shands Informed	-.60	5.7	1.3	.88
Shands Expert	-.50	5.8	1.1	.87

Table 4-4. Continued

Item	Factor Loading	Mean	<u>SD</u>	Item if Alpha Deleted
Trustworthiness				
* Shands (Un)Intelligent	-.90	5.9	1.5	.87
*Shands (Not) Valuable	-.75	6.0	1.3	.87
* Shands (Un)Reliable	-.35	5.5	1.5	.88

Reliability Coefficients 12 items

Alpha = .87 Standardized item alpha = .89

* Items were reverse coded for analysis

^aSemantic differential where high numbers indicate positive association with credibility on a 7-point scale

The separate Liking factor for Shands at the University of Florida yielded a Cronbach's alpha of .84. The Expertise factor for Shands at the University of Florida yielded a Cronbach's alpha of .78. The Trustworthiness factor for Shands at the University of Florida, as measured by the scale, yielded a Cronbach's alpha of .80.

Family Integrity Scale

A 22-question family integrity survey was used to measure the degree of idiocentrism or allocentrism for each subject. The entire Family Integrity Scale was used in its

original form. One additional item was added to the traditional scale due to the Sept. 11, 2001 terrorist attacks at the time that the research data were collected. The decision to add this variable was due to the close proximity of data collection to the time of the terrorist attacks. This researcher foresaw a potential problem in accurately measuring nationalism. The data were collected one month after the terrorist attacks in New York, Pennsylvania and Washington, D.C. Because questions on the Family Integrity Scale attempted to gauge the ties to one's community, there was concern that the emotional state of the nation would impact the findings. An item was needed to offset the scale item "it does not matter to me how my country is viewed in the eyes of other nations." The new item was "it doesn't matter to me how my community is viewed in the eyes of other communities" and it was intended to replace the country item, if necessary.

An initial factor analysis (principal axis factoring, oblimin rotation) of the family integrity items suggested a seven-factor scale; however, several items did not load as expected, didn't appear to "belong" with any of the seven factors, or did not load at all (see Table 4-5).

Table 4-5. Factor Pattern Loadings on Original Seven-Factor Solution, Principal Axis Factor Oblimin Rotation

Item	FACTOR						
	1	2	3	4	5	6	7
It doesn't matter to me how my community is viewed in the eyes of other communities.	.64		-.43		-.45		
I tend to do my own thing, and others in my family do the same.	.61						
When faced with a difficult personal problem, it is better to decide what to do yourself, rather than follow the advice of others.	.53						
Individuals should be judged on their own merits, not on the company they keep.	.44						
One does better work working alone than in a group.	.39						
One should live one's life independently of others as much as possible. ^a	.39			-.34			
It does not matter to me how my country is viewed in the eyes of other nations.	.37				-.35		
What happens to me is my own doing.	.31						
If the child won the Nobel Prize, the parents should not feel honored in any way.		.59			.36		
*Children should live at home with their parents until they get married.	.43	-.54		.31			
Children should not feel honored even if the father were highly praised and given an award by a government official for his contributions and services to the community.		.39					
It is important to me that I perform better than others on a task.			.46				
*In most cases, to cooperate with someone whose ability is lower than yours is not as desirable as doing the thing on your own.			.42				
If the group is slowing me down, it is better to leave it and work alone.			.40				
*Ageing parents should live at home with their children.				.48			

Table 4-5. Continued

I would rather struggle through a personal problem by myself than discuss it with my friends. ^a	.63						-.31	-.39
*I enjoy talking to my neighbors everyday. ^a								
*I like to live close to my good friends. ^a								
*What I look for in a job is a friendly group of coworkers. ^a				.40				
*I can count on my relatives for help if I find myself in any kind of trouble. ^a								
The most important thing in my life is to make myself happy. ^a								.33
*I would help within my means if a relative told me that (s)he is in financial difficulty. ^a								

* Item reverse coded

^aItem removed in subsequent factor analysis.

Next, the following eight items were deleted from factor analysis: “one should live one’s life independently of others as much as possible,” “I would rather struggle through a personal problem by myself than discuss it with my friends,” “I would help within my means, if a relative told me that s(he)is in financial difficulty,” “I like to live close to my good friends,” “the most important thing in my life is to make myself happy,” “what I look for in a job is a friendly group of coworkers,” “I enjoy talking to my neighbors everyday,” and “I can count on my relatives for help if I find myself in any kind of trouble.” These items were deleted because they did not load or the items did not appear to be testing the same culture constructs. The remaining 14 items were then submitted to another factor analysis that produced a five-factor solution. The five-factor solution is interpreted as Dependence/Reliance, Group vs. Self, Closeness to Ingroups, Family

Integrity, and Community vs. Individual Identification ideals (see Table 4-6). The factor matrix shows the five-factor solution scores (see Table 4-7).

Table 4-6. Pattern Factor Loadings Oblimin Rotation, Means, Standard Deviations, and Cronbach Alpha for Family Integrity Scale

Factor 1 Dependence/Reliance				
<u>Item</u>	<u>Factor Loading</u>	<u>Mean^a</u>	<u>SD</u>	<u>Item if Alpha Deleted</u>
I tend to do my own thing, and others in my family do the same.	.63	4.0	1.7	.47
Individuals should be judged on their own merits, not on the company they keep.	.57	2.8	1.6	.52
When faced with a difficult personal problem, it is better to decide what to do yourself, rather than follow the advice of others.	.53	4.0	1.5	.58

Reliability Coefficients 3 items

Alpha = .62 Standardized item alpha = .62

^a7-point Likert scale, high numbers indicate allocentric, low numbers indicate idiocentric

Table 4-6. Continued

Factor 2 Group vs. Self

Item	Factor Loadings	Mean ^a	<u>SD</u>	Item if Alpha Deleted
It is important to me that I perform better than others on a task.	.54	3.0	1.4	.51
* In most cases, to cooperate with someone whose ability is lower than yours is not as desirable as doing the thing on your own.	.52	3.8	1.7	.52
If the group is slowing me down, it is better to leave it and work alone.	.51	3.3	1.7	.50
What happens to me is my own doing.	.40	3.0	1.4	.54
One does better work alone than in a group.	.34	4.2	1.7	.55

* Indicates reverse coding

Reliability Coefficients 5 items

Alpha = .58 Standardized item alpha = .58

^a7-point Likert scale, high numbers indicate allocentric, low numbers indicate idiocentric

Table 4-6. Continued

Factor 3 Closeness to Ingroups

Item	Factor Loadings	Mean ^a	<u>SD</u>	Item if Alpha Deleted
Even if a child won the Nobel prize the parents should not feel honored in any way.	.69	6.4	1.0	n/a
Children should not feel honored even if the father were praised and given an award by government.	.58	6.1	1.3	n/a

Reliability Coefficients 2 items

Alpha = .55 Standardized item alpha = .56

^a7-point Likert scale, high numbers indicate allocentric, low numbers indicate idiocentric

Factor 4 Family Integrity

Item	Factor Loadings	Mean ^a	<u>SD</u>	Item if Alpha Deleted
* Children should live at home with their parents until they get married.	.89	4.3	1.7	n/a
* Aging parents should live at home with their children.	.47	2.4	1.8	n/a

Reliability Coefficients 2 items

Alpha = .62 Standardized item alpha = .62

* Indicates reverse coding

^a7-point Likert scale, high numbers indicate allocentric, low numbers indicate idiocentric

Table 4-6. Continued

Factor 5 Community vs. Individual Identification Item	Factor Loadings	Mean	<u>SD</u>	Item if Alpha Deleted
It doesn't matter to me how my community is viewed in the eyes of other communities.	-.82	5.3	1.6	n/a
It does not matter to me how my country is viewed in the eyes of other nations.	-.64	5.2	1.4	n/a
Reliability Coefficients 2 items				
Alpha = .68 Standardized item alpha = .68				
7-point Likert scale, High numbers indicate allocentric, low numbers indicate idiocentric				

Table 4-7. Factor Scores for Five-Factor Culture Solution

Item	FACTOR				
	1	2	3	4	5
I tend to do my own thing, and others in my family do the same.	.37	.11	-.00	.00	-.04
Individuals should be judged on their own merits, not on the company they keep.	.26	.02	-.04	.02	-.01
When faced with a difficult personal problem, it is better to decide what to do yourself, rather than follow the advice of others.	.23	-.01	.05	.00	-.05
It is important to me that I perform better than others on a task	.003	.28	-.00	-.03	.00
*In most cases, to cooperate with someone whose ability is lower than yours is not as desirable as doing the thing on your own.	-.01	.28	.07	.02	.00
If the group is slowing me down, it is better to leave it and work alone.	.05	.27	-.04	-.01	.00
What happens to me is my own doing.	.02	.18	.01	-.01	-.03
One does better work alone than in a group.	.11	.17	-.02	.02	-.01
Even if a child won the Nobel Prize, the parents should not feel honored in any way.	-.05	.04	.52	-.03	-.02
Children should not feel honored even if the father were highly praised and given an award by a government official for his contributions and services to the community.	.03	-.02	.34	.01	-.00
*Aging parents should live at home with their children.	-.06	.07	.05	.78	.07
*Children should live at home with their parents until they get married.	.22	-.13	-.09	.17	-.02
It does not matter to me how my country is viewed in the eyes of other nations.	.03	.02	-.02	-.05	-.25
It doesn't matter to me how my community is viewed in the eyes of other communities.	.05	-.01	.10	.06	-.70

* Indicates item reversed coded

The factor loadings found in this research differed from the original Triandis (Triandis et al., 1986; Triandis et al., 1990) studies and factors. The data and factor loadings from Triandis' original four factors showed low factor loadings (see Table 4-8). Additionally, previous research surveyed nationals within their own countries, whereas this study investigated American sub-cultures of other nationalities. When factor groupings contained similarly grouped items as found in the Triandis (Triandis et al., 1986; Triandis et al., 1990) findings, the original factor names were used. When factor items were not consistent with earlier findings, this researcher created intuitive labels for each factor. Rather than rely on Triandis' low-loading factors, this researcher used the five separate factor indexes created from factor scores.

Table 4-8. Items Loading on Same Factor in Pancultural Factor Analysis of Individualism-Collectivism from Triandis (1986)

Factor 1 Self Reliance with Hedonism	
When faced with a difficult personal problem, it is better to decide what to do yourself, rather than follow the advice of others.	.57
If the group is slowing me down, it is better to leave it and work alone.	.50
I would rather struggle through a personal problem by myself than discuss it with my friends.	.41
I tend to do my own thing, and others in my family do the same.	.39
The most important thing in my life is to make myself happy.	.35
One does better work working alone than in a group.	.43
What happens to me is my own doing.	.34
Factor 2 Closeness to Ingroups	
Children should not feel honored even if the father were highly praised and given an award by a government official for his contributions and services to the community.	.73
If the child won the Nobel Prize, the parents should not feel honored in any way.	.65
In most cases, to cooperate with someone whose ability is lower than yours is not as desirable as doing the thing on your own.	.32
Factor 3 Family Integrity	
Ageing parents should live at home with their children.	.58
Children should live at home with their parents until they get married.	.58
It is important to me that I perform better than others on a task.	.48
One should live one's life independently of others as much as possible.	.31

Table 4-8. Continued

Factor 4 Dependence/Reliance and Sociability	
I like to live close to my good friends.	.43
I would help within my means, if a relative told me that s(he) is in financial difficulty.	.41
Individuals should be judged on their own merits, not on the company they keep.	.40

The Dependence/Reliance construct was created through factor scores where three items were primary. The items included: “I tend to do my own thing, and others in my family do the same,” “when faced with a difficult problem, it is better to decide what to do yourself, rather than follow the advice of others;” and “individuals should be judged on their own merits, not on the company they keep.” The standardized item alpha score if the index included only those items would have been .62.

The Group vs. Self factor gauged participants’ dependence on themselves vs. the group. The five primary items included: “it is important to me that I perform better than others on a task;” “in most cases, to cooperate with someone whose ability is lower than yours is not as desirable as doing the thing on your own;” “if the group is slowing me down, it is better to leave it and work alone;” “what happens to me is my own doing;” and “one does better work alone than in a group.” The standardized item alpha score if the index included only those items would have been .58.

The Closeness to Ingroups factor was created using two primary items: “even if a child won the Nobel Prize, the parents should not feel honored in any way” and “children should not feel honored even if the father were highly praised and given an award by a

government official for his contributions and services to the community.” The standardized item alpha score if the index included only those items would have been .56.

The Family Integrity construct contained two primary items: “aging parents should live at home with their children” and “children should live at home with their parents until they get married.” The standardized item alpha score if the index included only those items would have been .62.

The final factor, Community vs. Individual Identification, was composed of two primary items: “it does not matter to me how my country is viewed in the eyes of other nations” and “it doesn’t matter to me how my community is viewed in the eyes of other communities.” The standardized item alpha score if the index included only those items would have been .68.

