

Increasing Knowledge of Diabetes Through Source Expertise and Perceived Credibility

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Abstract

For many, the Internet has become a primary source for health information and advice. However, online health information comes from a vast array of sources, which means Internet users must decide for themselves which information they deem to be credible and trustworthy. In this study, we tested the influence of manipulated source expertise (indicated by cues involving the formality of the language used in the health message and the affiliation of the source) on the perceived credibility of online health information, specifically, an online health message containing information about type 2 diabetes. Results from this study suggest that online health messages with high source expertise are perceived as being more credible, and in turn, lead to individuals retaining more of the health information from the messages. These findings indicate that the language used in a message, along with the affiliation of the message source, may play an important role in promoting knowledge gain from health information found on the Internet.

Key Words: Source credibility, Source expertise, Online health information, Internet information seeking, Type 2 diabetes

Type 2 diabetes is the most prevalent type of diabetes in the United States of America and is often found in individuals who are overweight as well as those who lead a very sedentary lifestyle (U.S. Department of Health and Human Services, 2014). However, this form of diabetes is typically preventable through lifestyle changes, such as increasing physical activity and/or eating fewer fatty foods. In a recent study by the U.S. Department of Health and Human Services (2014), individuals who changed their lifestyle saw a 34% decrease in their chances of contracting diabetes over a 10 year period. A similar study found an even greater reduction (58%) through increased physical activity (Knowler et al., 2002). Although changes can be made to an individual's lifestyle and eating habits to prevent the onset of type 2 diabetes, it is important that those who are most at risk are aware of the dangers of contracting type 2 diabetes and what they can do to prevent further health complications.

The awareness of important information about type 2 diabetes can undoubtedly alter the life

span of an individual, often by helping to get their health back on track. However, awareness of this important information is not always widespread. For example, one of the most important risk factors in contracting type 2 diabetes is being overweight or obese (U.S. Department of Health and Human Services, 2014), but a recent study by Smith et al. (2012) found that college students did not understand the risks associated with being obese and how this might lead to diabetes. Additionally, research on type 2 diabetes shows that prediabetes – a serious health condition that greatly increases the risk of developing type 2 diabetes (Centers for Disease Control and Prevention, 2014) – affected approximately 30% of individuals in the U.S. in 2005 to 2006, but less than 8% of individuals were actually aware that they had prediabetes (Geiss, et al., 2010). According to the U.S. Department of Health and Human Services (2014), if individuals can recognize prediabetes symptoms, they may have a better chance of preventing the full onset of diabetes. Thus, the dissemination and comprehension of diabetes information is an important element in the overall prevention of type 2 diabetes, especially for younger audiences who may still have the opportunity to make lifestyle changes in order to

prevent its onset.

One of the best ways to disseminate this important information about diabetes is through the Internet, as it provides an easy way for large audiences to gather health information at their convenience. In addition to this, individuals are becoming more and more comfortable with online health information. For example, in a cross-sectional study of 1,039 parents from southern Italy, over 80% of participants reported searching online for information about medical conditions (Bianco, et al., 2013). Research also shows that seeking health information online enables patients to be better informed about options for treatment, know what to expect during their appointment, get advice from others, and clarify what they heard during their office visit (Hu & Sundar, 2010; Iverson, Howard, & Kenney, 2008; Nettleton, Burrows, & O'Malley, 2005; Sillence, Briggs, Harris, & Fishwick, 2007b).

Coinciding with the increased use of the Internet for seeking health information is a growing popularity of health-related websites (e.g., WebMD, MayoClinic.org, CDC.gov). In a 2005 study by Escoffery et al., 72.9% of the undergraduate students surveyed about their online health information seeking behaviors reported using an Internet search engine to find health-related websites. In their responses about their use of the Internet for seeking health information, the students mentioned using numerous health websites, including: WebMD, Yahoo! Health, Health.com, Mayo Clinic, Centers for Disease Control and Prevention, MensHealth, Shape.com, Sexeducation.com, and Planned Parenthood (Escoffery et al., 2005). However, despite the prevalent use of health-related websites for online health information seeking, the health information that is being sought and used by individuals around the world is no longer limited to that which is found on websites that are health-specific in nature. As more and more people become part of the online global village, many users are also looking to online question-and-answer (Q&A) forums (e.g., Yahoo! Answers, WikiAnswers, Askville) for health advice. Health information seekers may be drawn to online Q&A forums because, on these sites, they are able to ask any question on any topic and receive multiple answers from the community of users on the site. Yahoo! Answers, one of the more popular online Q&A forums, has a large, active community whose users provide high answer diversity and responsiveness (Harper, Raban, Rafaeli, & Konstan, 2008). This popularity is illustrated by Yahoo! Answer's website traffic of around 5.5 million visitors each month (Answers. yahoo.com's audience profile on

