PREDICTORS OF CREDIBILITY ASSESSMENTS IN ONLINE INFORMATION

SEEKING OF COLLEGE STUDENTS

By

REBECCA VAN DE VORD

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To the Faculty of Washington State University:

The members of the Committee appointed to examine the dissertation of REBECCA VAN DE VORD find it satisfactory and recommend that it be accepted.

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Erica Weintraub Austin Ph D., Chair

_____

Bruce E. Pinkleton, Ph.D.

_____

Stacey J. T. Hust, Ph D.

_____

Leslie Hall, Ph D.

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Rebecca Van de Vord, Ph D.
Washington State University
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Chair: Erica W. Austin

The Internet has become a popular source of health information, particularly for those young adults who have grown up with the World Wide Web at their fingertips. Due to its structure as a free and open source of information, lacking oversight and regulation, individuals must be able to sort through a multitude of information varying largely in quality and accuracy. The current study employed both an online survey and a Web-response survey to explore the relationship between media literacy, health engagement and need for cognition and their impact on an individual's application of verification criteria, indicative of critical thinking about health information retrieved online. Findings suggest media literacy as having a greater positive impact on health information seeking, in terms of applying critical thinking criteria when forming credibility perceptions, than the other variables considered in this study. The results of the study are relevant to media literacy supporters working to influence educators, communities, state and federal policy makers and grantors. Additionally, these results provide guidance for health educators interested in promoting both their online health information and healthy online health information seeking behaviors. Lastly, this study provides a foundation on which to begin to build a model of media literacy external of a media literacy intervention.

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Dedication

This dissertation is dedicated to my mom, Joyce W. Prairie, and my father-in-law

Theodore A. Van de Vord, who would be so proud.

CHAPTER 1

INTRODUCTION

Every day eight million Americans turn to the World Wide Web in search of health related information (Fox, 2006). By and large, most of this health Information is retrieved with very little verification of quality, based on criteria recommended by experts, employed by information seekers. The Pew 2006 Online Health Search Survey results found that three-quarters of respondents check the source and date of health information they find online "hardly ever" or "never," while a mere 15% "always" do. Furthermore, these numbers have decreased from 2001 Pew data, suggesting that individuals are becoming increasing less likely to apply these important verification measures. This may be due in part to less availability of this type of information on Web sites (Fox, 2006). This makes it more difficult for those users who want to verify data quality to do so and increases the need for information seekers have a greater number of tools in their skill set to use in evaluating online information quality.

Additionally, individuals often overestimate the frequency with which they verify online information (Crespo 2004; Warnick 2004; Flanagin & Metzger, 2007), while research findings indicate that the quality of online health information is noticeably diluted by a vast quantity of misleading, contradictory or inaccurate information (Cline & Haynes, 2001; Huntington, Nicholas, Gunter, Russell, Withey & Polydoratou, 2004). This suggests a number of challenges for health information seekers, ranging from knowing how to operate a computer to accessing and sifting through confusing multitudes of information to retrieve accurate, relevant, high quality information (Brashers, Goldsmith & Hsieh, 2002; Rains, 08) and understanding how to appropriately

apply what they find. The potential risk to the individual who might take action based on inaccurate information, as well as the potential to misapply even accurate information, is of considerable concern to health professionals (Huntington, et al.2004).

This is of particular interest within the college student population. These individuals are often, for the first time in their lives, separated from family and long-time health care providers, as well as possibly searching for sensitive information they are not likely to discuss with trusted others. Prior research findings suggest that while college students acknowledge concerns regarding the credibility of online information, they are unlikely to verify the accuracy of the information they retrieve from these sources (Huntington, et al., 2004; Metzger & Flanagin, & Zwarun 2003).

The issue is not that individuals overestimate the quality of online information since overall credibility perceptions of online health information are low (Berland, et. al, 2001; Huntington, et al., 2004). Nor is it that individuals knowingly adopt information they do not find credible, otherwise defined as believable (Fogg, 2003; Tseng & Fogg, 1999). The concern, rather, is that individuals do not apply the verification criteria experts recommend and requiring critical thinking, but instead tend to gauge the credibility of a Web site based on surface factors, wholly unrelated to content, such as organization of information, ease of navigation and professionalism of site design (Crespo, 2004; Fogg, 2003; Freeman & Spyridakis, 2003). With this in mind, the question arises as to how to best assist and motivate individuals to critically evaluate the health information content they access online and move beyond credibility assessments based largely on the look and feel of the site, rather than on the quality of the information it contains. Credentialing processes of Web sites have been explored, and their success is

questionable (Flanagin & Metzger, 2000; Gagliardi & Jaded, 2002; Mittman & Cain, 2001; Napoli, 2001). Others propose a need for training programs (Crespo, 2004) and more specifically media literacy as a potential answer (Frechette, 2006).

The goal of the current study, therefore, was to explore factors, including media literacy defined as the ability to critically analyze media messages (Bergsman & Camey, 2008), which may influence the criteria that serve to form the basis of an individual's credibility perceptions regarding online health information. The study focused on college students, as this group is heavily reliant on the Internet as a source of information generally and health information specifically, while potentially lacking in trusted sources for information verification and unlikely to apply recommended verification criteria.

CHAPTER 2; LITERATURE REVIEW

Health Information Seeking and College Students

Research conducted in experimental settings predicts that credibility perceptions are affected by source expertise and knowledge of topic (Eastin, 2001; Hong 2006). Information seeking, however, is motivated by uncertainty (Wilson, 1997, 1999). Individuals search for information in order to fill gaps between what they know and what they need to know in a variety of domains, including health (Cotton & Gupta, 2004; Warner & Procaccino, 2004). Taken together with research suggesting that interest or involvement in a topic, such as health, promotes information seeking (Dutta-Bergman, 2004a; Gould, 1990; Moorman & Matulich, 1993) implies that it is the perception that one lacks knowledge in an area of interest or need that motivates the information seeker. The consequence being that verifying information quality in real world settings is likely to be hindered by lack of knowledge related to the specific topic of the information search (Freeman & Spyridakis, 2003).

College students are interested in and seek information about a variety of health issues, related more to lifestyle than illness prevention (Lewis 2006). Health priorities for this group include substance abuse, stress, anxiety, low self-esteem, lack of social support, and sexual health (Sax, 1997). Other scholars exploring the health information seeking practices of college students note that body issues, nutrition and exercise are primary topics of interest (Hanauer, et al., 2004; Gray, Klein, Noyce, Sesselberg, & Cantrill, 2005; Lewis, 2006).

A popular source of health information for individuals in this age group is the Internet. Information seeking generally occurs within the confines of the media that

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individuals normally use and with which they are most comfortable (Gantz, Fitmaurice, & Fink, 1991). For college students in this day and age, this is likely to be the computer. According to the 2004 Pew Internet and American Life Project, 77% of the 95 million American adults accessing online health information were between the ages of 18-29 (Fox, Anderson & Rainie, 2005). The Kaiser Family Foundation 2001 survey findings suggest that two-thirds of 15-24 year olds were going online to search for health information, 25% got "a lot" of health information online and 40% indicated acting on what they found (Rideout, 2001). Therefore, there seems little doubt that individuals in this age group view the Internet as an important source of health information. Additionally, the Internet provides an anonymous venue for students who may be searching for information regarding substance abuse or sexual health that they may not be willing to discuss with informed adults. This new found distance, both physically and emotionally, from trusted others leaves the individual searcher primarily responsible for verifying the quality of the information retrieved.

Several characteristics of the Internet exacerbate concerns regarding the credibility of information. These characteristics include the low cost of publishing, anonymity of authorship, the fast pace at which information is added and changed, and lack of peer review and regulation resulting from a global marketplace (Cline & Haynes, 2001; Mittman & Cain, 2001). All of these contribute to the substantial quantities of unreliable, biased, incomplete, misleading and inaccurate information available online (Cline & Haynes, 2001, Gagliardi & Jadad, 2002; Rice, 2001; Mittman & Cain, 2001; Napoli, 2001). Even greater concern is raised if users are not discussing the information retrieved with anyone else, checking the source or currency of the data, or otherwise

verifying its accuracy. Huntington and his colleagues (2004) found that respondents

under the age of 34 were 2.5 times less likely to check the source of the information than

those over 34.