Because culture type is central to the hypotheses in this study, this researcher needed to access the “strongest” cultural participants. Participants’ self-reported culture scores for each factor was separated into a 40/20/40 to determine the high and low scorers. This method was used in order to test participants who scored more strongly toward a culture, rather than use an arbitrary line to separate idiocentrics and allocentrics. The top 40% scorers for each culture factor were used to test the hypotheses as the strongest allocentrics. The bottom 40% scorers for each culture factor score were used to test the hypotheses as the strongest idocentrics. Each of the five factors for these “strongest” cultural participants were analyzed separately. It was important to analyze each culture factor score separately because of the differences in each factor. Based on this, it was possible for a single participant to measure allocentric on some culture factors and idiocentric on other culture factors. Because allocentrism and idiocentrism are

dimensions of culture, not considered concrete culture types, this was acceptable (Triandis et al., 1986). Finally, using this method allowed for equal representation of allocentric and idiocentric participants (see Table 4-9).

Table 4-9. Self-Reported Culture for All Factors for Strong Culture Participants

	Percent	<u>N</u>
Strongest Idiocentric	49.7%	81
Strongest Allocentric	50.3	82
Total	100%	163

Message

All participants were randomly assigned to conditions either with allocentric (51.0%) or idiocentric (49.0%) messages and in either an interactive (50.0%) or static (50.0%) format. A manipulation check at the end of the questionnaire found that those who were allocentric and received the allocentric message identified that the message as expressing dangers for people like them; those who were idiocentric and received the idiocentric message indicated that it was expressed dangers to them directly. The manipulation check read: “This message was intended for: me or others like me.” The participants who circled both “me” and “others like me were put into a “both” category for data analysis. The manipulation check was performed through a crosstab chi square analysis and reached statistical significance ($p \leq .01$), as seen in Table 4-10.

Table 4-10. Manipulation Check

		Participants' Culture			
		Allocentric	Idiocentric	Total	<u>N</u>
The message emphasized risk to:	Me	36.5%	72.0%	53.9%	110
	Others	52.9	25.0	39.2	80
	Both	10.6	3.0	6.9	14
Total		100%	100%	100%	204

Chi Square (1, 1) = 26.26, $p \leq .01$

After exposure to the messages, 64.7% of the participants indicated that they wanted to be contacted about a vaccination, as seen in Table 4-11.

Table 4-11. Behavior Elicited from Participants After Message Exposure

Question: Do you want to be contacted with information about a vaccine?

	Percent	<u>N</u>
Yes	64.7%	132
No	35.3	72
Total	100%	204

Next, study participants completed a short eight-item retention quiz and demographic questions. In this quiz, retention was measured through two true/false questions and six unaided recall questions. The true/false questions asked respondents if West Nile Virus was food poisoning (false) and if 100 people in Florida had contracted West Nile Virus since 1999 (false). All participants responded to the true/false questions (see Table 4-12), giving either one correct response (16.7%) or two correct responses (83.3%).

Participants also demonstrated message retention (see Table 4-13) through their responses to six unaided recall questions scoring: 0 correct responses (0.0%), one correct response (0.5%), two correct responses (1.0%), three correct responses (5.4%), four correct responses (20.6%), five correct responses (39.7%), or six correct responses (32.8%). These retention questions asked participants how West Nile Virus is

transmitted, in which state was it first reported, after many days can symptoms occur, and to list three ways one can avoid contracting West Nile Virus.

Table 4-12. Participants' Retention Demonstrated Through Two True/False Questions

	Percent	<u>N</u>
0 Correct Responses	0.0%	0
1 Correct Response	16.7	34
2 Correct Responses	83.3	170
	100%	204

Table 4-13. Participants' Retention Demonstrated Through Responses to Six Unaided Recall Questions

	Percent	<u>N</u>
0 Correct Responses	0%	0
1 Correct Responses	.5	1
2 Correct Response	1.0	2
3 Correct Responses	5.4	11
4 Correct Responses	20.6	42
5 Correct Responses	39.7	81
6 Correct Responses	32.8	67
	100%	204

Analysis for hypotheses

H1: Participants who receive culturally matched messages are more likely to adopt the suggested PHB.

H2: Participants who receive messages in a culturally matched level of interactivity are more likely to adopt the suggested PHB.

The self-reported culture scores for each of the five factors were compared to the message type and level of interactivity to which the subject was exposed. This comparison yielded a new variable of either match or unmatched with the message and with the level of interactivity for each subject. Participants were identified as either idiocentric or allocentric for each of the five culture factors. If an idiocentric subject received an idiocentric message, a new variable was created to indicate a message match. If an idiocentric subject received an allocentric message, a new variable was created to

indicate an unmatched message. This analysis process was also done to determine culture compatibility for the level of interactivity. An idiocentric was considered matched when exposed to a message in the interactive level, while allocentrics were considered matched when exposed to a static message. This cultural compatibility determination was made based on previous research as to the most effective way to communicate with different culture and ethnic groups (Pew Research Center, 2000b; Triandis et al., 1986). Finally, a chi square analysis tested whether or not a message or level of interactivity match would yield the desired behavior to test the hypotheses. Each hypothesis was tested five times, once for each culture factor. Because the dimensions of culture were so different, it became important to measure each factor separately. Merging the five, very different cultural constructs, would have been an inaccurate measure of the participants' culture. Additionally, the idiocentric/allocentric labels are meant to be dimensions of culture and not exclusively individualistic or collective.

As seen in Tables 4-14 and 4-15, the self-reported Dependence/Reliance culture factor participants were exposed 52.1% of the time to a culturally matched message and 47.9% of the time to a culturally unmatched message. Of those who desired to be contacted, 61.7% received a culturally matched message and 61.5% received a culturally unmatched message. For interactivity, 50.3% of the participants were culturally matched and 49.7% of the participants were culturally unmatched. Of those who desired to be contacted, 64.6% received a culturally matched level of interactivity and 64.2% received a culturally unmatched level of interactivity.

A crosstabs chi square analysis revealed that behavior was not a significant result for participants who received a culturally matched message vs. those who did not (Chi

Square (1, 1) = 54, $p \leq .23$) for the Dependence/Reliance factor. A crosstabs chi square analysis revealed that behavior was not a significant result for those who received a culturally matched level of interactivity vs. those who did not (Chi Square (1, 1) = .00, $p \leq .48$) for the Dependence/Reliance factor.

Table 4-14. Effects of Culturally Matched Message for Factor 1 Dependence/Reliance Factor on Desire to be Contacted

		Message Match Status			
		Match	Unmatch	Total	<u>N</u>
Do you want to be contacted?	Yes	61.7%	61.5%	64.4%	105
	No	39.2	38.5	35.6	58
Total		100%	100%	100%	163

Chi Square (1, 1) = .54 , $p < .23$

Table 4-15. Effects of Culturally Matched Level of Interactivity for Factor 1 Dependence/Reliance Factor on Desire to be Contacted

		Level of Interactivity Match Status			
		Match	Unmatch	Total	<u>N</u>
Do you want to be contacted?	Yes	64.6%	64.2%	64.4%	105
	No	35.4	35.8	35.6	58
Total		100%	100%	100%	163

Chi Square (1, 1) = .00, $p \leq .48$

As seen in Tables 4-16 and 4-17, 53.4% of the Group vs. Self culture factor participants were exposed to culturally matched messages and 43.6% were exposed to culturally unmatched messages. Of those who desired to be contacted, 63.2% received a culturally matched message and 64.5% received a culturally unmatched message. For the level of interactivity in this factor, 50.3% of the respondents were culturally matched vs. 49.7% who were culturally unmatched to the level of interactivity. Of those who desired to be contacted, 63.4% received a culturally matched level of interactivity and 62.4% received a culturally unmatched level of interactivity.

A crosstabs chi square analysis revealed that behavior was not a significant result for participants who received a culturally matched message vs. those who did not (Chi

Square (1, 1) = .03, $p \leq .43$) for the Group vs. Self factor. A crosstabs chi square analysis revealed that behavior was not a significant result for those who received a culturally matched level of interactivity vs. those who did not (Chi Square (1, 1) = .01, $p \leq .46$) for the Group vs. Self factor.

Table 4-16. Effects of Culturally Matched Message for Factor 2 Group vs. Self Factor on Desire to be Contacted

		Message Match Status			<u>N</u>
		Match	Unmatch	Total	
Do you want to be contacted?	Yes	63.2%	64.5%	63.8%	104
	No	36.8	35.5	36.2	59
Total		100%	100%	100%	163

Chi Square (1, 1) = .03 $p \leq .43$

Table 4-17. Effects of Culturally Matched Level of Interactivity for the Factor 2 Group vs. Self Factor on Desire to be Contacted

		Level of Interactivity Match Status			
		Match	Unmatch	Total	<u>N</u>
Do you want to be contacted?	Yes	63.4%	64.2%	63.8%	104
	No	36.6	38.8	36.2	59
Total		100%	100%	100%	163

Chi Square (1, 1) = .01, $p \leq .46$

As seen in Tables 4-18 and 4-19, in the Closeness to Ingroups culture, 48.5% of the participants were exposed to culturally matched messages vs. 51.5% of the participants who were exposed to culturally unmatched messages. Of those who desired to be contacted, 62.0% received a culturally matched message and 64.3% received a culturally unmatched message. For this level of interactivity of this factor, there were 54.0% of the participants who were culturally matched with the level of interactivity vs. 46.0% of the participants who were culturally unmatched with the level of interactivity. Of those who desired to be contacted, 60.2% received a culturally matched level of interactivity and 67.7% received a culturally unmatched level of interactivity.

A crosstabs chi square analysis revealed that behavior was not a significant result for participants who received a culturally matched message vs. those who did not (Chi

Square (1, 1) = .09, $p \leq .38$) for the Closeness to Ingroups factor. A crosstabs chi square analysis revealed that behavior was not a significant result for those who received a culturally matched level of interactivity vs. those who did not (Chi Square (1, 1) = .72, $p \leq .20$) for the Closeness to Ingroups factor.

Table 4-18. Effects of Culturally Matched Message for Factor 3 Closeness to Ingroups Factor on Desire to be Contacted

		Message Match Status			<u>N</u>
		Match	Unmatch	Total	
Do you want to be contacted?	Yes	62.0%	64.3%	63.2%	103
	No	38.0	35.7	36.8	60
Total		100%	100%	100%	163

Chi Square (1, 1) = .09, $p \leq .38$

Table 4-19. Effects of Culturally Matched Level of Interactivity for the Factor 3 Closeness to Ingroups Factor on Desire to be Contacted

		Level of Interactivity Match Status			
		Match	Unmatch	Total	<u>N</u>
Do you want to be contacted?	Yes	60.2%	67.7%	63.2%	103
	No	39.8	33.3	36.8	60
Total		100%	100%	100%	163

Chi Square (1, 1) = .72, $p \leq .20$

As seen in Tables 4-20 and 4-21, the 48.5% of the Family Integrity culture factor participants were exposed to culturally matched messages vs. 51.5 % of the participants who were exposed to culturally unmatched messages. Of those who desired to be contacted, 65.8% received a culturally matched message and 66.7% received a culturally unmatched message. For the level of interactivity for this factor, 44.8% of the participants were exposed to a culturally matched level of interactivity vs. 55.2% of participants who were exposed to culturally unmatched level of interactivity. Of those who desired to be contacted, 69.9% received a culturally matched level of interactivity and 63.3% received a culturally unmatched level of interactivity.

A crosstabs chi square analysis revealed that behavior was not a significant result for participants who received a culturally matched message vs. those who did not (Chi

Square (1, 1) = .01, $p \leq .45$) for the Family Integrity factor. A crosstabs chi square analysis revealed that behavior was not a significant result for those who received a culturally matched level of interactivity vs. those who did not (Chi Square (1, 1) = .77, $p \leq .19$) for the Family Integrity factor.

Table 4-20. Effects of Culturally Matched Message for Factor 4 Family Integrity Factor on Desire to be Contacted

		Message Match Status		
		Match	Unmatch	Total <u>N</u>
Do you want to be contacted?	Yes	65.8%	66.7%	66.3% 108
	No	34.2	33.3	33.7 55
Total		100%	100%	100% 163

Chi Square (1, 1) = .01, $p \leq .45$

Table 4-21. Effects of Culturally Matched Level of Interactivity for Factor 4 Family Integrity Factor on Desire to be Contacted

		Level of Interactivity Match Status			
		Match	Unmatch	Total	<u>N</u>
Do you want to be contacted?	Yes	69.9%	63.3%	66.3%	108
	No	30.1	36.7	33.7	55
Total		100%	100%	100%	163

Chi Square (1, 1) = .77, $p \leq .19$

As seen in Tables 4-22 and 4-23, the 51.5% of the Community vs. Individual Identification culture factor participants were exposed to culturally matched messages vs. 48.5% who were exposed to culturally unmatched messages. Of those who desired to be contacted, 59.5% received a culturally matched message and 70.9% received a culturally unmatched message. For the level of interactivity for this factor, 51.5% of the participants were exposed to culturally matched level of interactivity vs. 48.5% who were exposed to culturally unmatched level of interactivity. Of those who desired to be contacted, 70.2% received a culturally matched level of interactivity and 59.5% received a culturally unmatched level of interactivity.

A crosstabs chi square analysis revealed that behavior approached a significant result for participants who received a culturally matched message vs. those who did not (Chi

Square (1, 1) = 2.31, $p \leq .06$) for the Community vs. Individual Identification factor. A crosstabs chi square analysis revealed that behavior approached a significant result for those who received a culturally matched level of interactivity vs. those who did not (Chi Square (1, 1) = 2.07, $p \leq .08$) for the Community vs. Individual Identification factor.