Quantcast, 2015). Considering the widespread use of these online Q&A forums, as well as their affordances regarding the circulation of health information, research on the online distribution of important health information should not be limited only to health-specific websites; researchers and health information providers must also consider how health information-seeking individuals are using these new channels.

In summary, more research is needed examining the most effective ways to use the Internet as a tool for educating individuals about relevant health issues such as type 2 diabetes, especially given the importance of disseminating crucial information regarding type 2 diabetes, the current lack of awareness of this information, and the ability for this information to be easily distributed via online forums. However, research in this vein also needs to take into consideration that there exists an abundance of both accurate and inaccurate health information on the Internet, meaning that users must evaluate the reliability of the source of the information in order to determine whether they can trust the health information to be true. Fox and Rainie (2000) determined that 86% of online health information seekers are worried about getting health information from an unreliable online source, and Escoffery et al. (2005) found that 78.5% of the undergraduates that were surveyed in their study rated credibility of the author as being a very important criterion when evaluating health websites. Hence, more research is also needed regarding the evaluation of the credibility of online sources of health information and how this may affect knowledge gain (i.e., retention) of the information. The purpose of the current study is thus to investigate the retention of information related to type 2 diabetes found in an online Q&A forum setting and whether perceptions of the source of the information affect this retention. In order to examine how individuals will go about evaluating the attributions of the source of this online health information, the study will build upon social information processing theory (SIPT; Walther 1992).

Social Information Processing Theory

Social information processing theory (Walther, 1992) is an interpersonal communication theory that explains how people develop and maintain relationships with one another through computer-mediated communication (CMC). The theory predicts that online interactions follow similar steps as offline interactions (Walther, 1992). Additionally, Walther (1992) argued that these online interactions can be just as personal as those that occur face-to-face (FtF) and, as a result, can have the same level of influence. In fact, it was found that in a single conversation, those interacting online actually have greater gains in attributional confidence than their FtF counterparts (Tidwell & Walther, 2002). An explanation for this phenomenon is the discovery that users of online

communication have the ability to adapt to the information presented and use this information to meet their needs in forming an impression (Walther, Loh, & Granka, 2005). This is to say that, although online communication may lack many of the nonverbal cues found in FtF communication, users of CMC gather information from the text presented, the language used, the pictures displayed, or other cues offered by the sender in order to form an impression about the attributes of the other. For example, a study by Lea and Spears (1992) demonstrated that—in a CMC setting that filters out many common social cues—variations in paralanguage, such as punctuation, affect social perceptions of the other.

Even when only limited cues are provided, online interactions provide an opportunity for individuals to form an impression of one another (Walther, 1992). This may certainly be the case when an individual is seeking health information on the Internet, especially in an online Q&A forum. When forming an impression about a user providing health information in such a setting, it is likely that individuals take into consideration any cues available to them in order to determine whether the source is credible and can be trusted as an expert on the topic. In this particular online context, these cues may include the username and avatar of the user, background information about the user (e.g., occupation, affiliation, education), and the intelligence level of the language in which the response is written.