Credibility Assessments

Perceived credibility is a subjective concept based on an individual's

interpretation of various source, media and information elements and differs from the

actual credibility of the information (Crespo, 2004; Fogg & Tseng, 1999; Warnick,

2004). There are a variety of criteria that experts counsel individuals to employ in order

to assess the credibility of information retrieved from online sources and avoid

information of dubious quality. These include currency of information, expertise and

identification of source and availability of contact information, ability for information

exchange or interactivity, statement of purpose of the site as an indicator of bias,

evidenced-based content and attribution of evidence source, and links to external site

information (Cline & Haynes, 2001; Escoffery et al. 2005; Fox & Rainie, 2002; HSWG,

1999; Kim, Eng, Deering & Maxfield, 1999; Wathen & Burkell; 2002). Further,

accuracy and completeness of site content should be explored through comparison with

other sites or sources as a means of fact checking (Fox & Rainie, 2002). Those

individuals relying on fewer sites for information are more likely to believe the

information found than those relying on four or more sites during an information search

(Hunting et al, 2004). Additionally, studies measuring perceived credibility assessments

often include accuracy, authority, objectivity, currency, and completeness (e.g., Austin &

Dong, 1995; Flanagin & Metzger, & Zwarun 2003; Johnson & Kaye, 2000; Kiousis,

2001; Gzaznio & McGrath, 1986), inferring that these are constructs an individual should consider when assessing the credibility of information.

Online health information seekers, however, exhibit a variety of behaviors that serve to increase their chances of acquiring and adopting information of poor quality. The sheer availability of billions of pages of information requires that users exert some effort in order to obtain high quality, relevant information. The quality of information accessed is largely determined by the quality of the information search. Most users, however, indicate that their information seeking priorities are to access information in the quickest, easiest, and most convenient way (Crespo, 2004; Napoli, 2001; Wathen & Burkell, 2002; Rice, 2001). Often beginning an online health information search with a generic search engine such as Google or Yahoo, seekers are likely to view only the links on the first page or two of results (Rice, 2001). Further, limited numbers of search terms, spelling and typographical errors all contribute to the type of information ultimately retrieved (Hargittai, 2006). In terms of health information, many users may not have sufficient understanding of the issue to employ more than one- or two-word searches, which would lead to a greater number of hits but also would require more effort to sift through. Further, medical terminology is often complicated and difficult to spell and while some search engines include spelling tips, Hargittai's (2006) research suggests that users mostly ignore these tips and may inadvertently be directed to sites with identical errors, calling into question the quality of information presented on the site.

Once on a site, users may employ heuristics based on Web design and organization to weed out those sites they do not make use of (Sillence, Briggs, Harris, Fishwick, 2007; Wathen & Burkell, 2002). Individuals base credibility perceptions of

online information at least, in part, on professionalism and organization of the site design (Crespo, 04; Fogg, 2003; Huntington, et al. 2004; Sillience, et al, 2007; Warnick, 04), rather than apply the criteria experts suggest. The findings that respondents generally report being satisfied with the information found online (Cline & Haynes, 2001) does not indicate quality but more likely relevance, usability and consistency with what the user already knows (Freeman & Spyridakis 2003; Wathen & Burkell, 2002).

In sum, the majority of online health information seekers do not apply recommended verification criteria in order to evaluate actual information credibility (Esyenbach & Kohler, 2002; Flanagin & Metzger, 2000; Fox & Rainie, 2002; Gray, et. al, 2005 Siebert, Wilke, Delva, Smith, & Howell 2003). In other words, they do not think critically about the information retrieved. It is the behavior of subjects in the minority in these studies however, those who do utilize recommended credibility cues, that provide evidence of characteristics predictive of critical online health information seekers. For example, while three-fourths of the participants in a 2002 Pew Survey did not conduct the type of thorough online health information search experts recommend, 25 percent did

Predictors of Critical Information Evaluation

As noted previously, source identification, currency, comprehensiveness and potential bias are all suggested as critical criteria in verifying the quality of online health information. In a recent study, Crespo (2004) found that 37% of his subjects rejected information due to lack of an identifiable source and 47% because the Web site was too commercial. This is consistent with a Flanagin and Metzger (2007) finding that, in an online context, credibility assessments are lower when explicit persuasive intent is evident. Research findings suggest that verification of information, such as that noted in

these studies, is positively associated with skepticism in that skeptical users are more likely to verify online information, which in turn may decrease skepticism (Flanagin & Metzger, 2007). Huntington and his colleagues (2004) note that individuals indicating less believability of online health information visit a greater number of sites during an information search and compare information found between the sites visited. Further, findings of contradictions between sources increased skepticism toward the information. Specific to college students, Escoffery, et al (2005) found that 25.4% of their college age subjects reported talking to a doctor about the health information they found, thereby providing comparison and verification.

An additional predictor of information verification is technology experience. Individuals with more experience are more likely to report that they verify the information they find online (Flanagin & Metzger , 2000; Flanagin & Metzger, 2007). The relationship between experience and perceived credibility is somewhat murkier (Flanagin & Metzger; 2007), with early findings suggesting that experience positively predicts credibility perceptions (Flanagin & Metzger, 2000) and later work of these same authors (2007) suggesting there is no relationship between the two. Meanwhile, Rains' (2008) findings indicate that those with greater experience held less positive attitudes about the quality of health information available. He suggests that Internet efficacy mediates the relationship between experience and credibility, noting that those with more experience as well as confidence in their information searching skills, hold more positive attitudes regarding their ability to find quality health information. Furthermore, reliance on a particular source of information predicts greater perceived credibility of the information available through the source (Hong, 2006; Johnson & Kaye, 2000), and

reliance may have an inverse relationship with experience, in that individuals with less Web experience have been found to be more reliant on the Web as a source of information (Johnson & Kaye, 2004). Taken together, the research suggests that individuals with less technology experience and, or confidence in their ability to negotiate the environment, yet reliant on the Web for health information, may both perceive online information as more credible and be less likely to verify the actual content credibility prior to forming credibility perceptions. This is particularly true in light of the fact that Internet self efficacy positively correlates with Internet experience (Eastin & LaRose, 2000).

Noticeably missing from the research literature is empirical evidence linking one's interest in health and health information, referred to as health engagement, to credibility perceptions. It is clear that an individual's interest in their own health motivates health information seeking (Dutta-Bergman, 2004a, 2004b, 2005; Johnson, 1998; Gantz, Fitzmaurice & Fink, 1991; Gould, 1990). Yet, there is no research to date that suggests whether factors related to an individual's health engagement influences the factors an individual employs to form information credibility perceptions. It is critical that health communicators and health educators understand how best to motivate individuals to critically evaluate online health information in order to avoid potential harm and promote healthy behaviors.

In sum, research findings suggest that identification of source and persuasive intent, along with user characteristics of skepticism, Internet experience and perceived efficacy, contribute to critical evaluation of health information found online. This suggests that individuals with this knowledge and skill set might be better able to sort

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through the multitudes of information available and successfully retrieve highly credible information. It would seem likely then, that any training of online health information seekers should include an understanding of these concepts (skepticism, persuasive intent, source characteristics), as well as the skills required to apply this knowledge, including providing experience with online information searches, thereby increasing the individual's self efficacy to replicate good quality information searches.

Media literacy

Media literacy can be defined as the ability to use, analyze, access and evaluate media in a variety of forms (Aufderheide, 1997). The overall goal of media literacy education is to increase critical thinking towards media messages and decrease passive receptivity (Austin & Johnson, 1997; Austin, Pinkleton, Hust & Cohen, 2005; Brown, 2006; Brown, 1998; Feuerstein, 1999; Frechete, 2006; Hobbs & Frost, 2003; Irving & Berel, 2001; Irving, DuPen & Berel, 1998; Levine, Piran & Stoddard, 1999; Scaharrer, 2006; Wade, Davidson & O'Dea, 2002). According to Hobbs and Frost (2003), media literacy education generally involves student's analysis of their own media use, identification of the author's purpose and point of view, knowledge of production techniques, evaluation of media representation of the world, understanding of the economic structure of the media industry. Many programs also will provide students with experience creating a mediated message as well as an activism component.