Table 4-22. Effects of Culturally Matched Message for Factor 5 Community vs. Individual Identification Factor on Desire to be Contacted

		Message Match Status			<u>N</u>
		Match	Unmatch	Total	
Do you want to be contacted?	Yes	59.5%	70.9%	65.0%	106
	No	40.5	29.1	35.0	57
Total		100%	100%	100%	163

Chi Square (1, 1) = 2.31, $p < .06$

Table 4-23. Effects of Culturally Matched Level of Interactivity for Factor 5 Community vs. Individual Identification Factor on Desire to be Contacted

		Level of Interactivity Match Status			
		Match	Unmatch	Total	<u>N</u>
Do you want to be contacted?	Yes	70.2%	59.5%	65.0%	106
	No	29.8	40.5	35.0	57
Total		100%	100%	100%	163

Chi Square (1, 1) = 2.07, $p \leq .08$

No hypotheses in this study were supported.

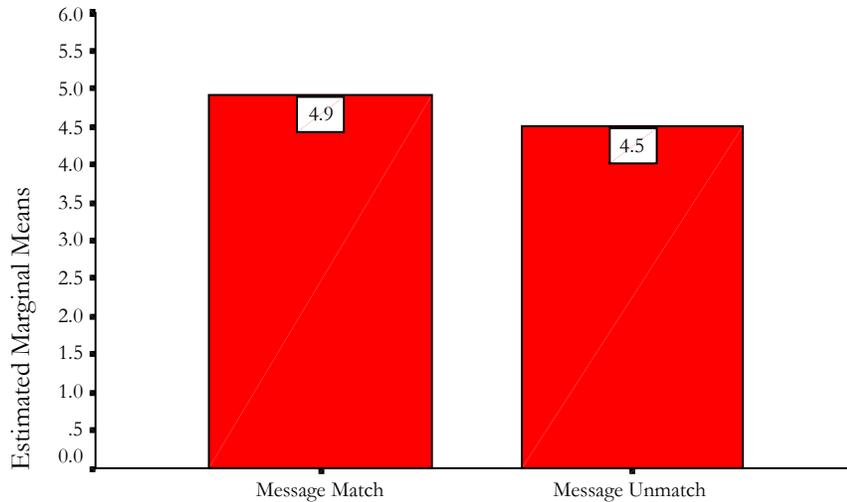
Post-hoc Analysis

Although none of the hypotheses in this research study were supported, post-hoc analyses showed significant relationships between variables, culture, and ethnicity.

Recall

A main effect on recall occurred in the Closeness to Ingroups culture factor in the message condition. When the message matched the participants' self-reported culture in this factor, recall was greater (see Figure 4-1). In this factor, participants in the matched message condition had a mean recall of 4.9 ($SD = 1.01$), while participants in the unmatched message condition had a mean recall of 4.5 ($SD = 1.29$) ($F = 4.89$, $p \leq .03$) (see Table 4-24).

Unaided Recall: Effects of Message Matching
with the Closeness to Ingroups Factor



Message Match Status for Closeness to Ingroups

Figure 4-1. Unaided Recall: Effects of Message Matching with Closeness to Ingroups Factor

Table 4-24. Means, Standard Deviation and F Test for Effects of Message Matching in Closeness to Ingroups Factor on Unaided Recall

	Mean	<u>SD</u>
Message Match	4.9	1.01
Message Unmatch	4.5	1.29

F test (1,1) = 4.54, p < .03

In addition, there was an interaction between the Family Integrity culture factor and the level of interactivity in relation to message recall. When participants rate Trustworthiness high for Shands at the University of Florida, there is a nearly equal

amount of recall regardless of whether the message is matched or unmatched. However, when participants rate the Trustworthiness of Shands at the University of Florida low on source credibility, the level of interactivity match status is an important predictor of recall. Participants who do not trust Shands and who are exposed to a matched level of interactivity have a statistically higher recall than those who are unmatched (see Figure 4-2). Participants who rated Trustworthiness high for Shands at the University of Florida had a 4.9 mean in both the matched and unmatched level of interactivity conditions. Participants in the unmatched level of interactivity condition who rated Shands low in Trustworthiness had a mean of 4.3; participants in the matched level of interactivity who rated Shands high in Trustworthiness had a mean of 5.2 ($F = 3.39, p \leq .07$) (See Table 4-25).

Unaided Recall: Effects of Trustworthiness and Level of Matching for Family Integrity Factor

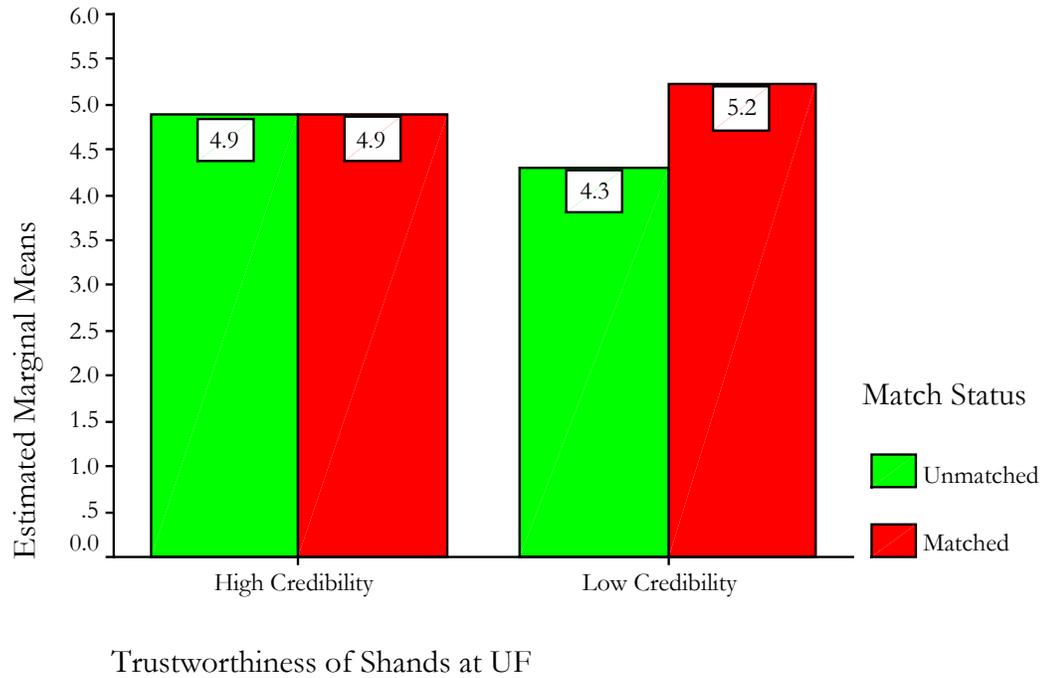


Figure 4-2. Unaided Recall: Effects of Trustworthiness and Level of Interactivity Matching for the Family Integrity Culture Factor

Table 4-25. Means, Standard Deviation and F Test for Effects of Message Matching in Closeness to Ingroups Factor on Unaided Recall

	Mean	<u>SD</u>
High Trustworthiness		
Level Match	4.9	.28
Level Unmatch	4.9	.27
Low Trustworthiness		
Level Match	4.72	.18
Level Unmatch	4.23	.25

F test (1, 1) = 3.38, $p \leq .07$

Trustworthiness

One assumption of the Health Belief Model (HBM; Rosenstock, 1974; Janz & Becker, 1984) is that message recipients must find the source and the message trustworthy.

Trustworthiness, the source credibility factor identifying the level of reliability and trust participant's found in Shands at the University of Florida, became a key element in this research study.

This research study found a greater result in intended behavior when trustworthiness is high through the matched message condition in the Group vs. Self culture factor (see Figures 4-3 and 4-4; Table 4-26).

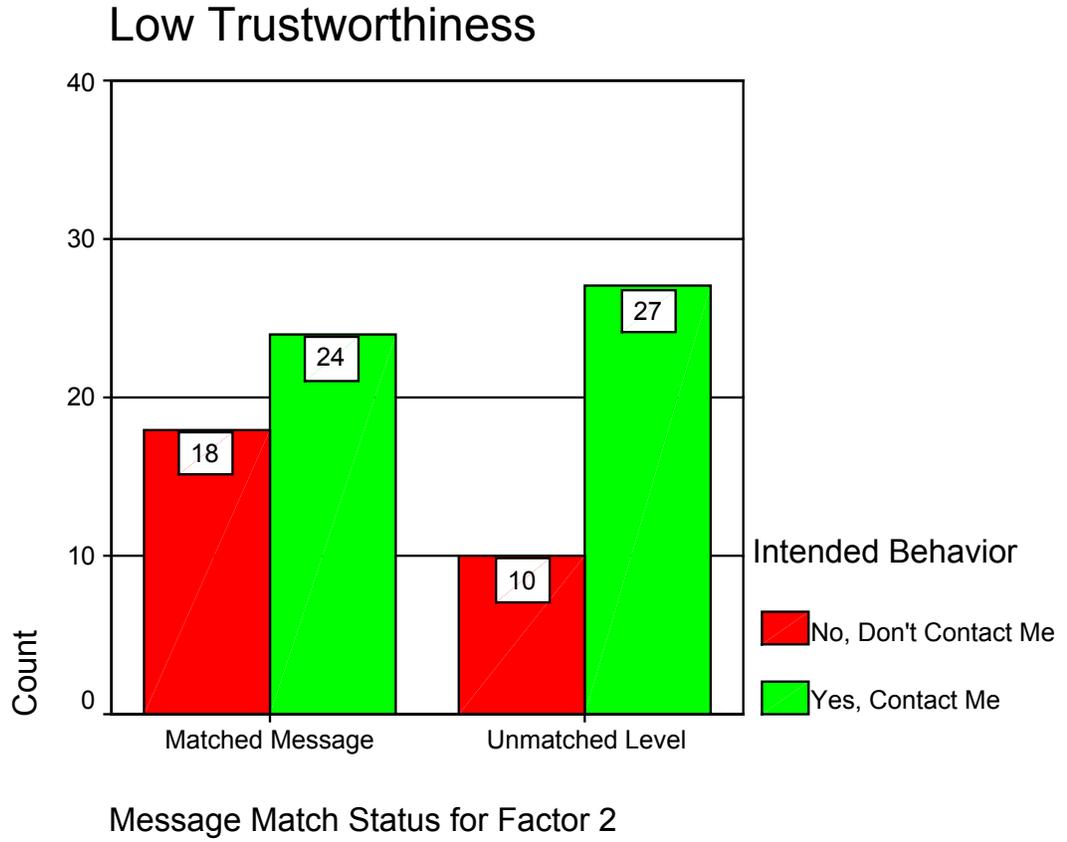
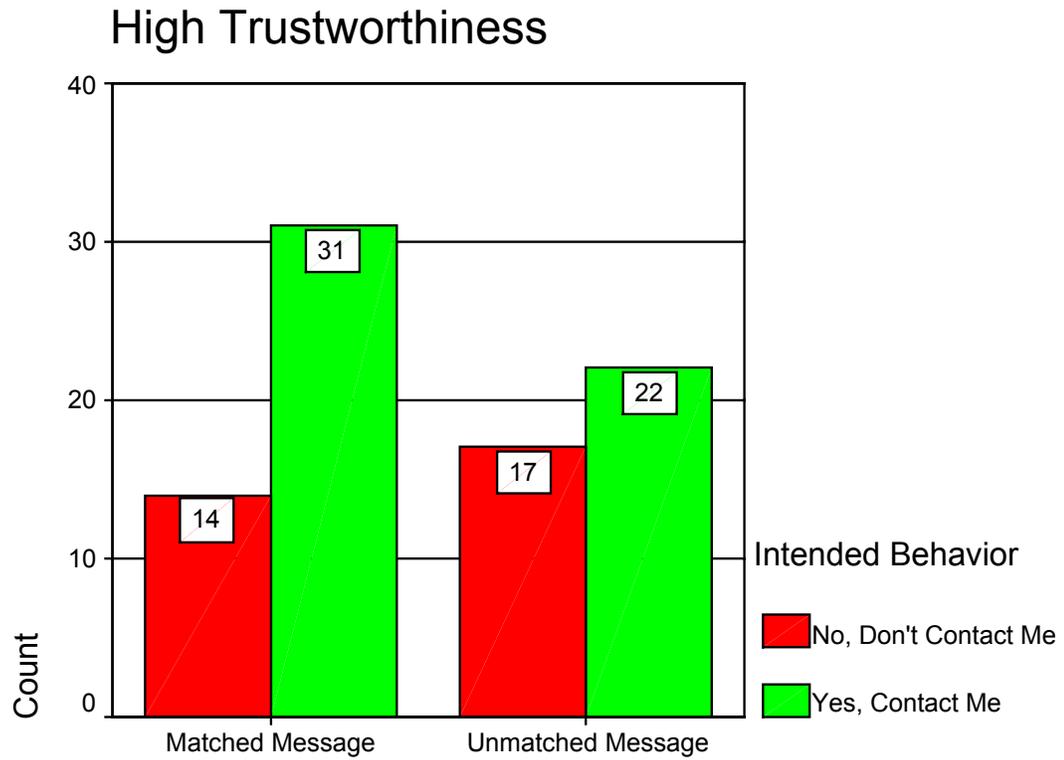


Figure 4-3. Effects of Low Trustworthiness for Factor 2 Group vs. Self on the Desire to be Contacted



Message Match Status for Factor 2

Figure 4-4. Effects of High Trustworthiness for Factor 2 Group vs. Self on the Desire to be Contacted

Table 4-26. Chi Square on Effects of Trustworthiness for Factor 2 Group vs. Self on the Desire to be Contacted

	Do you want to be contacted?			<u>N</u>
	Yes	No	Total	
Low Trustworthiness				
Message Match	47.1%	64.3%	53.2%	42
Message Unmatch	52.9	35.7	46.8	37
<hr/>				
	100%	100%	100%	79

Chi Square (1,1) = 2.15, $p \leq .07$

	Do you want to be contacted?			<u>N</u>
	Yes	No	Total	
High Trustworthiness				
Message Match	58.5%	45.2%	53.6%	45
Message Unmatch	41.5	54.8	46.4	39
<hr/>				
	100%	100%	100%	84

Chi Square (1,1) = 1.40, $p \leq .12$

In the Closeness to Ingroups factor, Trustworthiness becomes an important factor as participants in the unmatched level of interactivity condition overcome this barrier and desire to be contacted when Trustworthiness is high (see Figures 4-5 and 4-6; Table 4-27).