Despite the limited cues present in these Internet interactions, Westerman, Van Der Heider, Klein, and Walther (2008) posited that some cues might be more useful than other cues when forming impressions about others online. Westerman et al. (2008) suggested that, although SIPT was not originally designed to explain this possibility, future research should seek to examine the variance in the importance of different cues across diverse channels. Yahoo! Answers—an online Q&A forum that, as previously mentioned, is gaining popularity as a go-to source for online health information seeking—is an online channel that provides a new context in which to study the importance of these different cues when forming an impression about the credibility of an online source. Evaluations of credibility may be particularly critical in such a context, because although Yahoo! Answers provides “surprisingly high-quality (aggregate) answers,” there is “substantial variability in the quality of individual answers” (Harper et al., 2008, p. 10). Therefore, the current study examines the importance of various online cues in the context of Yahoo! Answers. Specifically, the current study looks to examine how the perceived source

expertise (as indicated by language cues and affiliation cues) of a user responding to a diabetes-related question on a forum may influence the perceived credibility of the user, and thus have an effect on the amount of type 2 diabetes knowledge an individual gains from reading the user’s response. If the findings of this study indicate that one or both of these online cues increases credibility, and thus, knowledge gain, there could be valuable implications for the development of online health campaigns and materials created to better educate the public about the symptoms and risks of diabetes.

Health Consciousness and Online Health Information Seeking

Given the popularity of online information seeking, we must consider the relationship between health, health consciousness, and online health information seeking. Health consciousness is a concept that relates to an individual and their attitudes towards participating in healthy activities (Moorman & Matulich, 1993). Recent research has shown that individuals who feel they have little control over their health are not actively seeking out health information as frequently as healthy individuals (Ek & Heinström, 2011). Those who identify as having low health consciousness are less likely to watch what they eat or monitor the way they live (Ek & Heinström, 2011). From these findings, we can infer that individuals who are at risk for diabetes and have low health consciousness might not seek information about their symptoms or risks. This lack of interest in seeking out information about their health presents a roadblock for these individuals and potentially increases their chances of fully developing type 2 diabetes because, if they are not aware of their diabetes risk, they might lose the opportunity to make changes to their lifestyle that could improve their health. One important indicator of the need to make lifestyle changes is known as body mass index (BMI), which relates to an individual’s height and weight ratio (National Heart, Blood, and Lung Institute, n.d.). Robinson and Smith (2003) found that individuals scoring high in health consciousness were more likely to have a healthy BMI, and these individuals tended to feel better about their health. Therefore, based on this research, we predict:

H1: Individuals with higher BMI are less likely to be health conscious.

Research has also found that individuals who have strong beliefs about their health place extra emphasis on healthy activities and are more likely to be actively seeking health information (Dutta-Bergman, 2004a). Those individuals who are motivated to learn about a health risk are more attentive to health information and, in turn, acquire more knowledge about health issues (Lo, Wei, & Su, 2013). Consequently, seeking online health information may lead individuals to experience a feeling of empowerment regarding their health (Gray, Klein, Noyce,

Sessleberg, & Cantrill, 2005). However, those who are not interested in their health have a greater feeling that their life and health are mostly influenced by chance rather than their own actions (Ek & Heinström, 2011). Thus, these individuals do not see themselves as having control over their health or of their future. In addition to this, those individuals who have a low level of health consciousness are less likely to see value in online health information and may avoid new health information completely (Ek & Heinström, 2011). Because of their avoidance of new health information, these individuals with low health consciousness could be missing out on an opportunity to increase their knowledge and understanding of a variety of health issues as well as the ability to use this information in many ways to improve their lives (Iverson, Howard, & Kenney, 2008; Nettleton, Burrows, & O'Malley, 2005). For example, a study by Iverson, Howard, and Kenney (2008) found that 55% of individuals who claimed to find health information online said it changed their outlook on their health. Thus, avoidance of new health information could inhibit at-risk individuals from changing their outlook on their health and prevent them from knowing that their life choices have resulted in diabetes. Without a proper understanding of their risks and behaviors, an individual cannot make the appropriate changes that will improve their quality of life.

Because of the established relationships between health consciousness and online health information seeking, we predict:

H2: Individuals who are higher in health consciousness will use the Internet more frequently to gather health information.