Media literacy interventions are increasingly suggested as potential health prevention strategies (Austin, Pinkleton, Van de Vord, Arganbright & Chen, 2006; Brown, 2006; Gonzales, Glik, Davoudi, & Ang, 2004; Irving & Berel, 2001) and conducted in K-12 schools. Media literacy interventions have focused on the relationship

between advertising and health issues such as eating disorders (Irving & Berel, 2001; Irving, DuPen & Berel, 1998; Posavac, Posavac & Weigel, 2001; Rabak-Wagener, Eickhoff-Shemek, & Kelly-Vance, 1998; Wade, Davidson, & O'Dea, 2002; Wilksch, Tiggemann, & Wade, 2006), underage alcohol consumption (Austin & Johnson, 1997) or tobacco use (Austin, Pinkleton, Hust, & Cohen, 2005; Gonzales, et. al., 2004). Media literacy is informed, in part, by Social Cognitive Theory suggesting that media depictions of unrealistic positive outcomes stemming from negative behaviors (e.g., alcohol or tobacco consumption) influence expectancies individuals may hold in relation to these behaviors, thereby increasing the likelihood that individuals will engage in these activities (Bandura, 2002).

Towards a goal of decreasing these potential harmful effects of media, media literacy programs teach individuals to critically analyze media messages, thereby decreasing the perception of realism and increasing media skepticism (Austin & Johnson, 1997; Austin, Chen, Pinkleton & Johnson, 2006; Brown, 2006; Irving & Berel, 2001; Posavac, Posavac & Weigel, 2001). To this end, media literacy often focuses on media images, specifically those used in advertising, teaching students to deconstruct the images, question the advertisement's reflection of reality both in terms of its creation and the message sent to viewers (e.g. Austin, et al, 2005; Rabak-Wagner, Eickhoff-Shemek, Kelly-Vance, 1998; Wilksch, et. al., 2006; Gonzaleset. Al., 2004; Irving & Berel, 2001). The lessons of media literacy are broader, however, than their application to images and advertising might suggest. Focus on perceived realism can be termed believability when applied to media as an information source (Austin & Dong, 1995).

In this information age, scholars note the vital importance of information literacy, including the ability to critically analyze and skeptically reflect on media text (Feuerstein, 1999, Hobbs & Frost, 2003; Brown, 1998). Hobbs and Frost's (2003) conducted a study embedding critical media literacy instruction into a yearlong high school English course. The students who received the instruction were better able, than the control group, to identify the purpose, target audience, point of view, and construction techniques used in media messages. The students in the media literacy program displayed better critical thinking skills in their ability to identify omitted information and were more likely to be aware of the blurring of information, entertainment, and economics present in nonfiction media messages, thus suggesting that media literacy can be an effective tool in teaching individuals to critically evaluate nonfiction information.

Frechette (2006) notes more specifically, that to be media literate includes the ability to critically analyze and evaluate information retrieved from online sources. Furthermore, access, a component of media literacy, suggests being able to find and make sense of information found online (Wyatt, Henwood, Hart & Smith, 2005). For an individual to be media literate then, would suggest that he or she has the ability and motivation to find, analyze, evaluate and make use of online information, as well as to create a communication message in an online format. In other words, one purpose of media literacy is to serve as "driver education on the information superhighway" (Frechette, 2006 p. 101). Ultimately, media literacy, through influencing the expectations one has of media, can empower individuals to gain control over media influence and direct it to their own goals (Brown, 1998; Potter, 2004).

Media literacy curricula vary considerably but are tied together with common themes designed to provide skills and knowledge regarding the ways in which media messages impact receivers. Points of emphasis include media's influence on behavior (Cortes, 2005; Semali, 1994), reflection or distortion of reality (Brown, 1998), message construction (Alvermann & Hagood, 2000; Potter, 2004; Scharrer, 2002; Semali, 1994) and understanding persuasive intent (Austin, Pinkleton, Hust & Cohen, 2005; Pinkleton et. al. 2007). Further, the development of strategies and skills with which to discuss, analyze and reflect on media messages, or apply critical thinking skills, (Pinkleton et. al. 2007; Strasburger & Wilson, 2002), is integral to these programs.

Media literacy research therefore suggests that in order to apply critical thinking to media, one must obtain knowledge of media industries including economic systems, production and motives of producers, and an understanding of values, points of view, and believability both from the perspective of the author and the audience. This is consistent with critical thinking literature that suggests that one does not develop critical thinking skills in general but critical thinking about something (McPeck, 1981, 1990). According to McPeck, critical thinking skills are developed as one gains knowledge and skills related to a particular subject area and he and others suggest that these critical thinking skills are not highly transferable (Bok, 2006). "There is, moreover, no reason to believe that a person who thinks critically in one area will be able to do so in another" (McPeck, 1981, p. 7). In other words, this suggests that a critical thinker about media messages might possess knowledge of media industries and message construction, the skills and experience necessary to analyze and deconstruct media messages, and a belief in their own ability to use media to serve their individual goals, consistent with the goals of

media literacy. McPeck (1990) refers to the concept of "reflective skepticism" or skepticism based on knowledge of the topic area (p. 21). He posits that knowledge of the subject area or field guides knowing how and when to ask questions and what kinds of questions to ask. Being skeptical, not taking the truth for granted prompting the asking of questions is, according to McPeck, the cornerstone of critical thinking. This concept of "reflective skepticism" also suggests that knowledge of health could lead one to be more critical towards health information, thereby increasing the likelihood that an individual would seek to verify the actual credibility by asking questions about the information content beyond easily assessed surface cues.

Table 1: conceptual definitions of media literacy variables:

Media literacy facet	Conceptual definition
Knowledge	This concept encompasses an understanding related to the 5 key questions of media literacy: who created the message and why, what techniques are used, why might something be included or left out, what points of view are included? Knowing the answers to these questions requires an understanding of how the media industry works including organizational structures and research regarding media influence.
Experience	Experience, for the sake of the current study, is defined as what tasks an individual can and does do in terms of using a computer and the Internet.
Access	Access is conceptualized as an individual's skills and abilities in getting to online information.
Self efficacy	Self efficacy is conceptualized as an individual's confidence in their own ability to navigate online information, avoiding poor and accessing reliable information.
Skepticism	Skepticism is conceptualized as a lack of trust in advertisers and the information presented in advertisements.
Media comfort	Media comfort differs from skepticism in that it attempts to address an individual's overall approach to media on the assumption that individuals are less likely to media if they have a high level of trust in mediated information.

As previously noted, however, individuals are motivated to seek information in order to fill knowledge gaps. In this case knowledge and skills related to media literacy would more likely promote "reflective skepticism" toward online health information than would engagement in one's health, thereby prompting individuals to apply recommended verification criteria when forming credibility perceptions of Web site content. To date, media literacy interventions have primarily focused on advertising and fictional media portrayals but this does not imply that media literacy would not be effective in terms of providing online health information seekers with the knowledge and motivation to filter out inaccurate or misleading health information. According to Thomas Friedman, "the only really effective filters are the values, knowledge and judgment that kids bring to the Web in their own head and hearts" (Alvermann & Hagood, 2000, p 193).

Table 2: Primary variables of interesting the current study

IV-Media literacy	Defined in table 1.
IV-Health Engagement	An individual's predisposition to thinking about, caring about, being interested in one's health status and believing that behavior choices impact health outcomes. Includes: health esteem, health efficacy, internal health control and motivation for healthiness.
DV- critical thinking	Application of verification criteria; author identification, expertise and goals, site sponsor, information currency, opinion versus fact, thoroughness and citations.

Based on this review of the literature, media literacy curricula generally focus on building knowledge of media industries combined with providing experience creating media which should act to increase students' access and self efficacy regarding media, while increasing skepticism and decreasing overall trust in media messages.

Therefore the first set of hypotheses predict that;

H1a: Knowledge, access, experience and skepticism positively, and media comfort negatively contribute to self efficacy,

H1b: Knowledge, access, experience and self efficacy will positively, and media comfort negatively contribute to skepticism

H1C: Knowledge, access, experience, skepticism and self efficacy will significantly, negatively contribute media comfort

Media literacy education is intended to positively contribute to the ultimate goal of increasing critical thinking towards media messages. An individual's understanding of message construction and persuasive intent should motivate information evaluation to extend beyond surface cues, such as the look and feel of a Web site, forming the basis for the credibility of the information presented, leading to the second set of hypotheses:

H2a: Skepticism and self efficacy will positively contribute, and media comfort will negatively

Contribute, to critical thinking towards the author of health online information.