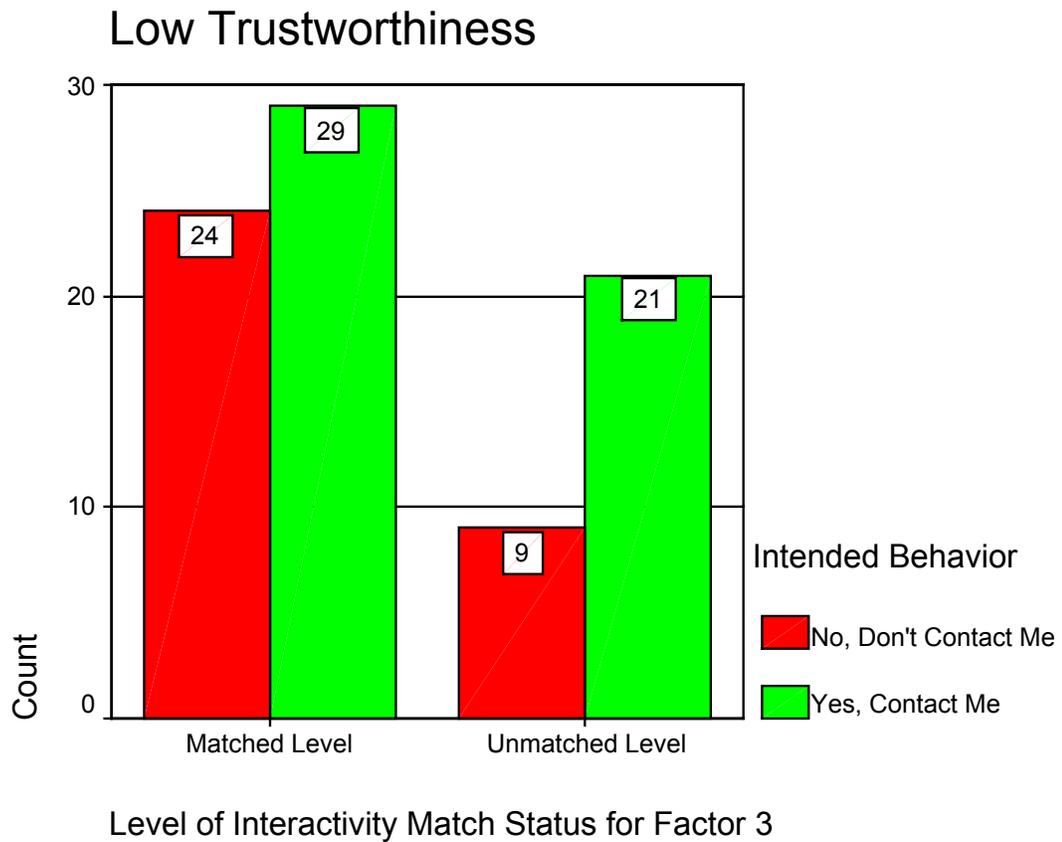
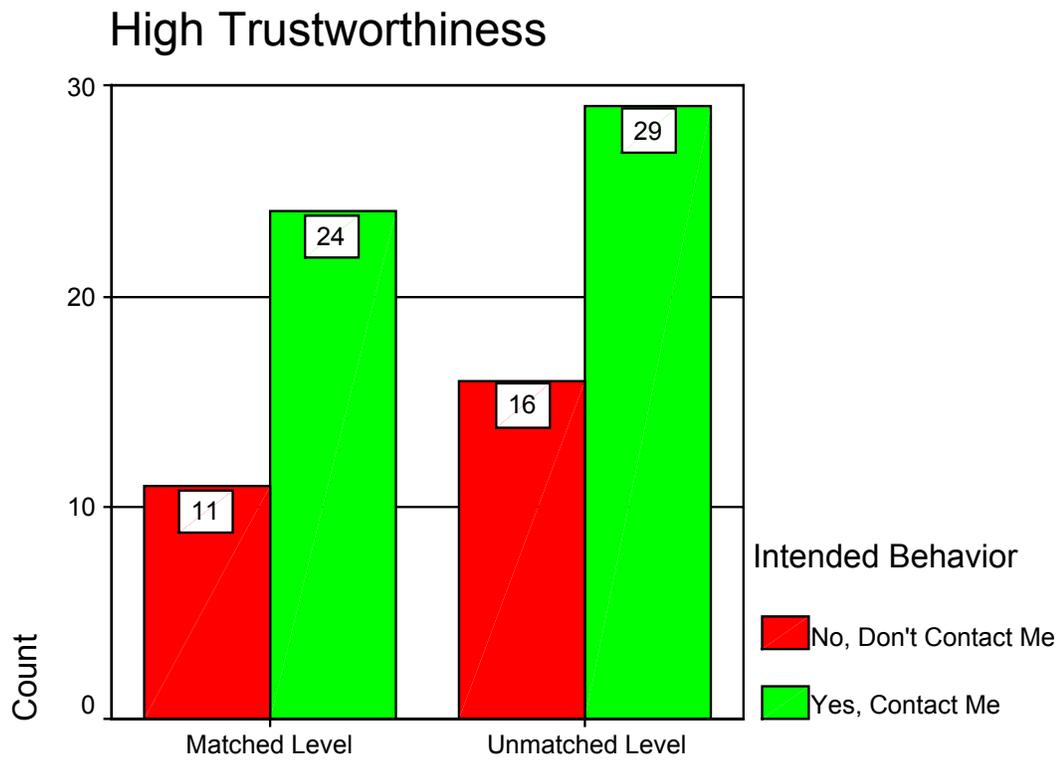


Figure 4-5. Effects of Low Trustworthiness for Factor 3 Closeness to Ingroups on the Desire to be Contacted



Level of Interactivity Match Status for Factor 3

Figure 4-6. Effects of High Trustworthiness for Factor 3 Closeness to Ingroups on the Desire to be Contacted

Table 4-27. Chi Square on Effects of Trustworthiness for Factor 3 Closeness to Ingroups on the Desire to be Contacted

	Do you want to be contacted?			<u>N</u>
	Yes	No	Total	
Low Trustworthiness				
Level Match	58.0%	72.7%	63.9%	53
Level Unmatch	42.0	27.3	36.1	30
	100%	100%	100%	83

Chi Square (1,1) = 1.87, $p \leq .09$

	Do you want to be contacted?			<u>N</u>
	Yes	No	Total	
High Trustworthiness				
Level Match	45.3%	40.7%	43.8%	35
Level Unmatch	54.7	59.3	56.3	45
	100%	100%	100%	80

Chi Square (1,1) = 1.50, $p \leq .35$

In the Community vs. Individual Identification Factor, there was an increase in the desire to be contacted in the level of interactivity match status as Trustworthiness increased (see Figures 4-7 and 4-8; Table 4-28).

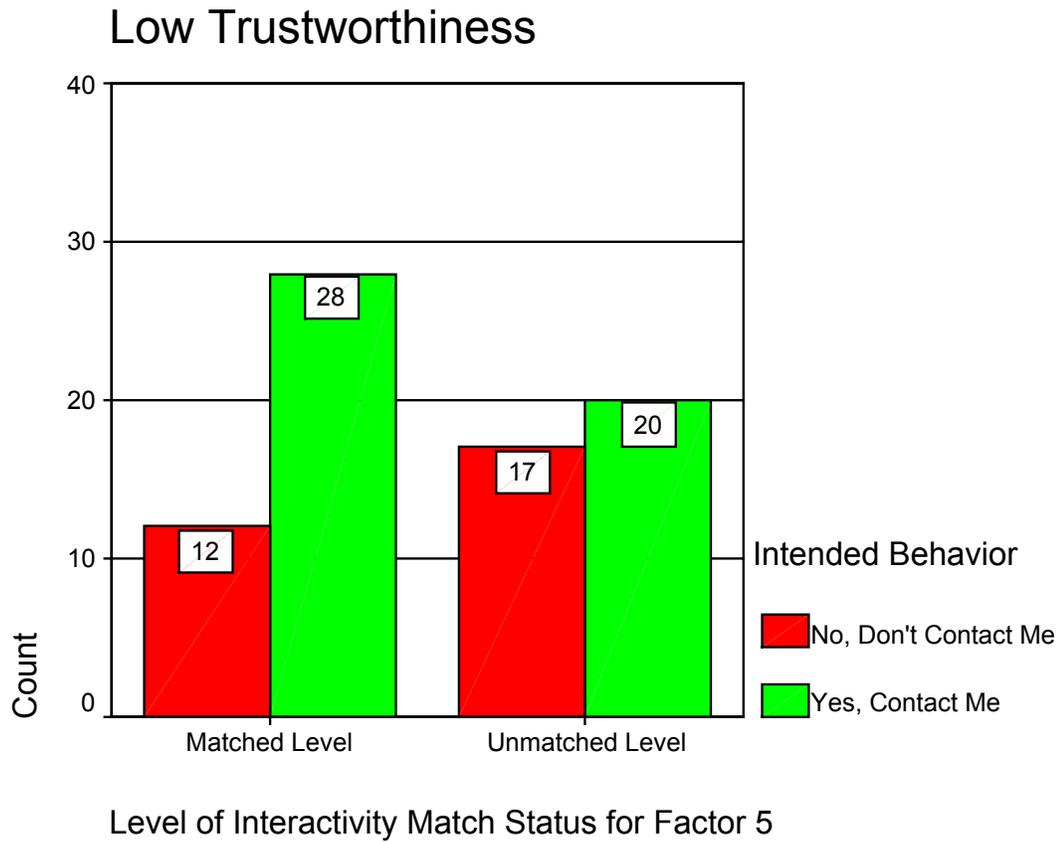


Figure 4-7. Effects of Low Trustworthiness for Factor 5 Community vs. Individual Identification on the Desire to be Contacted

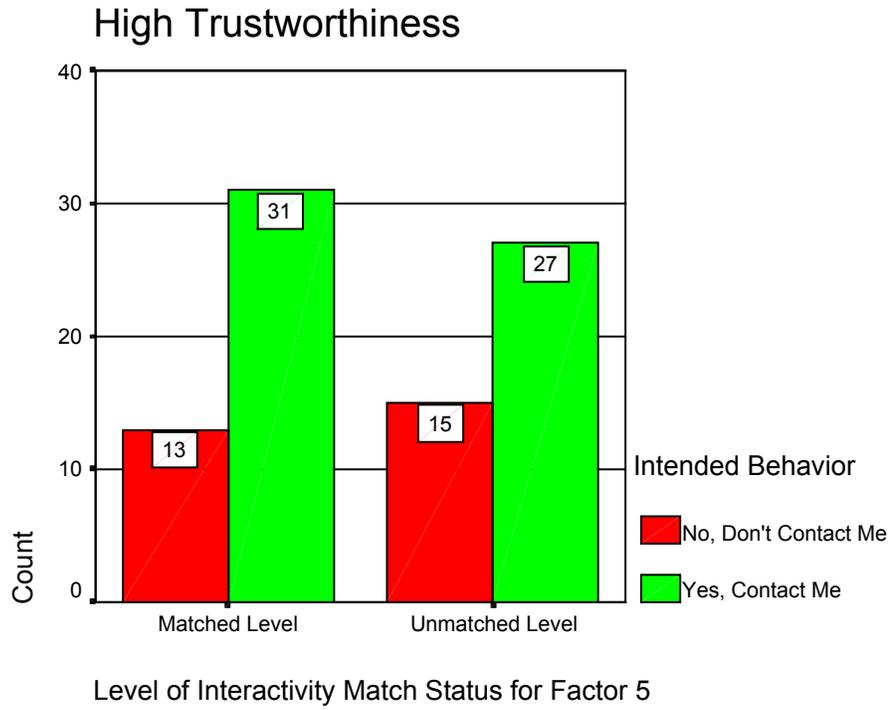


Figure 4-8. Effects of High Trustworthiness for Factor 5 Community vs. Individual Identification on the Desire to be Contacted

Table 4-28. Chi Square on Effects of Trustworthiness for Factor 5 Community vs. Individual Identification on the Desire to be Contacted

	Do you want to be contacted?			<u>N</u>
	Yes	No	Total	
Low Trustworthiness				
Level Match	58.3%	41.4%	51.9%	40
Level Unmatch	41.7	58.6	48.1	37
	100%	100%	100%	77

Chi Square (1,1) = 2.08, $p \leq .07$

	Do you want to be contacted?			<u>N</u>
	Yes	No	Total	
High Trustworthiness				
Level Match	53.4%	46.4%	51.2%	44
Level Unmatch	46.6	53.6	48.8	42
	100%	100%	100%	86

Chi Square (1,1) = .37, $p < .21$

Ethnicity In the Culture Factors

This study based cultural predictions on ethnicity and traditional cultural categorizations for the ethnic groups. Because of that, it is important to look how each ethnic group scored within each of the five culture factors in this study.