Benefits of Online Health Information Seeking

As previously alluded to, the Internet provides a variety of benefits that help individuals learn more about their health, which may lead to potential behavioral changes. One of the advantages of going online for health information is that individuals can learn how to actively manage their own health without the concern of gathering all of the necessary information in a short amount of time (Iverson, Howard, & Kenney, 2008). For example, in a typical doctor's office visit, there is a limited amount of time that the individual gets with their physician, which may not allow for the patient to digest information and think of follow-up questions on the spot. However, in an online format, information seekers have unlimited time to process the information they are gathering and can go back to refresh or review what they have read (Sillence, Briggs, Harris, & Fishwick, 2007b; Walther & Burgoon, 1992). Online information seekers can

prepare themselves with appropriate knowledge and specific questions for their doctor before an upcoming visit (Iverson, Howard, & Kenney, 2008). Research has found that many information seekers rely on online advice before going to see their physician to determine if their condition warrants further attention or in an effort to get more personalized advice (Nettleton, Burrows, & O'Malley, 2005; Sillence & Briggs, 2007; Sillence, Briggs, Harris, & Fishwick, 2007b).

Individual health issues, such as diabetes, present opportunities for large groups of patients to share health information related to their specific affliction. Patients with diabetes have found a great deal of support through using online discussion boards (Armstrong & Powell, 2009). In fact, users of online forums expressed appreciation that there were others on the discussion boards who understood and could relate to their condition (Armstrong & Powell, 2009). These virtual meeting places allow those with diabetes to learn about managing their health, network with others, and find information about how to best cope (Shaffer-Hudkins, Johnson, Melton, & Wingert, 2014). These boards exist for a variety of health issues, and many rely on this peer-to-peer sharing of experiences to cope with uncertainty. Although the Internet provides these information seekers a wealth of benefits, users are aware that it presents concerns regarding the accuracy and credibility of the information obtained (Nettleton, Burrows, O'Malley, 2005; Sillence, Briggs, Harris, & Fishwick, 2007a, Sillence, Briggs, Harris, & Fishwick, 2006).

Credibility of Online Health Information

Individuals who go online for information are left to decide for themselves whether they think the information is credible (Rains & Karmikel, 2009; Sillence & Briggs, 2007). Research has suggested that perceived online credibility is a multi-dimensional construct that includes aspects such as the source's organizational affiliation and whether the source is selling a product along with their advice (Rains & Karmikel, 2009). A study by Nettleton, Burrows, and O'Malley (2005) found that individuals have greater trust in health information websites when they are run by organizations that exist outside of the Internet, such as well-known organizations like the American Diabetes Association or a federal organization such as the Centers for Disease Control and Prevention (Dutta-Bergman, 2003; Freeman & Spyridakis, 2009). On the other hand, users are skeptical of any site that offers to sell them something, instead placing their trust in sites that have professional sources and sites where the motivation of the website is clear (Nettleton, Burrows, & O'Malley, 2005; Sillence & Briggs, 2007). Nonetheless, information seekers looking for advice still have to make a final decision about how credible the information is that they find (Sillence, Briggs, Harris, & Fishwick, 2006). Because individuals who frequently seek information online have more experience in

evaluating the credibility of the information and are likely more comfortable with using online information, we predict that:

H3: Individuals with more experience seeking health information online will be more likely to view online health information as credible.

Freeman and Spyridakis (2009) manipulated online health information to see if including contact information, displaying a logo, and using medical terms would influence perceptions of credibility. The researchers found that those who viewed the author as biased were significantly less likely to use the information and to share it with others. Another aspect they studied was the difficulty in reading the article. Participants who judged the article as too easy to read did not see it as containing enough important information. Similarly Lederman, et al. (2014) found that posts that were well-written and contained information that seemed like it would be found in medical literature were held in higher regard and viewed as being from an expert source. Thompson and Ince (2013) suggested that messages that are more difficult to read may be perceived as the source having exceptional knowledge on the topic. Participants may even garner mistrust for information that is written too simply and may view articles that are more difficult to read as being from an expert (Freeman & Spyridakis, 2009). The manipulation of logos, style of language, and use of expert material are all cues that help to form an impression of the source in this CMC environment. SIPT suggests that having more information about the sender is beneficial in forming an impression (Ramirez, Walther, Burgoon, & Sunnafrank, 2002). Based on the elements of SIPT and the research regarding online health information, we predict:

H4: Individuals who view a message perceived as being high in source expertise will view the message as being more credible.