H2b: Skepticism and self efficacy will positively contribute, and media comfort will negatively

Contribute, to critical thinking towards health online information content.

Specific to health information, there is nothing to suggest that media literacy would function differently in its relationship to health information seeking as opposed to

general information seeking. Other factors, however, such as a person's motivation to be healthy or their self efficacy in their ability to be and stay healthy, might influence information evaluations. In that information seeking is motivated by knowledge, it is not likely that these variables will have a stronger relationship with information credibility formation than does media literacy, however, leading to the third set of hypotheses proposed:

H3a: Media literacy variables, skepticism, media comfort and self efficacy, will more strongly associate with critical thinking regarding the author of online health information than will the health engagement variables (health efficacy and health motivation).

H3b: Media literacy variables, skepticism, media comfort and self efficacy, will more strongly associate with critical thinking regarding online health information content than will health engagement variables, (health efficacy or health motivation).

Media literacy variables are expected to positively impact critical thinking towards online health information, and because individuals are more inclined to use information they find believable, individuals with higher means on critical thinking should be more likely to mention media literacy related cues when evaluating a Web site's believability and likelihood of revising the site. Therefore the fourth set of hypotheseis predicts:

H4a: Individuals with higher means for critical thinking will be more likely to list media literacy cues in selecting an authentic Web site they deem most believable than will those low in critical thinking.

H4 b: Individuals with higher means for critical thinking will be more likely to list media literacy cues in selecting an authentic Web site they deem most likely to revisit than will those low in critical thinking.

Further, the literature review suggests that individuals are not likely to trust or use information they do not consider believable. Therefore the fifth hypothesis predicts:

H5: The more believable an individual rates a Web site the more likely an individual will be to rate the site as most likely to revisit.

Ultimately, the goal of media literacy would be to ensure that media literate individuals are more inclined to select better health information Web sites and to avoid those with poor quality information leading to the sixth hypothesis.

H6: Individuals noting media literate responses regarding the site they are most likely to revisit are more likely to select a better quality health information Web site than individuals not employing media literacy responses.

To summarize, the goal of the current study was to test the hypothetical relationships depicted in the media literacy process model (figure 1). Media literacy, under experimental conditions, has been found to increase skepticism and decrease perceived realism thereby decreasing influence of media messages. The current study theorized that this might occur because media literacy motivates an individual to apply critical thinking to message evaluation and credibility perceptions. Based on the critical thinking literature, it seems likely that media literacy would have greater impact than health engagement, on the relationship between message evaluation and critical thinking.

CHAPTER 3; THE PRETEST

Method

The purpose of the prestest was to thoroughly test the conceptual definitions of media literacy with a sample of the target audience to ensure that interpretation of terminology, used in the eventual online survey, would be consistent with the goals of the study. Both focus groups and a paper based survey were employed to achieve this goal. The creation of the paper-based survey was informed by development and design principles available in the literature (Austin & Pinkleton, 2006; Dillman, 2000, 2008). The survey was distributed in two large university classes with a total enrollment of 200 students. Both classes satisfy a general university science requirement and therefore include students from a wide variety of majors. Approximately 40 surveys were distributed at a neighboring university in lower division education and technology courses. Additionally, three focus groups were conducted exploring students' use of the Internet and health information seeking practices. Focus group participants were volunteers from the first two classes mentioned above. Detailed results follow.

Pretest Measures:

Media Literacy Measures

Media literacy is generally measured as part of an intervention, with the assessment of pre-post attitude changes toward media messages being explored. A single example of prior research attempting to measure media literacy levels, separate from an intervention, through the development of a smoking media literacy scale (Primack, Gold, Land & Fine 2006; Primack, Gold, Switzer, Hobbs, Land & Fine, 2006) was found in the literature. For use in the current study, no existing valid and reliable scales of media

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literacy per se were found that encompass the constructs suggested in the literature to be integral to media literacy: knowledge of media, media skills and experience, understanding persuasive intent, self efficacy, and access. Therefore, a mix of preexisting and newly developed scales was used in the current investigation.

Understanding of persuasive intent was measured using the nine-item "skepticism toward advertising scale" (Obermiller & Spagenberg, 1998; 2000; Obermiller, Spagenberg & MacLachlan, 2005). The nine-item scale focuses on skepticism towards advertising based on the definition of skepticism employed by the authors "the tendency toward disbelief in advertising claims" (1998, p. 170). The assumption in using this scale for the current study was that if one is not skeptical towards advertising one is not likely to be skeptical towards any type of media message, since advertising is generally recognized as one of the most blatantly biased media messages produced. The original nine-item scale is based on a five-point response scale ranging from 1 (strongly disagree) to 5 (strongly disagree) and includes items such as "the aim of advertising is to inform consumers about a product" and "advertisements can be a reliable source of information." For the purposes of the current study the original 5-point scale was expanded to 7-points in order to maintain consistency with other scales used in this study. An additional measure of "understanding persuasive intent" was newly developed and called "media comfort." The six item seven-point strongly disagree to strongly agree scale was intended to measure more global attitudes towards mediated information than are addressed by the skepticism scale and included items like "When looking for online information I can usually find what I need on the first one or two sites I visit"

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Measure of "access," referring to the ability to search for and retrieve health information, was based on the work of Hargittai (2005, 2006, 2007). As noted by Hargittai, simple availability of online information does not ensure that individuals will be able to negotiate the vast quantities of information available. The author has found digital literacy to significantly positively correlate with actual, observed ability to search for online information and therefore to provide a strong proxy measure of ability to access information being sought. Digital literacy was measured using a seven-point Likert-type scale asking subjects to indicate no understanding to full understanding of 24 computer-related terms such as malware, mashup and phishing. These terms were updated from Hargittai's original scale based on the input of three computer experts.

The self efficacy scale, newly developed for use in this study, consisted of six items including "I am certain that I can find information online that is accurate." A second self efficacy measure focused specifically on health information seeking, and contained six identical items with the word health inserted, including "I am certain that I can find health information online that is accurate." Items for both measures used a seven-point Likert-type scale with 1 representing strongly disagree and seven representing strongly agree.

The media knowledge measure developed for the current study consisted of six items, four seven-point Likert-type scales and two multiple choice questions. An example of a scaled item includes "the U.S. is just one of many countries whose media is financed almost exclusively by advertising dollars." The two multiple choice questions were "alternative Web sites and blogs, offering a diversity of opinions and information are used by what percent of the population?" and "all of what is currently available on

American television is owned by (number of corporations)?" Both questions gave four choices for respondents to select from.

In addition, reliance has been found to be a predictor of credibility in that individuals rely on information sources they perceive as credible (Hong, 2006; Johnson & Kaye, 2000). Reliance was measured with two single items, the first being "I am likely to turn to the Internet when looking for information" and the second "I am likely to turn to the Internet when looking for health information", employing a seven-point scale from "not at all likely" to "extremely likely."

Dependent Variables

Based on the literature review, the study predicted that the above measures of media literacy would positively associate with the extent to which an information seeker employs a critical thinking approach towards online content when forming credibility perceptions. Critical thinking was conceptualized as evaluating, questioning and analyzing information. Critical thinking towards media was measured in two ways. The first employed a seven-point, strongly disagree to strongly agree, Likert scale originally developed as a verification scale (Escoffery, 2005) measuring to what extent individuals verify information they find by applying seven different author and content related items.. Secondly, the primary purpose of the current study is to determine factors that affect the foundations on which individuals form their credibility perceptions, specifically content cues such as author and contact information versus external or surface cues such as the organization of the Web site. Subjects were therefore asked to think about the last time they searched for health information online and to rank the order of importance in their consideration for each of six items, including "the ease of locating the site and

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information I needed" and "whether or not the site had advertising." Although respondents generally do not like to rank information (Austin & Pinkleton, 2006), using a Likert-type scale allows individuals to rate all items as equally important when realistically one must often prioritize criteria based on credibility cues available on the Web site.