Factor 1 measured Dependence/Reliance through items that identified one's desire to do his or her own thing, be judged on own merits, and make own decisions. In this factor, Asian and Middle-Eastern participants rank extremely allocentric (see Figure 4-9; Table 4-29). This finding is statistically significant ($F = 4.09, p \leq .01$). These findings are consistent with cultural ethnic data in previous studies.

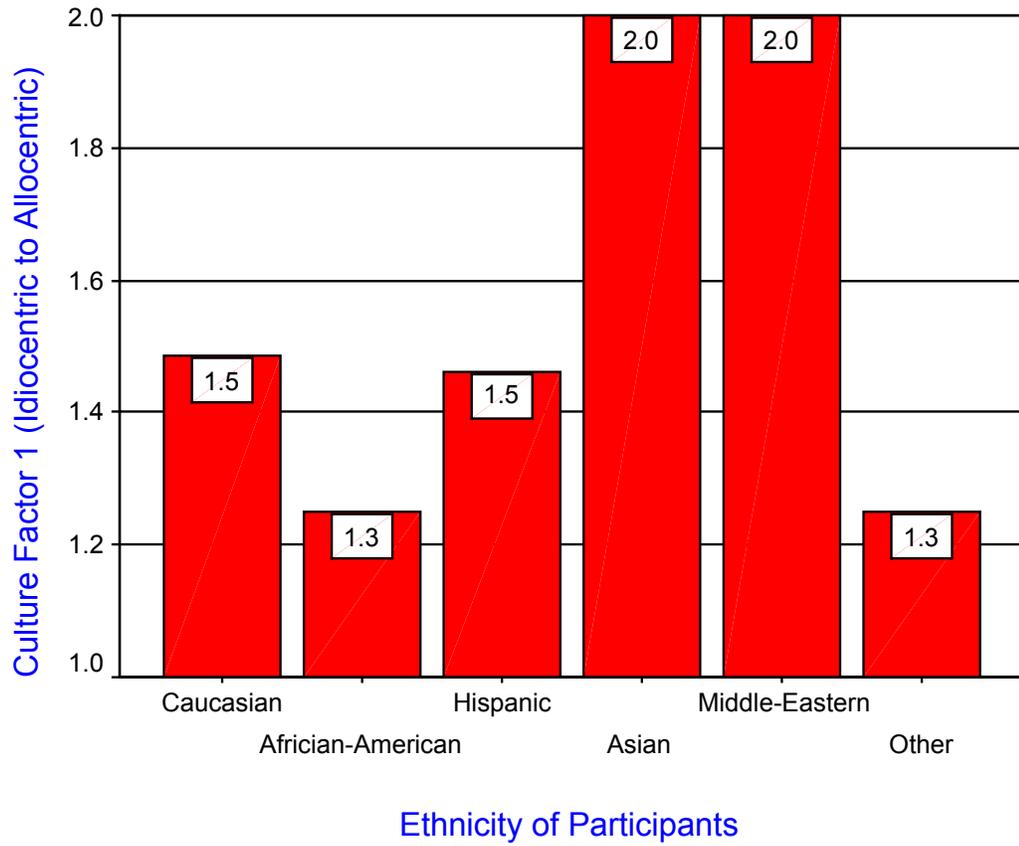


Figure 4-9. Ethnicity of Factor 1 Dependence/Reliance

Table 4-29. Means, Standard Deviation and F Test for Effects of Ethnicity in Dependence/Reliance Factor

	Mean	<u>SD</u>
Caucasian	1.49	.51
African-American	1.25	.50
Hispanic	1.46	.52
Asian-American	2.00	.00
Middle-Eastern	2.00	.00
Other	1.25	.50

F test (1, 1) = 4.09, $p \leq .01$

Factor 4 measured Family Integrity through items in which participants rated their beliefs about continued cohabitation between children and parents. In this factor, Caucasians rate the most idiocentric and Asians and Middle-Easterns rate the most allocentric among ethnic groups (see Figure 4-10; Table 4-30). This finding is statistically significant ($F = 4.32, p \leq .01$). This finding was expected and is consistent with previous cultural ethnic findings.

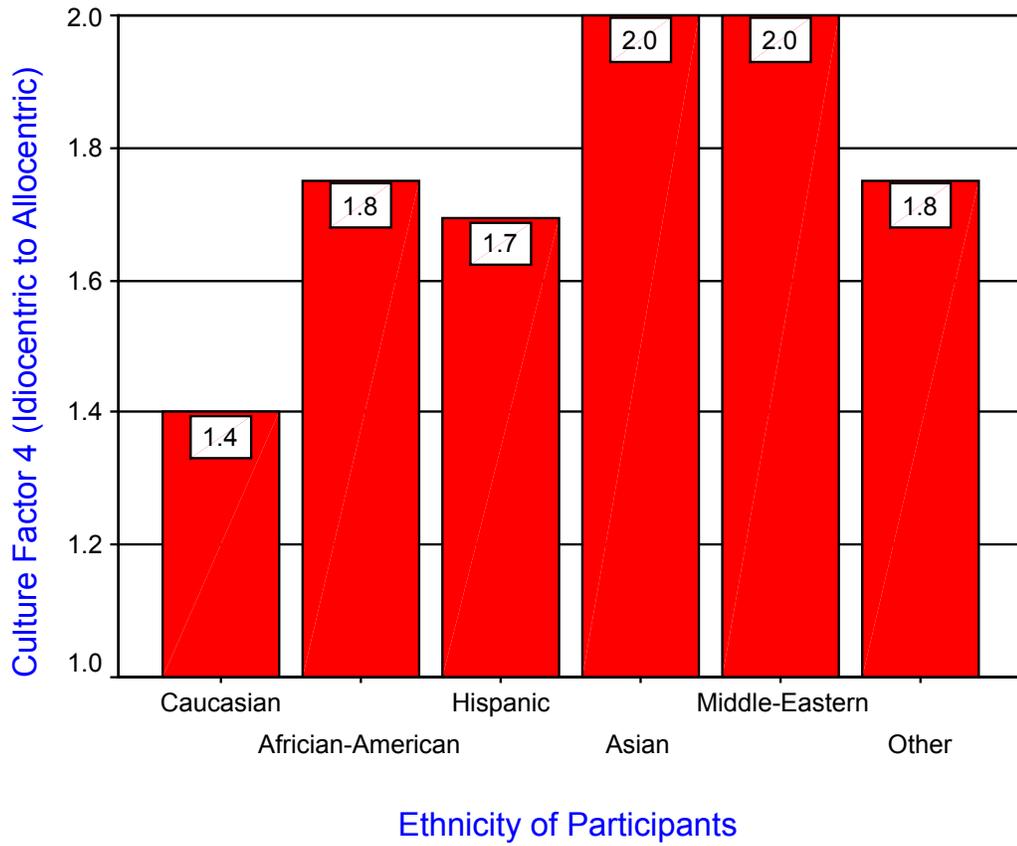


Figure 4-10. Ethnicity in Factor 4 Family Integrity

Table 4-30. Means, Standard Deviation and F Test for Effects of Ethnicity in Family Integrity Factor

	Mean	<u>SD</u>
Caucasian	1.40	.50
African-American	1.75	.50
Hispanic	1.96	.48
Asian-American	2.00	.00
Middle-Eastern	2.00	.00
Other	1.75	.50

F test (1, 1) = 4.32, $p \leq .01$

Factor 5 measured Community vs. Individual Identification through items which gauged one's sense of community and nationalism. In this factor, African-Americans rate the most allocentric and Asians and Middle-Easterns rate the most idiocentric among ethnic groups (see Figure 4-11; Table 4-31). This finding is statistically significant ($F = 2.39, p \leq .05$). This finding was nearly opposite of what was expected. This finding is attributed to the effects of Sept. 11, 2001 and the subsequent barrier Middle-Easterns may have felt was necessary in order to connect with what other Americans were feeling in the wake of the tragedy.

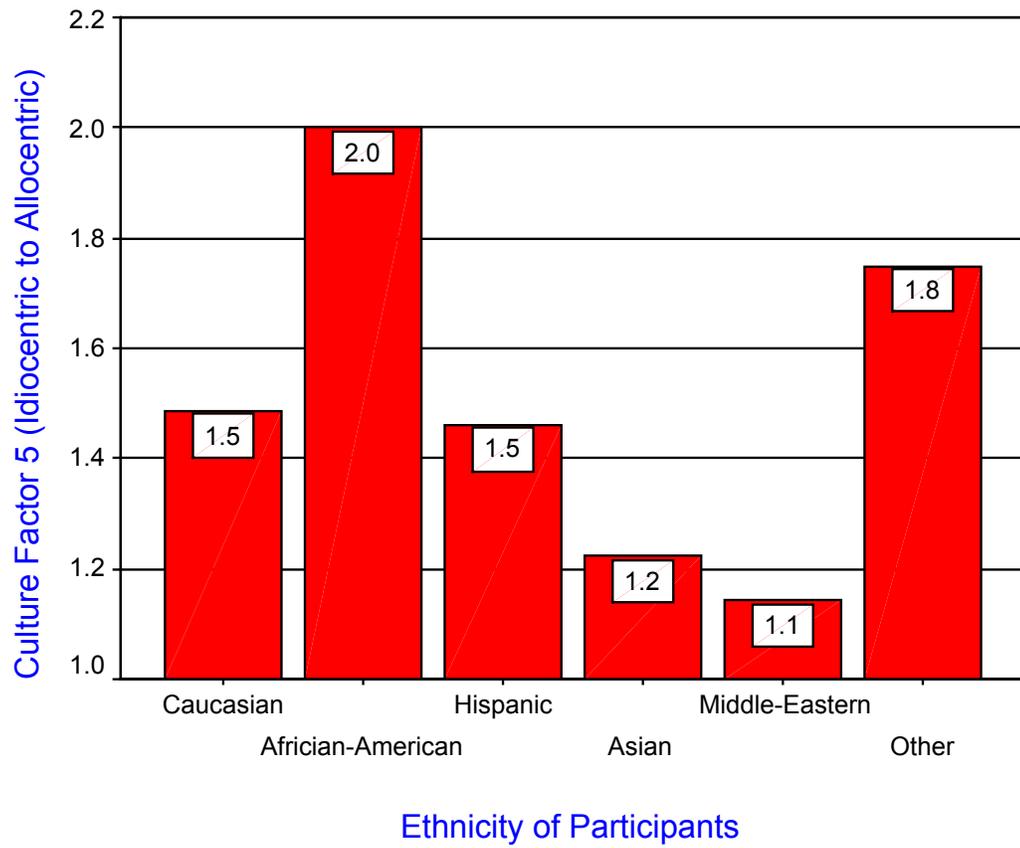


Figure 4-11. Ethnicity in Factor 5 Community vs. Individual Identification

Table 4-31. Means, Standard Deviation and F Test for Effects of Ethnicity in Community vs. Individual Factor

	Mean	<u>SD</u>
Caucasian	1.49	.51
African-American	2.00	.00
Hispanic	1.46	.52
Asian-American	1.22	.44
Middle-Eastern	1.14	.39
Other	1.75	.50

F test (1, 1) = 2.39, $p \leq .05$

Frequency of Family Communication

Triandis et al. (1986) make assumptions about the frequency of contact with family members based on the idiocentric/allocentric cultural tendencies. This study allowed the opportunity to see how often participants communicate with a member of their family when at school and at home.

Caucasian participants indicated that they communicated with a family member more frequently than Asian and Middle-Eastern participants while at school (see Figure 4-12). This finding is statistically significant ($F = 5.46$, $p \leq .01$). This finding is expected considering the cost a Middle-Eastern student may incur from frequent telephone communication vice that what the American students would incur.