H5: Individuals will learn more from a message they view as being credible.

Each of the hypothesized relationships is included in our proposed path model (see Figure 1). By testing these relationships in a path model, we will be able to test the significance of the proposed relationships as well as see how the obtained data fits the overall tested model.

Methods

Participants

The participating university's institutional review board approved the materials for this study, and participants provided consent before taking part. Participants for this study were sampled from an

introductory communication course at a northeastern university ($N = 227$). Forty-nine percent of participants were male, and the average age of our participants was 19 years ($SD = 1.37$).

Procedures

Participants responded to a set of measures, which included demographics, height and weight (used to calculate their BMI), health consciousness, use of the Internet for health information and type 2 diabetes knowledge. Each participant was then randomly assigned to view one of two manipulations (high source expertise message or low source expertise message). Following their exposure to the stimulus, participants completed a second set of measures, which contained an evaluation of perceived credibility as well as a post-test assessment of participants' type 2 diabetes knowledge.

Stimulus

Participants viewed an image made to look like a screenshot of a question on the Yahoo! Answers website. The user asking the question was named Sam and intentionally had no avatar so as to remain neutral regarding any impact from gender or individual characteristics. The user solicited advice, claiming to have just been diagnosed with type 2 diabetes. After viewing the question, the participants viewed a response to the question that was also made to look like a screenshot from the Yahoo! Answers website. The responder's avatar was the logo of a well-known health organization (American Diabetes Association), suggesting that the responder was affiliated with the organization. The logo for the organization also appeared at the end of the text in the response.

The response contained information about the major symptoms and complications associated with type 2 diabetes. Participants were randomly assigned to view either a high source expertise or a low source expertise version of the response. Because findings suggest that messages that are well-written and contain information from medical literature are perceived as coming from an expert source (Lederman, et. al., 2014), the high source expertise version of the response was characterized by a formal message tone, proper grammar, and use of medical terminology. The high source expertise version of the response contained statements such as, "Diabetes is a disease in which your body is unable to properly use and store glucose," "Type 2 diabetes develops when the body becomes resistant to insulin or when the pancreas stops producing enough insulin," and "Diabetes can occur in anyone, but people who have close relatives with the disease are more susceptible." Because findings also suggest that messages that are written simply and are not difficult to read are perceived as being less trustworthy (Freeman & Spyridakis, 2009), the low source expertise version of the response was characterized by an informal

message tone with colloquial grammar and a distinct lack of medical terminology. The low source expertise version of the response contained statements such as “Diabetes messes with your glucose (people usually call it ‘blood sugar’),” “It makes it so your body has trouble using and keeping the glucose,” and “There are a bunch of other symptoms too.”

Before participants were asked to evaluate perceptions of the responder in the set of measures following exposure to the stimulus, they were shown the name, the avatar (i.e., the logo of the health organization), and a short “bio” of the user from the response that they had viewed in order to remind them of the source of the message to which they had been exposed.

Measures

Health Consciousness. Health consciousness was measured using a scale developed by Dutta-Bergman (2003). The assessment of health consciousness consisted of five items measured on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree,” and was reliable ($\alpha = .89$, $M = 5.79$, $SD = .96$). The scale included items such as “Living life in the best possible health is very important to me” and “I actively try to prevent disease and illness.”

Use of the Internet for Health Information. An assessment of each participant’s use of the Internet for health information was measured with five items adapted from a scale developed and used by Iverson, Howard, & Penney (2008). The original scale was modified from a dichotomous Yes/No answer format to a 7-point Likert scale measuring from “strongly disagree” to “strongly agree.” Items from the scale included “I have used the Internet to find information on medical problems or health-related concerns” and “Information I have found on the Internet changed the way I think about my health.” A confirmatory factor analysis showed that all five items loaded together as one component with factor loadings over .66, except for the fourth item (“I feel that my doctor would be willing to talk with me about my Internet findings”),

which had a factor loading of .47. Despite its lower factor loading, it was decided to include this item in the scale due to the overall alpha reliability identified for the scale, ($\alpha = .75$, $M = 5.09$, $SD = .95$).