Control Variables

     Health Engagement Measures

The question as to whether one's media literacy level is more or less important than one's interest in health in terms of assessing the credibility of online information cannot be answered without measuring some aspect of an individuals health engagement. Throughout the literature a variety of health terminology and measures are employed including health consciousness (Dutta-Bergman, 2004a, 2005; Gould, 2004; Pandey, Hart, Tiwary, 2003), health orientation (Dutta-Bergman, 2004a ; 2004b, O'Keefe, Boyd, & Brown, 1999), health motivation (Moorman & Matulich, 1993), and health involvement (Hong, 2006). Because one's health perspective is, like media literacy, multifaceted, the current study utilized factors from the multidimensional health questionnaire (Snell, 1996), one of the most comprehensive, valid and reliable scales available. The original scale consists of 20 factors, each measured with five items on a five-point Likert-type scale, with 1 representing "not at all characteristic of me" and 5 representing "very characteristic of me." For the purpose of the pretest the following

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subscales were selected: health efficacy, internal health control, motivation for healthiness, and health esteem, and the Likert scale increased to seven points. The use of these four scales was expected to identify individuals for whom health is important, something over which they believe they have control, and is tied to their identity so that accessing quality health information should be important to their self-concept. Items in the health efficacy scale included "I have the ability to take care of any health problems that I may encounter." Motivation for healthiness included items like "I'm very motivated to be physically healthy." Health esteem items included "I am proud of the way I deal with and handle my health" and internal health control was measured with items such as "What happens to my physical health is my own doing."

Finally, prior research suggests that need for cognition (Cacioppo & Petty, 1982; Cacioppo, Petty & Kao, 1984) is a personality trait related to the degree to which individuals enjoy thinking and it seemed likely that need for cognition would positively associate with critical thinking. In order to control for this factor as possibly being more strongly related to critical thinking regarding media than either media literacy or health engagement, the scale was added to the pretest instrument.

Pretest Results

 Focus Group Results:

College students were recruited from a 200 level Animal Sciences course that meets the general science requirement for all University students. Three focus groups were conducted (total n=35) discussing participant media use, information seeking and media credibility perceptions. The following paragraphs highlight the salient topics consistent across the three groups.

All participants said they owned a personal computer with Internet access. Most indicated having laptops and wireless capability. No one suggested any difficulty accessing the Internet and most spend at least some time each day online involved in activities not related to school work. The most popular items mentioned were Facebook or MySpace and YouTube. YouTube serves, for many students, as a source of entertainment, from which they access music, music videos, and a variety of other videos they find humorous or entertaining. A few participants mentioned having watched the Presidential debates on YouTube because they did not have access to a television.

Most participants have had at least a keyboarding class, and several had taken basic Microsoft office functionality classes while in K-12 or college. Two students were certified in Microsoft Word and one in Excel as a result of courses taken in high school. Several students considered themselves "novice" computer users because they could use the basic office programs but could not install or "fix stuff" and did not know how to troubleshoot problems. Most participants put themselves in a mid-level category, indicating they could troubleshoot, although it generally involved a process of trial and error. They regularly used system tools to keep their computer functioning well and knew how to protect their computer from viruses. A few participants considered themselves to be experts and said they could fix things easily, for example resetting their computer to a date previous to a problem occurring, or because they were certified in the use of Microsoft Office products.

In terms of information seeking, all students indicated that they use the Internet for information seeking, often when they want to learn more about something they heard elsewhere. Participants were asked if they had followed the Presidential election, which

most had, and where they had acquired information. Traditional choices such as TV and newspapers were mentioned. Online sources generally included CNN or the news page of their email home page such as Yahoo, MSN, or hotmail. None of the students indicated having participated in a blog or seeking out alternative news sources. Some mentioned that "bloggers are not credible."

When asked if they had looked for health information online in the past year most indicated yes. For those who said no, when asked specifically about nutrition, exercise, or diet advice they said they had searched for these types of information. Weight loss products, protein benefits, diet advice (eat this not that), vaccines, and birth control were all topics about which participants indicated having searched. A couple of individuals mentioned using online images to identify a rash.

Participants admitted to recognizing that there is unreliable or "sketchy" information online. Credibility cues mentioned most often related to the design of the site or checking several sources for consistency of information. Important design cues include the "fanciness" of the site. Plain, boring sites are interpreted as not being credible. Further, user friendliness and language, as in no grammatical or spelling errors, were reported as being important. One student mentioned he views emotional language as being opinion rather than fact. Some students mentioned consistency with what they have heard or already know and the URL as credibility cues. URLs ending in dot org or dot edu are viewed as more credible than dot coms, according to these participants. Additionally, some suggested that more credible sites identify the author and provide contact information although others noted finding this information difficult to obtain. Consistent with third person effect, the individuals participating in the focus groups

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seemed to feel they were somewhat less gullible than their peers in terms of believing information available online. According to the participants, some people believe that anything posted online is credible.

When asked how they use information they find online, specifically health information, the majority suggested they seek information primarily to satisfy their curiosity about some thing. If an issue is serious, some thing important they need to know, they will contact their mom (generally the first source of information for all participants), a doctor, or student health which has a 24-hour hotline. According to these participants, they generally do not adopt information they find online, and if they were going to they would verify it with other sources, including interpersonal sources. Checking as many as 8-10 Web sites to verify consistency of information was mentioned. One participant suggested she was more apt to try something heard about via word of mouth than something read online. (Pretest survey results, however, indicate 50.6% of respondents changed their behavior based on information acquired online.)

Participants were asked how the presence of advertising on a site influenced credibility perceptions. Answers ranged from "it's the price of doing business" and the ability to just ignore it, "our generation is really good at blocking out ads online," to the presence of well designed ads increasing the perceived credibility of a Web site "because it means someone wants to invest in the site." Participants, for the most part, do not perceive that advertisers influence content. Rather, advertisers seek out channels with content that will reach their target audience. They approach the media producer to indicate "we want to be put on this channel at this time and we'll pay you this much." While participants understand that advertising contributes a significant portion of media

financing, they are unclear as to what proportion this may be and what other sources of funding, aside from cable subscriptions, might exist. In one of the groups, participants were asked if government financing would be a better option. Most said no, that either model (advertising or government) has the potential to bias media content but that government would be more likely to do so. Both censorship and propaganda were mentioned.

When asked to what extent media influence reality, most participants acknowledged some influence. Several mentioned that coverage of the Iraq war presented a different picture from what they heard from individuals who were or are currently serving there. Several commented on the harmful effects of images and toys such as Barbie and Brat dolls on young women. Most indicated although violent media does not necessarily increases violent activity, it creates a numbness or callousness among viewers to real violence, as well as impacting perceptions of the occurrence of violence, which is higher in media portrayals than in real life.

Pretest Survey Data Analysis:

A pretest paper-based survey was completed by university students enrolled in either a 200 level Animal Science or Human Development course, both of which count as a science GER and are taken by students in a wide variety of majors, or an educational technology course at a neighboring university. The goal of the pretest was to test the strength and interrelationships of the factors being developed for this current study. All 15 factors suggested for use in the final instrument were represented on the pretest survey including those gleaned from prior research and considered to be valid and reliable.

Of the 240 students enrolled in the three courses, the survey was completed by 165 respondents, ranging in age from 18 to 34 with a mean age of 20.6. The population sample was primarily Caucasian (76.5%) and slightly more than two-thirds (68%) of respondents were female. Respondents received extra credit in their courses for completing the survey.

All factors were tested following the same process. For each factor, a correlation analysis was first conducted. None of the items, for any factor, indicated correlations large enough to suggest multicollinearity (>.90) (Brown, 2006). Items not significantly associating with at least one other variable were dropped from further consideration. The remaining items were analyzed using principle component exploratory factor analysis with varimax rotation. Items loading at less than .60 were dropped from the final factor, and in most cases from the final questionnaire. Where this left factors with only two or three items, new items were developed for the final questionnaire based on focus group responses. The final scales were then tested for reliability using Cronbach's Alpha.

Independent Variables

Media Literacy Measures

Six factors were suggested in the literature as contributing to a larger construct identified as media literacy including experience, access, knowledge of media, skepticism toward advertising, media comfort and self efficacy for online information seeking. For eigenvalues and factor loadings for each of these factors see table 3. Caveats regarding formation of a subset of the factors must be explained.