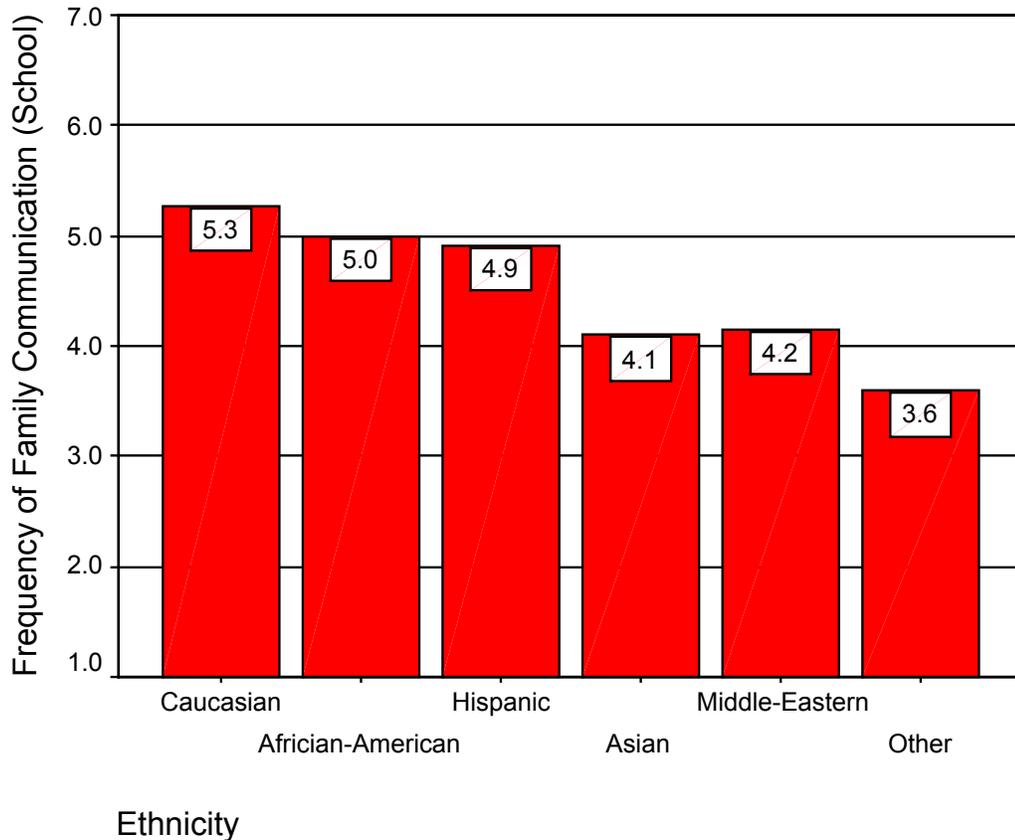


Figure 4-12. Ethnicity in Frequency of Family Communication When at School

Caucasian participants indicated that they communicated with a family member more frequently than Asian and Middle-Eastern participants when at home (see Figure 4-13). This finding is statistically significant ($F = 18.64, p \leq .01$). This finding is unexpected, as traditional cultural research finds Middle-Easterners as allocentric and in frequent communication with their family and ingroup (Triandis et al., 1986). This researcher attributes this finding to the level of independence the Middle-Eastern students would have to have in order to travel to the United States for school.

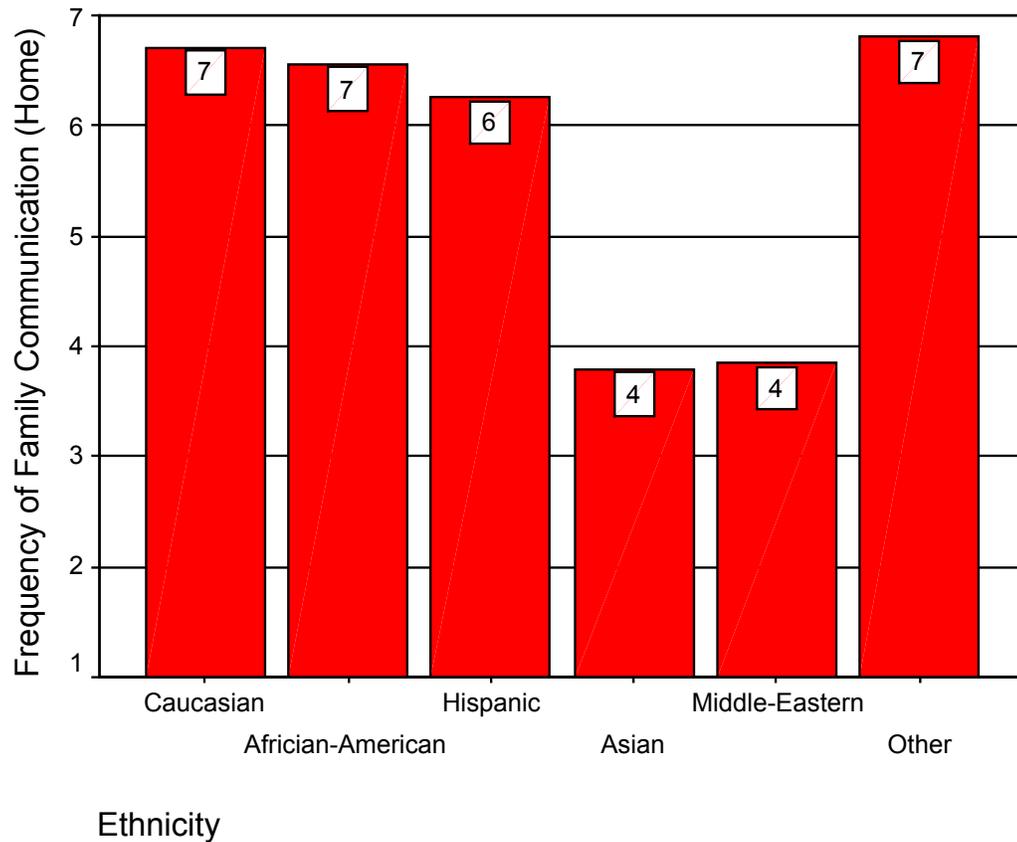


Figure 4-13. Ethnicity in Frequency of Family Communication When at Home

There was a significant correlation between four of the five culture factors and participants' communication with a family member while at school (see Table 4-32). There was a negative correlation between the Dependence/Reliance factor, the Family Integrity factor, and the Community vs. Individual factor with the frequency of family communication at school. This negative correlation is attributed to content of the three factors. Each of the negatively correlated factors encompasses family and community-orientated concepts. Thus, a person who rates high on these factors is more likely to communicate at a different rate than those who rate high on the Group vs. Self and Closeness to Ingroups factors.

Table 4-32. Correlation Between Culture Factors and Communication with Family Member While at School

When I'm at School I Communicate with a Family Member			
	Pearson	Significance	<u>N</u>
Factor 1 Dependence/Reliance	-.15	.01	204
Factor 2 Group vs. Self	.19	.01	204
Factor 3 Closeness to Ingroups	.20	.01	204
Factor 4 Family Integrity	-.16	.02	204
Factor 5 Community vs. Individual ID	-.08	.13	204

There was a correlation between the five culture factors and participants' communication with a family member when at home (see Table 4-33). As revealed earlier, the means for the Dependence/Reliance factor and the Family Integrity factor were split – with one item rating very idiocentric and one item rating very allocentric. This researcher asserts that this variance in each of the factors caused the negative correlation between the frequency of family communication at home and these two variables.

Table 4-33. Correlation Between Culture Factors and Communication with Family Member While at Home

When I'm at Home I Communicate with a Family Member			
	Pearson	Significance	<u>N</u>
Factor 1 Dependence/Reliance	-.36	.01	204
Factor 2 Group vs. Self	.13	.03	204
Factor 3 Closeness to Ingroups	.13	.03	204
Factor 4 Family Integrity	-.40	.01	204
Factor 5 Community vs. Individual ID	.25	.01	204

Internet Use

This research study based its assumptions about Internet usage on existing data from the Pew Research Center (2000a). This researcher applied the traditional idiocentric/allocentric culture label to the ethnic Internet usage data from the Pew study. There was no significant correlation between any of the five culture groups and how often each used the Internet (see Table 4-34).

Table 4-34. Correlation Between Culture Factors and Frequency of Internet Usage

	Internet Usage		
	Pearson	Significance	<u>N</u>
Factor 1 Dependence/Reliance	-.20	.38	204
Factor 2 Group vs. Self	.03	.33	204
Factor 3 Closeness to Ingroups	-.05	.26	204
Factor 4 Family Integrity	.10	.07	204
Factor 5 Community vs. Individual ID	.09	.08	204

CHAPTER 5 DISCUSSION

Summary

Data from this research suggest that tailoring messages through either culturally targeted messages or levels of interactivity does not have a significant effect on the likelihood that receives would adopt the proposed preventive health behavior (PHB).

The null hypothesis was rejected and there was no difference in the likelihood of adopting the PHB when culture as matched with the message or level of interactivity. Based on one study, it is not possible to tell if culture has no bearing in this Interactive Age or if the manipulation was not strong enough.

The hypotheses were near significance in support of accepting the null for the Community vs. Individual Identification factor. That factor accessed participant sense of community and nationalism. The first hypothesis, which submitted that a message match could predict behavior, failed when more participants in the unmatched message condition desired to be contacted than those who received matched messages. As the post-hoc analysis revealed, participants' cultural categorization for this variable nearly opposite of how existing research categorizes people based on ethnicity. This researcher submits that this "opposite effect" is due to the terrorist attacks. During the time this data was collected, there was an increased scrutiny in the American media regarding Middle-Easterners, which may have lead to them rating themselves as more idiocentric in this factor with less nationalism and sense of community. When testing the second hypothesis for the same factor, the data completely reversed in that more participants in

the matched level of interactivity desired to be contacted than those in the unmatched. This finding is attributed to the role Trustworthiness plays in predicting intended behavior. A post-hoc analysis revealed that participants in a matched level of interactivity rated source Trustworthiness higher at a statistically significant level.

Although source credibility is central to the Health Belief Model (HBM; Rosenstock, 1974; Janz & Becker, 1984), it was not an expected indicator in this research study. A one-way anova test found a main effect on recall in the Closeness to Ingroups culture factor. This factor included items that measured one's closeness to the familial ingroup and honor issues associated with outside praise of a family member. If participants were culturally matched with the message in this factor, recall was significantly greater. When idiocentrism/allocentrism was defined by the Family Integrity factor, participants who rated Shands at the University of Florida low in Trustworthiness and were exposed to a matched level of interactivity had a statistically significant greater recall. In fact, this group reported a greater recall than even those who felt Shands at the University of Florida was highly Trustworthy. It appears that in this case, matched level of interactivity is key in predicting recall. This recall can later translate into a cue to action if exposed to like messages again.

Limitations

Measurement

The data in this research study were reliable in terms of the criteria of internal consistency. This is evident based on the acceptable alpha levels in all of the culture factors and the source credibility factors. Construct validity is an issue in this study because the constructs found in this study varied from the Triandis et al. (1986) findings.

Design

There is limited measurement validity in this study. The validity is strengthened by the use of pre-existing and previously tested scales. However, this study found Triandis et al (1986) family integrity factor culture scale limited and that it yielded unreliable results. Because the hypotheses in this study were not supported, there are no effects to generalize. Thus there is no external validity to this study.

Because of the small size of each experimental condition, this study has limited power in predicting behavior. A future replication of this study would benefit from more participants and a better representation of different ethnic groups.

Scale Limitations

The use of the Triandis et al. (1986) scale may have been a major limitation in this study. This study used the scale to gauge cultural variations within the United States; however, the scale originally was used on “pure” cultural participants. Originally, the scale was used to compare people from different cultures to one another, such as Chinese respondents living in China against Australian respondents living in Australia. On the other hand, this study attempted to gauge the level of idiocentrism or allocentrism across American sub-cultures, such as Asian-Americans, African-Americans, Hispanic-Americans, etc.

Another limitation concerning the Family Integrity Factor dealt with the way Triandis et al. (1986), created culture factors. Triandis and his colleagues did not create factors based on the items that loaded highly with one another. Instead, the original scale combined items based on face value of what the item intended to investigate. Because of this analysis method, the scale becomes very difficult to rely upon when later data collected through the scale yield different results.

Finally, the Triandis scale measured cultural variation nearly two decades ago. It is possible that people have changed since the scale was created. This nation has seen two wars and other cultural impacts since the scale was created. Based on the current data, this researcher attests that the scale is no longer valid; its effectiveness in gauging cultural differences should be further evaluated. A further examination of the Triandis scale among sub-cultures is needed to assess if this scale is properly used to measure culture among such a homogenous group.

Subject Limitations

University of Florida college students may not fully represent their respective cultures. The University of Florida is a major southern university with over 44,000 students, many of whom travel from outside of Gainesville to attend classes at the institution. While there is a range of socio-economic statuses in the student body, the average cost of attending the University of Florida is \$19,170 for out-of-state undergraduates and \$23,230 for out-of-state graduate students. The economic impact of tuition, transportation, and housing is great on any family. This different status may affect the cultural values and differentiate students from the rest of the general population, which limits the generalizability of this study.

Exposure to the message was controlled, but there was no way to determine how many of the participants exposed to the messages would have sought out the information on their own. Additionally, there is no way to determine if those who would seek out the information would then be more willing to participate in the proposed PHB. In a real life setting, health information seekers would seek and then read only the pages that contained content covering self-selected health topics. Thus, the external validity of the findings in this study is limited.

Terrorist Attacks

The data for this study were collected around the one-month anniversary of the worst terrorist attack against the United States in the nation's history. The nation's slow recovery from this tragedy may have affected the results of this study. During the data collection period, the media bombarded the public with information on the attacks, the rescue process, other terrorist threats, and the looming promise of an eminent war.

Since the terrorist attacks, it appears the nation has become more unified. Immediately following the attacks, Congress set aside party lines and unanimously passed legislation to get the country on the road to recovery. A noticeable sense of nationalism and feeling of the "American community" emerged. While anecdotal, businesses and homes across the nation displayed flags. In fact, several national retailers sold out of American flags because the demand to purchase them so rapidly rose after the attacks.