Type 2 Diabetes Knowledge. Participants’ knowledge of type 2 diabetes was measured using a 4-item assessment developed for the study. The assessment included items such as “Type 2 diabetes can occur when your pancreas produces too much insulin” and “Having relatives with type 2 diabetes makes you less vulnerable to getting it.” Participants selected whether they felt each statement was true or false, and they received one point for each question that they answered correctly. Thus, the assessment was scored on a scale of 0 to 4, where a score of 4 would indicate that the participant had answered all of the questions correctly and a score of 0 would indicate that they had answered none of the question correctly. Type 2 diabetes knowledge was measured for each participant both before viewing the stimulus ($M = 2.94$, $SD = .79$) and after viewing the stimulus ($M = 3.54$, $SD = .60$).

Credibility. A modified version of a credibility scale developed by McCroskey and Teven (1999) was used to assess perceived credibility of the source of the response. The scale includes three sub-scales of credibility: competence ($\alpha = .92$, $M = 5.66$, $SD = .96$), goodwill ($\alpha = .86$, $M = 5.51$, $SD = .88$), and trustworthiness ($\alpha = .92$, $M = 5.38$, $SD = .98$). Each scale consisted of six bipolar adjective pairs measured on a 7-point semantic differential scale. The scale included adjective pairs such as “Incompetent – Competent,” “Does not care about the other person – Cares about the other person,” and “Untrustworthy – Trustworthy.”

In order to create a unidimensional factor of credibility, the three sub-scales of credibility were entered into a confirmatory factor analysis. Competence, goodwill, and trustworthiness each returned factor loadings over .84 (see Table 1 for factor loadings), which confirmed that these three factors comprised the higher order factor of credibility. The higher order factor of credibility was created, and the alpha for this scale was reliable ($\alpha = .94$, $M = 5.53$, $SD = .81$).

Table 1 Factor Loadings for Confirmatory Factor Analysis of Higher Order Perceived Credibility

Scale	Credibility Loading
Competence	0.84
Goodwill	0.86
Trustworthiness	0.91

Results

Manipulation Check

An independent samples t-test was used to check the effectiveness of the manipulation. The

results of the t-test demonstrated a significant difference between the manipulated messages on perceived credibility, $t(215.22) = 4.34$, $p < .001$. Therefore, participants who viewed the high source expertise message ($M = 5.77$,

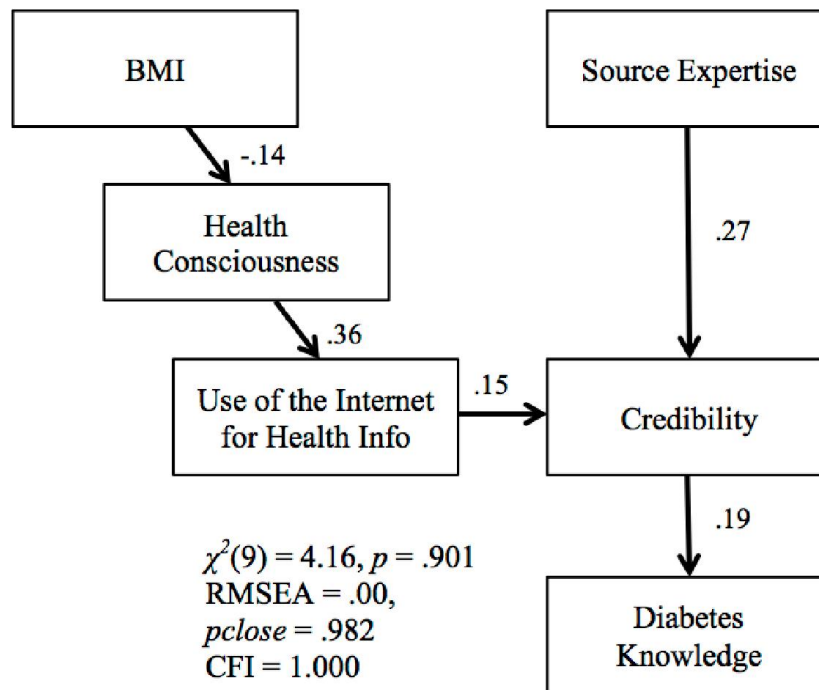
$SD = .66$) perceived the responder to be more trustworthy and expert than participants who viewed the low source expertise message ($M = 5.32$, $SD = .87$).