Access was measured employing Hargittai's digital literacy scale, with terms updated based on information acquired during pretest focus group type conversations with three individuals employed in Information Technology positions, including two systems analysts. A list of 21 computer related terms was developed, including two unrelated words to control for error. Data from subjects indicating understanding of these dummy terms was excluded from analysis, eliminating 15 surveys from final analysis. The remaining 19 terms were summed creating an item which correlated significantly with experience ($r = (166) .44$, $p < .001$) as would be expected. Two items indicated as understood by all respondents were dropped for the final survey, as was one of the dummy terms.

The skepticism for advertising (Obermiller & Spangenberg) scale has been found to be valid and reliable in previous research. Based on correlation analysis, however, one item, "I feel I've been accurately informed after viewing most advertisements" did not associate significantly with other items in the factor. Additionally, the item "the aim of advertising is to inform consumers about a product" did not load (.41) with the other items in the factor. For the final instrument, the original nine items were retained. For further analysis of the pretest, the two items that did not fit the factor were excluded. Media comfort, on the other hand, is a scale newly designed for the current study, intended to measure broader attitudes toward media in general. Correlation analysis does not suggest multicollinearity between media comfort and skepticism because, somewhat surprisingly, the two scales do not significantly associate with each other.

Self efficacy for information seeking separated into two factors, negatively versus positively worded. (i.e., I can find versus I can avoid), as did need for cognition

(Cacioppo & Petty). Both were subsequently forced into one factor guided by previous

use of the need for cognition items as one factor.

Table 3: Media Literacy Variables, pretest analysis

Factor & *a*	eigenvalue	Item	Loading
Experience *a* = .84	3.4	I have experience updating Web sites.	.82
		I have experience creating Web sites.	.79
		I have experience downloading software.	.62
		I have experience using html coding.	.73
		I have experience writing my own SQL statements.	.76
		I have experience building data base interactivity within a Web page.	.79
Self efficacy Information seeking *a* = .84	3.00	I am certain I can find information online that I trust.	.74
		I am certain that I can find information online that is comprehensive.	.71
		I am certain that I can avoid online information that is out of date.	.77
		I am certain that I can avoid online information that is inaccurate.	.83
		I am certain that I can avoid online information that is misleading.	.82

Skepticism Advertising $a = .90$	4.40	Advertising information is generally truthful.	.68
		Advertisements can be a reliable source of information.	.72
		We can depend on getting the truth in most advertising	.84
		Advertising is truth well told.	.88
		In general, advertising presents a true picture of the product being advertised.	.83
		Most advertising provides consumers with essential information.	.80.
		I believe advertising is informative.	.78
Media comfort $a = .60$	1.6	When looking for online information I can usually find what I need on the first one or two sites I visit.	.74
		I have tried something I read about online without checking several other sources.	.75
		I primarily use online information so that I know what questions to ask an expert (i.e., doctor, lawyer, financial planner).	.76
Media Knowledge $a = -.81$	1.73	Research suggests that what we see and hear from the media influences the way individuals see the world.	-.82
		(reverse word) The U.S. is just one of many countries whose media are financed with advertising dollars.	.68
		(reverse word) There are currently more TV, radio stations and Web sites providing consumers with the largest variety of entertainment, news and information ever available.	.78

These media literacy factors were then tested for correlations and evidence of multicollinearity. As can be seen in Table 4, self efficacy for information seeking significantly associates positively with access, $r(166) = .30, p < .001$, experience $r(166) = .22, p < .01$, and media comfort $r(166) = .16, p < .05$, but negatively with knowledge $r(166) = -.18, p < .05$ The direction of the relationships with media comfort and

knowledge are unexpected. Additionally, as would be expected, experience significantly

correlates positively with access $r(166) = .35, \ p < .001$.

Table 4: Correlations

	Access	Experience	Media comfort	Knowledge
Self efficacy	30**	.22**	.16*	− .18*

The goal of this body of work was to understand the impact of media literacy, not

just on information seeking practices as a whole, but specifically on health information

seeking practices. Therefore, self efficacy for health information seeking was also

measured using the identical items as in the more general self efficacy for information

seeking and inserting the word "health." As with the general self efficacy scale, the items

again loaded into two factors, the first including three negatively worded items (I can

avoid) and the other including the two positively termed items (I can find). The five

items then were forced into one factor (See Table 5).

Table 5: Self efficacy for Information Seeking

Factor & *a*	eigenvalue	Item	Loading
Self efficacy information seeking	3.06	I am confident I can find information online that I trust.	.66
a = .84		I am confident that I can find information online that is comprehensive.	.70
		I am confident that I can avoid online information that is out of date.	.84
		I am confident that I can avoid online information that is inaccurate.	.88
		I am confident that I can avoid online information is that misleading.	.81

Control Variables

Other possibilities for predicting critical thinking regarding evaluation of online health information included health engagement and need for cognition, which was thought to likely associate with critical thinking since many of the construct items ask about "thinking." Scales adopted for this research were previously tested for validity and reliability and were used in their entirety. That said, the health factors chosen consisted of subset of Snell's multidimensional health questionnaire (1991, 1992, 1997), including health efficacy, motivation for healthiness, health esteem and internal health control. Each factor includes five items. Each formed a strong factor when analyzed one factor at a time. When all 20 items were loaded together, however, results based on eigenvalues and scree plot suggest these 20 items form two to three, not four, factors. Additionally, further analysis suggested that internal health control and health esteem do not impact health information seeking practices and these two scales were therefore dropped from the final instrument. Again, factor loadings for these remaining 10 items do not clearly suggest two factors as most items cross load. With a correlation of $r(166) = .59$, $p < .001$, the two factors do not associate strongly enough to raise concerns regarding multicollinearity (Brown, 2006). Additionally, when forced into one factor, two items would need to be dropped due to low loadings. For the purpose of pretest analysis they will be treated as two separate factors. (See Table 6) and the 10 items for the original two factors will be retained for the final instrument.

Table 6: Health Engagement Factors

Factor & *a*	eigenvalue	Item	Loading
Health Efficacy *a = .78*	1.4	I have the ability to take care of any health problems that I may encounter.	.61
		I am competent enough to make sure that my physical health is in good shape.	.60
		I have the skills and ability to ensure good physical health for myself.	.76
		I am able to cope with and to handle my physical health needs.	.66
		I have the capability to take care of my own physical health.	.81
Health Motivation *a = .94*	5.57	I'm very motivated to be physically healthy.	.87
		I'm strongly motivated to devote time and effort to my physical health.	.84
		I have a strong desire to keep myself physically healthy.	.86
		It's really important to me that I keep myself in proper physical health.	.85
		I strive to keep myself in tip-top physical shape.	.90

Dependent Variables

Critical thinking towards online information and online health information both were measured using two different scales. At one point individuals were asked to rank the importance of six different items when conducting information searches. Additionally, similar items were included in a Likert-type seven-point scale ranging from strongly disagree to strongly agree. The ranking scale allowed the division of respondents based on their propensity to first consider external cues such as ease of locating information and appearance of the Web site, versus those who employed media literacy criteria such as information regarding the author's credentials and currency of the information. On the other hand, items measured on an interval scale allowed greater flexibility in the testing of relationships between variables. Both means of measurement

were of interest in the initial pretest analysis and were kept for use on the final instrument.

A credibility factor was created using ten items in the Likert-type scale. As with self efficacy, two different factors were created, one for information seeking in general and the second for health information seeking specifically. In both cases two factors were formed from the ten initial items, the first related to the author and the second to the content of the information. Further analysis also suggested different relationships between the independent variables and the two separate factors (author information versus content cues).