In fact, this researcher believes that the terrorist attacks did affect the results in that Middle-Eastern and Asian participants ranked much more idiocentric in the Community vs. Individual Identification factor which measure participants' sense of community and nationalism. It became very important for these two culture groups in the United States to separate themselves from their nationality and connect with other Americans at this time. These groups also may have felt additional pressures to create barriers between their traditional communities in order to function without the threat of violence or harm against them. These ideas are supported by media reports of an increase of attacks against the ethnic groups within the United States, particularly the south.

Anthrax Over West Nile Virus

During the weeks the data were collected, one person was diagnosed with and died from exposure to anthrax in the state of Florida. The media reported that several others in the deceased's office had been exposed to this deadly biological weapon. The exposure of people in Florida became the first of many throughout the Eastern United States, including reported exposure in the nation's capital, Washington D.C.

Many of the participants in this study were journalism school students, who may have paid more attention to the reports of anthrax in Florida and beyond. Additionally, the first cases of anthrax exposure were targeted at media outlets, outlets at which these students could one day work. While it is anecdotal evidence, several participants commented that they would have been more interested in a health message regarding the development of an anthrax vaccine, as opposed to one for West Nile Virus. While West Nile Virus and mosquito alerts continued during this time frame in the local media, these messages and media cues were over-shadowed by those related to the threat of anthrax.

Prior to administering the health message stimulus in the experiment, this researcher was concerned as to the relevancy of West Nile Virus in light of recent events. In the days following the terrorist attacks, concern and relevancy of many public issues lessened. However, there were no viable alternatives to using West Nile Virus as the message stimulus. If the researcher chose another disease or virus, it would not have differed from the presented threat of the West Nile Virus. If this researcher had changed the health message stimulus to inform participants about a biological or chemical weapon, such as small pox or anthrax, the ability to replicate the findings of this study may have been limited. This is believed to be the case because a replication of such a study a year later may have produced entirely different findings when the perceived

threat of anthrax was not as high. This researcher believes that in a time when the public was overly interested in and fearful of such health problems, the study's findings would have yielded inaccurate results. Had this researcher changed the health topic/message stimulus to anthrax, it would have resulted in an inflated level of interest in the vaccination. The purpose of this study was not to test public interest in medical information, but the effects of message stimulus through interactive delivery.

Conclusions

This research study attempted to find a relationship between complex issues such as culture, source credibility and the level of interactivity. This jump into tying all of these concepts together resulted in finding limited significant relationship findings. Thus, future research must forge forward more slowly. Important lessons such as knowing one's audience and culture when targeting a message became an important theme in the findings that did yield statistical significance. For example, the data from this study shows that health communicators should assess the level of Trustworthiness of their message source and culture type prior to disseminating a message in order to ensure its impact is as full as possible. Additionally, while the purpose of a health message is typically to persuade one to undertake a particular behavior, health communicators should react positively to the discovery of ways to increase recall as demonstrated in this study. If a message recipient is able to recall the health information, the health communicator is assured that the message got through. Even though it may not inspire a message recipient to adopt the health goal, it can serve later as a cue to action. This finding supports that aspect of the HBM.

Culture

Culture played an integral role in this research study. This research study hypothesized that culture would be the deciding factor as to whether or not a health message was effective. While the hypothesis was not supported, other interesting effects emerged from the data. The Closeness to Ingroups culture factor displayed a main effect when culturally matched messages resulted in a significantly higher recall. This direct relationship is key in that health communicators can increase recall by simply phrasing the verbiage in a culturally matched way.

One interesting relationship looked at the role the level of interactivity and Trustworthiness play in recall for the Family Integrity factor. This factor identified participants' beliefs about continued cohabitation between parents and adult children. When Trustworthiness was high between the matched and unmatched level conditions, recall was nearly equal. Yet, when Trustworthiness is low, participants rely on the level of interactivity match in order to recall more. Thus, if health communicators can properly identify those who find them low in Trustworthiness prior to disseminating a message, and can match their level of interactivity, communicators can increase recall for this group.

The breakdown of ethnicity across culture factors illustrated interesting differences between groups. In some of the culture factors, traditional cultural expectations were met. However, some factors resulted in completely opposite effects. For example, for the Dependence/Reliance culture factor and Family Integrity factor participants' cultural responses were in line with what traditional suggests. Yet, in the Group vs. Self factor, which identified the desire to out-perform, not cooperate and desire to work alone, Caucasians ranked more allocentric than Middle-Eastern participants. While this finding

was not statistically significant, it is probably due to the fact that many undergraduate classes rely on group projects and working together. This researcher submits that Middle-Eastern participants may have ranked surprisingly idiocentric due to their assimilation into this idiocentric American culture. Another finding contrary to traditional culture research found Asians the most idiocentric in the Closeness to Ingroups factor. However, this finding was not statistically significant. A particularly interesting breakdown of ethnicity in the Community vs. Individual Identification factor, which measured sense of community and nationalism, found Asians and Middle-Eastern participants the most idiocentric at a statistically significant level. Again, this researcher attributes this transposed image of traditional culture to the events of Sept. 11, 2001 and the use of the inaccurate Triandis culture scale.

While culture did not necessarily play a predictive role in the affect of a HBM message, more than 60% of all the participants in the study desired to be contacted after exposure to the message. Additionally, while message recall was not as desired as actual behavior, this relationship remains an important finding. Health communicators are one step closer to reaching the target audience by knowing how they can influence recall.

Source Credibility

Source credibility played an extremely important role in the recall of messages received interactively. Additionally, recall becomes predictable when Trustworthiness is high and the level of interactivity is matched. This significant finding can help health communicators positively impact message recall if they determine and match culture when delivering a message. This effect is found in the Family Integrity culture factor. When participants rated Shands at the University of Florida Trustworthiness high, their recall level is similar, regardless of matched or unmatched level of interactivity.

However, when participants rate Shands at the University of Florida Trustworthiness low, the matching level of interactivity is key in predicting recall. This is important because it says that matching level of interactivity is key for those who will find the source low on Trustworthiness in source credibility. Thus, if health communicators know a certain culture or demographic is more likely to rate Trustworthiness in source credibility low, then it would behoove the communicator to match the level of interactivity in message exposure.

Health Belief Model

The constructs of the HBM were used to create health communication messages in this study. Several of the assumptions central to the HBM have a high degree of importance. For instance, Trustworthiness in the source credibility can have a positive influence on retention and intended behavior. According to the findings of this study, the cross-cultural implications of the HBM remain limited in this Interactive Age. Neither of the hypotheses, which suggested a positive behavior-orientated outcome if the message appealed to culture, were supported. Thus, this researcher ascertains that messages built using traditional HBM constructs are limited in effectiveness. While a positive behavior outcome is not always produced, this study did show an important link between recall and culture and Trustworthiness. Even though this was not the intended result, health communicators are breaking through and getting the health message across to recipients. This increased retention about a health topic could become a media cue to action (a construct of the HBM) and pave the way for a future message to be effective.

Internet as an Information Source

Early research found that “people who have health concerns are more likely to consult a specialized print medium or health professional” (Hofstetter et al., 1992, p. 268). Now

that more specialized information sources are available, this researcher finds it a natural transition that more people will turn to the Internet for health information. While current technology is limited and has not yet completely saturated the market, the coming decade will find a synthesis of: 1) The convenience of the Internet, 2) The human qualities of interpersonal communication, 3) The static record print offers, and 4) The drama and personalization of television and radio. Current research indicates that the Internet can function as a social-support system as well as a trusted information resource, filling in the gaps left through traditional interpersonal health communication with providers (Johnson et al., 1992).

Much of the technology to bridge these gaps exists but is not yet widely used by the public. The addition of Web cameras (Web-cams) can provide patients with direct links to health care professionals and increase patients' quality of care. When the patient has the power to speak directly to medical experts all over the world, the patient becomes empowered with knowledge and access to additional medical teams. By speaking directly with the physician through a Web-cam, the patient is able to receive immediate feedback, pick up on emotional cues, and interpret non-verbal communication.

Additionally, the social interaction sought by many health information seekers can be provided easily through online support groups (Mittman & Cain, 2001). Researchers predict that future online health care messages will include anecdotal social support through patient testimonials (Mittman & Cain, 2001). With this trend in mind, this writer believes that health care institutions soon may offer these real-life patient success stories alongside disease descriptions, symptoms and treatment options.

Not only is a vast population of people going online to find health information, these information-seekers typically share their findings with others (Aspden & Katz, 2001). This sharing could be a result of people looking for health information online for others (Pew Research Center, 2000a). This researcher speculates that this type of sharing is actually a result of acquiring information for others and as an opportunity to validate the credibility of the acquired information from the Internet.

Since the advent of the Internet, it has grown into a powerful medium for message dissemination. Because of this, it is more important than ever to investigate the implications of this new information source and test the effectiveness of health messages on it. Many users are turning to the Internet for both sick-role information as well as PHB suggestions. More specifically, it is important to understand what the HBM would predict for encouraging PHB through the Internet across various cultures. Because health seeking can be done anonymously online, patients are able to investigate fully a variety of health topics they may be embarrassed about discussing with a physician or other reputable resource, and they may have questions they would not ask of a person. Yet, different cultures react in a variety of ways to the personalization of information. Additionally, it is more important than ever to word messages in neutral language to maximize the message's effectiveness across many diverse cultures. If a culture is more community-centered, the reader will not respond to text that promotes the self-importance of a health issue.

Future Research

This research attempted to tie together three very different and well-researched worlds: the HBM, the effect of culture on the success of a message, and the Internet. Whether future research investigates the role of the HBM, how to induce positive PHB,

what role culture plays in the use of the Internet, or how people use the Internet to find answers to their health questions, research in all of these areas must continue.

Researchers must be have more information and become better equipped to make more accurate predictions about the roles of culture and Internet use in successful health messages. Even though the predicted results in this study were not significant, that finding in itself is a breakthrough for the field. While this study failed to show a link between culturally matched messages and behavior, it did show that the predictions for a non-Web world do not hold true in the new interactive age.

As the HBM nears its third decade in health communication, messages, more research should be done to test its relevance in a digital world. One of the assumptions of the HBM is that message recipients are interested in the message. Because Internet-delivered messages are often actively sought, according to Pew research, it seems a natural that the HBM would extend to the Internet. Most online health information seekers are trying to expose themselves to specific health messages; this high level of interest in the health topic is the basis of the HBM's traditional success.

The world of the Internet could open new doors of possibility for communicators. It is important for future research to investigate which constructs are found to be more effective online and which constructs have limited success online. After the discovery of these HBM strengths and weaknesses, one should continue to further this body of knowledge and compare whether a particular construct is more effective in the traditional or online medium. Further, investigators should study which types of health messages are better communicated through these static and interactive media. For example, it

would be interesting to find which medium health information seekers prefer when searching for complex disease information versus basic health and wellness tips.

Future research regarding the implications of the HBM in an interactive age must be done. Future studies should carefully choose health topics that are both timely and relative to the study participants. Participants may have been more interested in the West Nile Virus prior to the terrorist attacks and bioterrorism threats occurring.

One research study into this new field will not suffice to offer health communicators the “answer” to this emerging question. More research must be done to investigate which PHB messages are more appealing to different types of cultures, as well as how different cultures prefer to receive the messages.

The field of Internet health still faces many big questions. Are some people more susceptible to Internet-delivered messages than others? Do cultures that would traditionally react to a PHB message react differently to the same message when it is delivered to them interactively? How likely are people to review Internet health messages, and how does this compare to traditional means of health information gathering?

Because the Internet and like technologies offer the capability to tailor messages on an individual level, it is important that future research uncover exactly what makes a Web-based PHB message more attractive to consumers and how people differ in their preferences for these messages. In this study, this was attempted through appealing to one’s culture through message type and level of interactivity. Perhaps this is not the key. Future research should investigate the attractiveness and usability of a Web page to see if a certain “style” of page generates a predictable result. Researchers also should

investigate the effectiveness of the truly tailored message – where the user enters information about himself and receives “targeted” information. An example of this is the ability to enter your own zip code on national news Web site and see your local weather and regional headlines. For health communication, this could mean offering a quiz in which the user provides lifestyle information and is then supplied with health messages based on his lifestyle needs and interest.

This study only scratched the surface of needed online health research. While the findings of this research were not predicted, they remain an addition to the growing body of Internet health research on messages. Future research must continue to explore the relationship between culture and credibility with health messages.

APPENDIX A
 ATTRIBUTES DEFINING INDIVIDUALISM AND COLLECTIVISM AND THEIR
 ANTECEDENTS AND CONSEQUENCES FROM TRIANDIS, MCCUSKER, & HUI
 (1990)

Antecedents	Attributes	Consequences
	Individualism	
Affluence	Emotional detachment from	Socialization for self-reliance
Cultural complexity	ungroup	and independence
Hunting/food gathering	Personal goals have primacy	Good skills when entering
Upper social class	over ingroup goals	new groups
Migration	Behavior regulated by	Loneliness
Urbanism	attitudes and	
Exposure to the mass media	cost-benefit analyses	
	Collectivism	
Unit of survival is food	Family integrity	Socialization for obedience
ingroup	Self defined in ingroup	and duty
Agriculture	terms	Sacrifice for ingroup
Large families	Behavior regulated by	Cognition: Focus on
	ingroup norms	on common elements
	Hierarchy and harmony	with ingroup
	within ingroup	members

Ingroup is seen as	Behavior: Intimate, saving
homogeneous	face, reflects
Strong ingroup/outgroup	hierarchy, social
	distinctions support,
	interdependence

APPENDIX B
INFORMED CONSENT FOR PROTOCOL HEALTH BELIEF MODEL IN AN
INTERACTIVE AGE

Purpose of the research study: The purpose of this study is to examine effectiveness of interactive messages. This research is being conducted for the master's thesis of Kaye Trammell, a mass communication graduate student at the University of Florida.