Testing the Proposed Path Model

Hypotheses 1 through 5 were tested using path modeling techniques in Amos (v. 22). The proposed path model was tested, and the results indicated that the model provided a good fit of the

data, $\chi^2(9) = 4.16$, $p = .901$, $RMSEA = .00$, $pclose = .982$, $CFI = 1.000$. See Figure 1 for the tested model and path coefficients.

Figure 1 Tested Model with Path Coefficients



Hypothesis 1 predicted that BMI would have a negative influence on health consciousness, such that participants with a higher BMI would have lower levels of health consciousness than participants with a lower BMI. Hypothesis 1 was supported, as the path from BMI to health consciousness was significant and in the predicted direction ($b = -.14$, $p < .05$).

Hypothesis 2 predicted that health consciousness would have a positive influence on use of the Internet for health information. This hypothesis was supported, as the path from health consciousness to use of the Internet for health information was significant and in the predicted direction ($b = .36$, $p < .001$). This finding suggests that individuals who are more health conscious are more likely to use the Internet to find and research health information.

Hypothesis 3 predicted that use of the

Internet for health information would have a positive influence on perceived credibility of the responder. This hypothesis was supported, as evidenced by the significant path in the model from use of the Internet for health information to credibility ($b = .15$, $p < .05$). This finding suggests that individuals who are more familiar with online health information were more likely to find the source of the health information presented in this study as credible.

Hypothesis 4 predicted that the manipulated source expertise of the response (coded as low source expertise = 1 and high source expertise = 2) would have a positive influence on the perceived credibility of the responder, such that participants who viewed a response with high source expertise would perceive the responder as being more credible. The path from source expertise to credibility was significant ($b = .27$, $p < .001$), and thus, this hypothesis was supported.

Hypothesis 5 predicted that the perceived

credibility of the responder would have a positive influence on an objective measure of type 2 diabetes knowledge. This hypothesis was supported, as the path from credibility to type 2 diabetes knowledge was both significant and positive ($b = .19, p < .01$). This finding has important implications for message design, as it suggests that a message that is perceived as having a credible source can increase a user's knowledge about a particular health topic or issue. The implications surrounding these findings are discussed below.

Discussion

As type 2 diabetes continues to be a significant health concern in the U.S., it is important to educate individuals about the signs and symptoms so that they may avoid later complications. Because online health information seeking is on the rise, the Internet is a useful channel through which to communicate this information. However, because of the abundance of both accurate and inaccurate information on the Internet, users must constantly evaluate the source of the health information they are seeking by quickly forming impressions about the source. Social information processing theory (Walther, 1992) provides a guideline in regards to how certain cues are utilized to form impressions of others online, although Westerman et al. (2008) hypothesized that some cues might be more important than others in this process. The current study looked specifically at perceived source expertise, as indicated by language cues and affiliation cues, and how the manipulation of this attribution would increase or decrease the source credibility of an online health information message, thus leading to greater knowledge on the topic. The most important findings from the study involve how to effectively increase knowledge of the signs of diabetes. These findings are important because there is a large percentage (22%) of the U.S. population on the verge of diabetes (Geiss, et al., 2010), and increasing awareness of the signs of diabetes might help those in the prediabetes stage avoid getting full onset type 2 diabetes, as well as prompt those who are currently undiagnosed to seek treatment.