Table 7; Critical thinking cues

Factor, and *a*	eigenvalue	Item	Loading
Credibility verification author *a* = .84	4.14	Whether the author of the information is identifiable	.80
		Whether contact information for the author or site sponsor if available	.78
		Whether the author's expertise is identifiable	.86
		The author's goals for posting the information online	.68
Credibility verification content *a* = .86	1.10	How current the information is	.69
		Whether the information represented is opinion or fact	.80
		Whether the information provided is comprehensive	.81
		Whether the information is verified by other sources	.61
Health Credibility verification author *a* = .85	4.43	Whether the author of the information is identifiable	.86
		Whether contact information for the author or site	.87

		sponsor if available	
		Whether the author's expertise is identifiable	.73
		The author's goals for posting the information online	.70
Health Credibility verification content *a* = .79	1.13	How current the information is (item kept for final instrument to match non health factor)	.57
		Whether the information represented is opinion or fact	.77
		Whether the information provided is comprehensive	.76
		Whether the information is verified by other sources	.78

Preliminary correlational analysis of the variables conceptualized as components of media literacy suggested significant interrelationships between self efficacy and knowledge, $r(164) = -.18$, $p<.05$, access $r(166) = .30$, $p<.01$, skills $r(168) = .22$, $p<.01$, and media comfort $r(168) =.16$, $p<.01$; between skepticism and knowledge (2) $r(164) = -.16$, $p<.05$; and lastly, between knowledge (2) and access $r(164) = -.17$, $p<.05$. It is important to note, when looking at this data, that media comfort and skepticism move in opposite directions so that skepticism is coded as 1(high skepticism) to 7 (low skepticism) and media comfort is 1 (low trust) to 7 (high trust). In this way, for both scales high trust/low skepticism is at the high end of the scale and low trust/high skepticism is at the low end of the scale. (For analysis of the final survey the skepticism scale was reversed so that 7 equaled high skepticism and 1 equaled low skepticism, which is more consistent with the other scales with the larger number indicating more of something)

Table 8 *Media literacy variables, correlations*

	Knowledge 2	Knowledge	Access	Skills	Self Efficacy	Skep	Media Comfort
1 knowledge 2	1	-.07	.17*	.05	.12	-.16*	.04
2 knowledge		1	-.09	-.11	-.18*	-.01	-.10
3 Access			1	.44**	.30**	-.10	.10
4 skills				1	.22**	-.03	.13
5 self efficacy					1	-.01	.16*
6 skepticism						1	.08
7 media comfort							1

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Further corrleational analysis indicates significant correlations between self efficacy and media comfort $r(168) = .16$, $p<.05$, critical thinking re: author $r(165) = .16$, $p<.05$, critical thinking re: content $r(164) = .20$, $p<.05$, need for cognition $r(168) = .20$, $p<.01$, health efficacy $r(168) = .23$, $p<.01$, health motivation $r(168) = .20$, $p<.01$, and health control $r(168) = .20$, $p<.05$; between skepticism and need for cognition $r(168) = .17$, $p<.05$; between media comfort and health efficacy $r(168) = .21$, $p<.01$, and health control $r(168) = .17$, $p<.05$. Again, while these relationships are small to medium they are significant and do suggest a relationship between media literacy and critical thinking regarding online health information.

Table 9: primary variables of interest; Correlations

	CT Author	CT Content	Need for Cog	Health Efficacy	Health Motivation	Health Esteem	Health Control
1 self -efficacy	.16*	.20*	.20**	.23**	.20**	.11	.19*
2 skepticism	-.03	-.03	-.17*	-.06	-.09	-.08	-.08
3 Media comfort	.10	.06	-.08	.21**	.141	.117	.17*
4 CT: author	1	.61**	.26**	.16*	.22**	.18*	.15*
5 CT: content		1	.31**	.29**	.26**	.14	.29**
6 Need for cognition			1	.01	.05	-.01	.07
7 Health efficacy				1	.57**	.60**	.70**
8 Health motivation					1	.89**	.46**
9 Health esteem						1	.48**
10 Health control							1

Stepwise, linear regression analysis was conducted with critical thinking regarding the <u>content</u> of online information as the dependent variable and media literacy variables and need for cognition as the independent variables. Significant relationships were found between critical thinking about content and self efficacy (β =.31, $t(155) =$ 4.00, $p < .001$), access ($\beta = -.28$, $t(155) = -3.66$, $p < .001$), need for cognition (β =.27, $t(155) = 3.67$, $p < .001$), and knowledge ($\beta = -.17$, $t(155) = -2.37$, $p < .05$). For critical thinking regarding <u>author</u> the findings indicate significant relationships between critical thinking and need for cognition ($\beta = .28$, $t(161) = 3.62$, $p < .001$), and self efficacy ($\beta =$

.22, $t(161) = 2.86$, $p < .01$. It is of interest that predictors of critical thinking regarding the content of information differ from those regarding the author of information.

Stepwise linear regression was repeated as above with critical thinking regarding the <u>author</u> of <u>health</u> information specifically as the dependent variable. The health engagement factors were added to the model, along with the media literacy and need for cognition variables. Self efficacy for general information seeking was found to be no longer significant in this model and was replaced with self efficacy for <u>health</u> information seeking specifically. In this model, need for cognition ($\beta = .28$, $t(153) = 3.71$, $p < .001$), self efficacy for health information seeking ($\beta = .20$, $t(153) = 2.66$, $p < .01$), and health motivation ($\beta = .19$, $t(153) = 2.22$, $p < .05$) were significant predictors.

Lastly, critical thinking regarding the author of health information was replaced with critical thinking regarding the <u>content</u> of health information as the dependent variable while the independent variables consisted of the media literacy, health engagement and need for cognitions factors, as above. In this model, need for cognition ($\beta = .35$, $t(149) = 4.82$, $p < .001$), health efficacy ($\beta = .20$, $t(153) = 2.73$, $p < .01$), access ($\beta = -.19$, $t(153) = 2.59$, $p < .01$), both knowledge measures (scale and multiple choice), ($\beta = -.17$, $t(153) = -2.36$, $p < .05$) and ($\beta = -.15$, $t(153) = -2.17$, $p < .05$), and self efficacy for health information seeking, ($\beta = .16$, $t(153) = 2.16$, $p < .05$), were significant predictors.

In this early exploratory work need for cognition and health engagement account for more variance in the dependent variables of critical thinking, than do the media literacy items. This may be because these scales having come from previous research may have greater validity and reliability. It will be important, therefore, to work to

strengthen the media literacy factors with additional items for the final instrument. These

analyses, however, on this small sample suggest that further investigation of the

relationship between the media literacy variables themselves, and their relationship to

critical thinking regarding online health information is warranted.

CHAPTER 4: ONLINE SURVEY

Method

The major goal of data collection was to survey a generalizable sample of college students, mostly living away from home and therefore somewhat less connected with family and trusted health care professionals in order to test the first three hypotheses. The study employed an online survey design in order to attempt to gather data regarding credibility foundation assessments in real world online health information seeking. Online surveys have many advantages including reaching larger number of participants more efficiently and cost effectively with faster response time and greater ease of data entry as compared with mail, phone or face to face surveys (Bethell, Fiorillo, Lansky, Hendryx, & Knickman, 2004; Graham, Papandonatos, Bock, Cobb, Baskin-Sommers, Niaura & Abrams, 2006; Granello & Wheaton, 2004; Gosling, Vazire, Srivastava & John, 2004; Kaplowitz, Hadlock & Levine, 2004). As with all method choices, a researcher must be cognizant of the population of interest. In the case of the current study, because it was designed to investigate online behavior, the use of an online survey instrument would not exclude members of the population of interest, all of whom must have some Internet access and experience in order to search for online health information. Further, with the increased use of cell phones among college students phone surveys would exclude much of this population.

Concerns regarding online surveys include high nonresponse rates, reliability and validity of constructs originally developed for other survey modes, and comparison with previous studies. A body of research is emerging that suggests, if thoughtfully designed and in a population in which each member has Web access, an online survey will be as

accurate and comparable to previous paper/pencil or phone surveys (Fricker, Galesic, Tourangeau & Yan, 2005; Graham, et al., 2006; Gosling, et. al., 2004; Ritter, Loring, Laurent, & Mathews, 2004). Additionally, survey design and implementation were guided by well-researched principles regarding the development of friendly Web based surveys (Dillman, 2008).

Survey Design

All research methods suffer from some type of error, of which the researcher must be aware and implement best practices in order to minimize. Surveys are prone to four types of error; sampling, coverage, measurement, and non response error (Couper, 2000; Dillman, 2000; 2008; Dillman, Jolene & Smyth, 2017; Lorenz & Dillman, 1995). The most difficult challenge of surveyors, according to Dillman (2000), is to minimize each of these four types of error. While the Web provides more options for the survey designer, decisions to use available features must focus on maximizing data quality and minimizing error (Couper, Traugott & Lamas, 2001). Although online surveys are relatively new, scholars began employing and exploring their use in the 1990's, providing at least a decade's worth of research on which to draw when designing an online survey.