What you will be asked to do in the study: You will be asked to fill out a survey about Shands at the University of Florida, complete another survey indicating how you feel about the various statements presented, and read a health message. You do not have to answer any questions that make you feel uncomfortable. You will be allowed to take the debriefing paperwork home with you.

Time required: 1 hour

Risks and Benefits: There are no direct benefits to the researcher for this study. However, the field of mass communication will benefit from the knowledge gained by the study. The only possible benefits a participant in the study would receive would be extra credit, if his or her professor chooses to give extra credit.

Compensation: The researcher will not compensate you in anyway for participation in this study.

Confidentiality: Data will be anonymously collected.

Voluntary participation: Your participation in this study is completely voluntary. There is no penalty for not participating.

Right to withdraw from the study: You have the right to withdraw from the study at anytime without consequence.

Whom to contact if you have questions about the study:

Kaye Trammell, kaye@trammell.com or Dr. Mary Ann Ferguson, College of Journalism and Communications, P.O. Box 118400, Gainesville, FL 32611, ph. (352) 392-6660

Whom to contact about your rights as a research participant in the study:

UFIRB Office, Box 112250, University of Florida, Gainesville, FL 32611-2250; ph 392-0433.

Agreement: I have read the procedure described above. I voluntarily agree to participate in the procedure and I have received a copy of this description.

Participant: _____ Date: _____
Principal Investigator: Kaye Trammell Date: Sept. 21, 2001

APPENDIX C
SOURCE CREDIBILITY SCALE

Instructions: On the scales below, please indicate your beliefs about Shands at the University of Florida and its doctors. Shands at UF is the academic medical center of UF.

Circle the number between the adjectives which best represents your beliefs about Shands at UF and its doctors. Numbers “1” and “7” indicate a very strong feeling. Numbers “2” and “6” indicate a strong feeling. Numbers “3” and “5” indicate a weak feeling. Number “4” indicates you are undecided or do not understand the adjectives themselves. Please work quickly. There are no right or wrong answers.

Do you think Shands at UF and its doctors are

Reliable	1	2	3	4	5	6	7	Unreliable
Uninformed	1	2	3	4	5	6	7	Informed
Unqualified	1	2	3	4	5	6	7	Qualified
Intelligent	1	2	3	4	5	6	7	Unintelligent
Valuable	1	2	3	4	5	6	7	Worthless
Inexpert	1	2	3	4	5	6	7	Expert
Honest	1	2	3	4	5	6	7	Dishonest
Unfriendly	1	2	3	4	5	6	7	Friendly
Pleasant	1	2	3	4	5	6	7	Unpleasant
Selfish	1	2	3	4	5	6	7	Unselfish
Awful	1	2	3	4	5	6	7	Nice
Moral	1	2	3	4	5	6	7	Immoral

APPENDIX C
FAMILY INTEGRITY FACTOR

Read the statements below. Please indicate the level you agree or disagree with the statement. Selecting “1” means that you very strongly agree with the statement. Selecting “7” means that you very strongly disagree with the statement. Please read the questions quickly and respond with your first impression.

1. One should live one’s life independently of others as much as possible.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
2. I would rather struggle through a personal problem by myself than discuss it with my friends.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
3. I would help within my means, if a relative told me that s(he)is in financial difficulty.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
4. I like to live close to my good friends.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
5. The most important thing in my life is to make myself happy.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
6. It is important to me that I perform better than others on a task.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
7. I tend to do my own thing, and others in my family do the same.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
8. Aging parents should live at home with their children.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
9. What I look for in a job is a friendly group of coworkers.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
10. Children should live at home with their parents until they get married.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
11. One does better work alone than in a group.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree

12. Individuals should be judged on their own merits, not on the company they keep.
 Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
13. When faced with a difficult personal problem, it is better to decide what to do yourself, rather than follow the advice of others.
 Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
14. It does not matter to me how my country is viewed in the eyes of other nations.
 Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
15. I enjoy talking to my neighbors everyday.
 Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
16. I can count on my relatives for help if I find myself in any kind of trouble.
 Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
17. What happens to me is my own doing.
 Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
18. If the group is slowing me down, it is better to leave it and work alone.
 Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
19. Even if a child won the Nobel Prize, the parents should not feel honored in any way.
 Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
20. Children should not feel honored even if the father were highly praised and given an award by a government official for his contributions and services to the community.
 Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
21. In most cases, to cooperate with someone whose ability is lower than yours is not as desirable as doing the thing on your own.
 Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree
22. It doesn't matter to me how my community is viewed in the eyes of other communities.
 Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree

APPENDIX E CULTURE MESSAGES

Idiocentric Message

Do you enjoy being outdoors in the early evening? Do you rarely wear insect repellent when you're outdoors? Do you forget to dispose of stagnant water outside of your home to keep mosquitoes away?

If you answered “yes” to any of these questions, you are at risk for West Nile Virus.

A threat to your life

The international virus has been found throughout Africa, Asia and the Middle East. After moving into the United States in 1999, the virus has spread from New York through the country. The virus has now taken a stronghold in the state. To date, cases of the West Nile Virus are reported in 10 Florida counties and three people have been infected this summer.

The swamp-like climate of Florida makes you especially susceptible to contracting the West Nile Virus. Mosquitoes transmit this disease to you through bites. You can contract the virus when an infected mosquito bites you. Once you're infected, the virus leads to encephalitis, or swelling of the brain. If you don't treat the virus, you could die.

Symptoms

Symptoms generally occur about 15 days after you are bitten by a West Nile Virus infected mosquito. If you are infected with the West Nile Virus, you can experience:

- Fever
- Headache
- Rash
- Altered mental state or stupor
- Muscle convulsions, weakness or stiffness

Vaccination

University of Florida researchers are working on a vaccine for the virus. You may be able to use this vaccination as a preventive measure, protecting you from contracting the West Nile Virus. When the vaccine is available, Shands at UF is considering making it available to you free of charge.

Protect yourself

In addition to your free vaccination at Shands at UF, you can reduce your chances of contracting West Nile Virus by:

- Wearing insect repellent with at least 30% DEET
- Staying indoors at dusk when the mosquito population feeding is at its highest
- Wearing long sleeves and long pants when you go outside
- Disposing of stagnate water, possible mosquito breeding grounds

Sign up today

Sign up to receive information about the vaccine after its developed. To be contacted by Shands at UF to find out how you can receive your free vaccine, please check the box below.

Yes, I'd like to be contacted to receive information about the vaccine.

No, I don't want to be contacted about the vaccine.

Allocentric Message

Do you and your loved ones enjoy being outdoors in the early evening? Do they rarely wear insect repellent when they're outdoors? Does your family forget to dispose of stagnant water outside of the home to keep mosquitoes away?

If you answered "yes" to any of these questions, then the people you care about are at risk for West Nile Virus.

A threat to your community

The international virus has been found throughout Africa, Asia and the Middle East. After moving into the United States in 1999, the virus has spread from New York through the country. The virus has now taken a stronghold in the state. To date, cases of the West Nile Virus are reported in 10 Florida counties and three people have been infected this summer.

The swamp-like climate of Florida makes your loved ones especially susceptible to contracting the West Nile Virus. Mosquitoes transmit this disease to your community through bites. Your loved ones can contract the virus when an infected mosquito bites them. Once they're infected, the virus leads to encephalitis, or swelling of the brain. If the virus isn't treated, they could die.

Symptoms

Symptoms generally occur about 15 days after being bitten by a West Nile Virus infected mosquito. If someone you care about is infected with the West Nile Virus, he or she can experience:

- Fever
- Headache
- Rash
- Altered mental state or stupor
- Muscle convulsions, weakness or stiffness

Vaccination

University of Florida researchers are working on a vaccine for the virus. Your community may be able to use this vaccination as a preventive measure, protecting them from contracting the West Nile Virus. When the vaccine is available, Shands at UF is considering making it available to your community free of charge.

Protect your loved ones

In addition to the free vaccination at Shands at UF, you can reduce your love one's chances of contracting West Nile Virus by:

- Wearing insect repellent with at least 30% DEET

- Staying indoors at dusk when the mosquito population feeding is at its highest
- Wearing long sleeves and long pants when outside
- Disposing of stagnate water, possible mosquito breeding grounds

Sign up today

Sign up to receive information about the vaccine after its developed. To be contacted by Shands at UF to find out how the people you care about can receive the free vaccine, please check the box below.

Yes, I'd like to be contacted to receive information about the vaccine.

No, I don't want to be contacted about the vaccine.

APPENDIX F
DEMOGRAPHIC AND INTERNET USE SURVEY

Instructions: Please complete the following phrases about yourself.

I am:

Male Female

I am in my _____ year of college:

1st 2nd 3rd 4th 5th or more

I am _____ years old.

Race:

Caucasian African-American Hispanic Asian Middle-Eastern Other

When I'm at school, I communicate with a member of my family: (check one)

- Several times a day
- At least once a day
- Several times a week
- At least once a week
- At least once a month
- Rarely
- I don't communicate with anyone in my family

When I'm at home, I communicate with a member of my family: (check one)

- Several times a day
- At least once a day
- Several times a week
- At least once a week
- At least once a month
- Rarely
- I don't communicate with anyone in my family

I use the Internet: (check all that apply)

- For school
- For communication (e-mail, instant message, chat)
- For work
- To play games
- To research topics I'm interested in
- To find out more information about my hobbies
- I don't use the Internet

I'm on the Internet: (check one)

- Several times a day
- At least once a day
- Several times a week
- At least once a week
- At least once a month
- Rarely
- I have never been on the Internet

APPENDIX G
INFORMATION RETENTION AND COMPREHENSION SURVEY

Instructions: Please read the following statements and answer the questions to the best of your ability. Your responses will be kept anonymous.

1. West Nile Virus is a type of food poisoning.
True False

2. How is West Nile Virus transmitted? _____

3. West Nile Virus was first reported in the United States in _____.
(name state)

4. I am in danger of contracting West Nile Virus.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree

5. I think the West Nile Virus vaccination can protect my health.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree

6. Since 1999, more than 100 people in Florida have contracted the West Nile Virus.
True False

7. In the future, I will protect myself from West Nile Virus.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree

8. Symptoms of West Nile Virus occur after _____ days.

9. List three ways you can avoid contracting the West Nile Virus:

10. After reading the information about West Nile Virus, I signed up to for the vaccine.
True False

11. I plan on receiving the vaccination for West Nile Virus to protect me from infection.
Very strongly agree 1 2 3 4 5 6 7 Very strongly disagree

12. The message about West Nile Virus emphasized a risk to:

Me Others like me

APPENDIX H DEBRIEF STATEMENT

Thank you for participating in this research study. The purpose of this study was to investigate the relevance of culture when reviewing health communication messages.

Today you learned about the West Nile Virus. There **is not** currently a human vaccine for West Nile Virus. University of Florida researchers **are not developing** a human vaccine. The information that you read about the vaccine was false. Your name and contact information was not gathered in this study. You **will not be contacted** by Shands at the University of Florida if a human vaccine is developed for West Nile Virus.

You can protect yourself from West Nile Virus by:

- Wearing insect repellent with at least 30% DEET
- Staying indoors at dusk when the mosquito population feeding is at its highest
- Wearing long sleeves and long pants when you go outside
- Disposing of stagnant water, possible mosquito breeding grounds

Thank you for participating in the study!

If you have any questions about this study, please contact the Kaye Trammell, primary researcher, at (352) 392-6660 or via e-mail at kdt@ufl.edu. Kaye Trammell is a graduate student of Dr. Mary Ann Ferguson, phone (352) 392-6660, e-mail mferguson@jou.ufl.edu.

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BIOGRAPHICAL SKETCH

Kaye Trammell grew up alongside her two sisters, twins Shelly and Shelby, and graduated from Junction City High School in 1994. She attended Kansas State University, Johnson County Community College, and University of Missouri at Kansas City before she joined the United States Navy.

On Jan. 2, 1996, Kaye left Kansas to live the life of a Sailor. After boot camp, Kaye attended the Defense Information School to learn her Navy trade: journalism. After training, she reported to the USS John F. Kennedy (JFK) in Mayport, Fla. While there, Kaye met her future husband, Mark R. Trammell, Jr., who coincidentally was the first person she interviewed as an official Navy journalist. She spent her 21st birthday in Paris and enjoyed European port visits. In July 1997, she transferred to Fleet Surveillance Support Command in Chesapeake, Va., where she served until she was honorably discharged in Jan. 2001. In May 2001, she received a direct commission as a Public Affairs Officer in the Naval Reserves.

Kaye has been Web Editor at Shands HealthCare since Jan. 2001. She looks forward to a long life in academia as she works toward her doctorate and aspires to be a professor investigating the way technology continues to change communication.

Kaye holds an A.S. (general studies) from Tidewater Community College in Chesapeake, Va., a B.S. (communication) from Old Dominion University in Norfolk, Va., and a M.A.M.C. from the University of Florida in Gainesville, Fla.