The results of this study identified an important relationship between perceived credibility and increased knowledge regarding important signs of the onset of diabetes. Research has shown that individuals perceive information to have a greater value when it comes from recognizable sources (Freeman, & Spyridakis, 2009; Nettleton, Burrows, O'Malley, 2005; Sillence, Briggs, Harris & Fishwick, 2006). The results from this study add to this literature

by suggesting that the way the text was written, in addition to the recognizable affiliation of the source, contributed to an increased sense that the information was coming from an expert. The implications of this finding are important to online health organizations that are crafting health messages and responding to information seekers in online forums. The data indicate that, for a population of educated individuals, it is important to avoid writing a message too simply because some individuals may discount what they have read when it does not seem to be from an expert (Freeman & Spyridakis, 2009), which may prevent them from gaining important knowledge. These findings suggest that organizations should create messages that have greater detail and more complex information, as these types of cues increased participant ratings of credibility, which increased knowledge of diabetes symptoms. (However, this information should be used with caution, as again this audience, was educated.) These findings also demonstrate support for SIPT (Walther, 1992) as the participants were able to form an impression about the source using the limited information provided in the post.

The results of this research also indicate that those individuals who used the Internet frequently to gather health information were more likely to rate the information they read as being credible. Their experience with online information most likely increased their understanding of the important elements of credibility in a message, such as the language used, and increased their ability to judge the source. Therefore, helping individuals become more comfortable with searching for health information online may increase their ability to judge the credibility of a source.

In addition to the finding that use of the Internet increased feelings of credibility, it was also found that those in the sample who were higher in health consciousness were more likely to use the Internet to find health information. This finding is important in showing that those who are interested and are seeking health information online feel more comfortable judging the credibility of the information, and, when they find accurate information, they are likely to learn from the experience. This finding also supports previous CMC research, which has posited that those with more experience online will likely be more comfortable in gathering information, and that information seekers often turn to the Internet first (Nettleton, Burrows, O'Malley, 2005; Sillence & Briggs, 2007; Sillence, Briggs, Harris & Fishwick, 2007b). Thus, campaigns should look to increase health consciousness, as this helped increase information seeking, and eventually, knowledge.

Furthermore, this study found that individuals with a higher BMI were less likely to be concerned about their health. This aligns with the research of Robinson and Smith (2003), who found a significant relationship between low health consciousness and high BMI. When dealing with a

preventable issue, such as diabetes, this lack of interest in living healthy is a definite obstacle to overcome. Individuals in the most at-risk population, those with high BMI, are not actively concerned about their health, which could lead them to become diabetic or suffer other health problems in the future. Those with a BMI in the healthy range were more concerned with their health, which was found in research by Dutta-Bergman (2004a). This concern for their health influenced them to use the Internet to gather health information more often than those who had a higher BMI. Information seeking is an important aspect of remaining healthy, however, without the proper information it can be difficult to understand what actions to take and which to avoid. Those in the sample who were healthy potentially are able to remain healthy because of their willingness to seek and learn from health information online. In terms of disseminating future diabetes-related information to an at risk population, the Internet does not seem to be the best outlet for those who have a high BMI. On the other hand, for those looking to maintain their current good health, the Internet is a great place to share pertinent health information, which can help them to maintain their health and make them aware of the signs of type 2 diabetes.

Future Research

Prior research has supported that there are a variety of factors that influence the credibility of health information online, and that many of these factors need to be present and working together (Dutta-

Bergman, 2004b). Research has also shown that sites that are more visually appealing, have recognizable branding, and display trusted logos are rated higher when it comes to trustworthiness—a component of credibility (Freeman, & Spyridakis, 2009; Sillence, Briggs, Harris, & Fishwick, 2006). Even with the existence of current research related to trust and credibility of sources, more research needs to be done on these topics, specifically regarding online health information and the role that the channel plays (Rains & Karmikel, 2009; Sillence, Briggs, Harris, & Fishwick, 2007a; Wang, Walther, Pingree, & Hawkins, 2008).

Limitations

Yahoo! Answers was chosen because of its widespread use for gathering information, but the strength of the study could be increased by using other online Q&A forums. Another limitation is that the stimuli were static, and thus, the lack of live links and the inability of participants to click for more information may have limited the sense that these were actual postings. There was no way to determine how much time participants spent reading and viewing the stimuli. Individuals who spent more time engaged with the material likely learned more, but it was not possible to measure their attention and time spent. Lastly, the population was comprised of educated young people, and their ability and comfort with reading complex online messages may have influenced the results. Using a population of diabetic or pre-diabetic individuals with a broader age range would have increased the generalizability of the results.

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