Coverage error is a fairly straightforward issue. Coverage error occurs as a result of using a list, to select the sample population that does not include all of the elements of the population to be studied (Dillman, 2000; Lorenz & Dillman, 1995). As previously noted, the current study investigated online health-seeking behaviors, suggesting that all members of the population would have online access. Sample error occurs primarily as a result of not using well-developed formulas for both measuring sampling error and drawing the necessary sample (Dillman 2000). Due to the sampling nature of the current

study, it should be considered a non-probabiliby sample, not generalizable to the entire population of college students. A review of several recent issues of Public Opinion Quarterly suggests this is not unusual for online surveys, several of which utilized the student population of the researcher's university as the sample population (Christian, Dillman, Smyth, 2007; Heerwegh & Loosveldt, 2008; Kaplowitz, Hadlock & Levine, 2004; Peytchev, Couper, McCabe & Crawford, 2006).

Measurement error, however, is far more complex. Measurement error is a result of respondents not providing accurate answers to questions (Dillman, 2000, Lorenz & Dillman, 1995). Primary issues of concern, in terms of measurement error, include; social desirability, acquiescence, question order, category order and the use of vague quantifiers (Dillman, 2000; Lorenz, et. al, 1995;Willits & Saltiel, 1995; Carlson et. al. 1995; Dillman, et al. 1995; Betrand & Mullainathan, 2001; Bartels, 2002). The goal of a well-designed survey is to include questions easy to understand and understood in the same way by all respondents (Couper, Tourangeau & Kenyon, 2004) while minimizing respondent burden (Christian, Dillman & Smythe, 2007; Peytchev, Couper, McCabe & Crawford, 2006). Considerable research has explored the impact of various Web features related to question order concerns. Those issues unique to online survey development are highlighted here.

Available to the online survey designer is the ability to control the page length in a way not previously obtainable. Surveys can be designed to present one question at a time or to present the entire survey requiring the respondent to "scroll" down the page, or a mixture of the two. Presenting one question at a time increases the burden on the respondent and is likely to increase noncompletion rates while the scrolling method may

increase missing data (Couper, Traugott & Lamas, 2001; Peytchev, et. al. 2006). Additionally, questions grouped together on the same page are interpreted by respondents as being related (Tourangeau, Couper & Conrad, 2004). Research indicates question order effects may occur when respondents perceive two or more questions to be linked (Bertrand & Mullainathan, 2001; Lorenz, et al. 1995; Willits & Saltiel, 1995). The survey designed for the current study, therefore, attempted to keep pages at a length where all questions on a page could be viewed at once, minimizing scrolling, yet separating sections where it is important to minimize the extent to which respondents considered them related, such as credibility perceptions of general information versus those of health information. Additionally, online surveys can be set to randomize the order of the questions within a survey section, which is an option utilized in the current survey. With in each section, items for constructs, such as "need for cognition items" presented in random order, minimizing order effects within constructs.

Further, an online survey can be set to require each question be answered before the respondent moves on to the next question. Although this largely minimizes missing data, it increases respondent burden and frustration, which is likely increase noncompletion of the survey (Christian, Dillman & Smyth, 2007). Therefore, only one question was set to require an answer in this study, that being whether an individual had searched for online health information in the past year. An answer of no to this triggered a skip pattern taking the respondent to the final page, so that questions about online health information would not be completed by individuals who did not actually access it.

Non-response error occurs when those members of the sample frame not responding to the survey are determined to be different from those who do respond in

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characteristics important to the study. There is considerable research available to inform the survey designer as to the best possible means of increasing response rate, thereby decreasing non-response error for online surveys as well as for more traditional methods. Multiple contacts are the most effective means of increasing response rates for both mail and online surveys (Dillman, 2000, 2008; Granello & Wheaton, 2004). Careful design of the questions, questionnaire and implementation process are all considered crucial (Dillman, 2000, 2008). Dillman (2008) deems the first page, the welcome screen, to be the most important page of the survey. It is here that the researcher must entice the respondent to begin the survey. Including information such as how long the survey will take can positively impact response outcomes (Granello & Wheaton, 2004). If possible, for an online survey, respondents will be contacted prior to receiving the actual survey link, so that they are expecting it and do not perceive it as spam. Further, personalized emails, which are often used for this purpose, have been found to not impact response rates to sensitive question (Heerweigh, 2005). Overall, Dillman and his colleagues (2007) suggest that formats originally developed for phone surveys may produce the best quality data in Web surveys as well and that the "bells and whistles" available online be used sparingly.

Based on this research, wording of email invitations and the survey's welcome page were considered carefully during the design process for this study. The email invitations were personalized, using the mail merge feature of Microsoft Word, which allowed for the greeting Dear "name" at the beginning of each email message, where the name had been supplied by the university providing the email addresses. Information contained in the email included; the purpose of the research, amount of time required to

complete the survey, incentive of a chance to win one of two $50.00 gift cards, that the researcher was a student as an attempt to form a connection between the researcher and the potential respondent, and that the sending of the invitation was approved by the recipients university. The email asked for the students help and thanked them in advance for participating (see appendix for actual wording). Most of these items were duplicated on the survey welcome screen where potential respondents were asked to participate in "research exploring attitudes and experience with the Internet and media in general." In addition, the welcome screen provided IRB and researcher contact information, reassurance that no answer could be considered wrong and clarification of the definition of health information (see appendix for the final instrument).

Sampling process

College students are often said to be a sample of convenience. They were, however, in this case an appropriate population because the online health information seeking behaviors of this specific age group were an integral part of the central questions explored in the current study.   A cluster sampling process was implemented in order to draw a generalizable sample.

First a random order of 50 states was generated through Random.org-List randomizer (http://www.random.org/lists). The author then generated 10 random numbers between 1 and 50, again using Random.org, and selected the 10 states in the numbered positions on the list; Arkansas, Pennsylvania, Washington, Montana, Michigan, Georgia, Utah, Maryland, Florida, and Idaho.   Next, a list of public 4-year Universities in each of the 10 states, as listed on the Wiki List of American State University site, was developed. Where state university systems exist, such as The

University of Arkansas system with six campuses, the location noted as main campus was the only institution from the system included in the cluster population. If no main campus was identified, all campuses were included in the population. Registrars and IRB offices at each University were contacted and asked to provide or disseminate an email invitation with an embedded survey link to a random selection of 300 undergraduate students.

Of the original 10, three schools agreed to participate, the third of which agreed to disseminate the survey to 600 students. Eventually an additional seven schools, as well as the Distance Degree Program of the author's home institution, were contacted. From this second wave one university agreed to disseminate the email invitation to 200 students. In total, of the 17 Universities contacted, four agreed to participate with the email invitation disseminated to a total of 3531. The Distance Degree Program agreed to participate with the email invite disseminated to 2281 online students. In addition, 96 students participating in a second study completed this first survey as well. The resulting sample was a nonprobability sample, which had the additional benefit of allowing for comparisons between online and on-ground students.

Two universities did not provide student names on the email address list so in those cases email invitations could not be personalized. Follow-up reminder emails were sent to all but two groups. One university requested that the author delete the email addresses as soon as the first message had been sent. Additionally, a follow-up was not sent to distance students because the number of respondents from this group was substantially larger than the on-ground students, without a follow-up email.

Measures

Development of the final measures was explained in detail in the pretest results section. The final survey included six media literacy related constructs. Experience was measured using six of the items from the original pretest, employing a seven-point Likert-type scale from none at all (1) to extensive (7) including items like "how much experience do you have with each of the following …writing SQL statements." The final access measure, based on the digital literacy scale used by Hargati, retained 17 of the original 21 items with respondents indicating that they were familiar, yes/no or unsure. The knowledge factor retained three items from the pretest and an additional six were added based on focus group conversations including "The FCC requires that each television channel be owned by an individual company" and media depictions influence an individuals' perceptions of reality" using a seven-point Likert-type scale from strongly disagree (1) to strongly agree (7). Both self efficacy measures, for general information seeking and for health information seeking retained the original five items from the pretest including "I am confident I can find information online that is thorough" and "I am confident I can avoid online information that is out of date" measured on a seven-point Likert-type scale from not at all certain (1) to extremely certain (7). Skepticism toward advertising was measured using the original nine item scale (Obermiller & Spangenberg, 1998), measured on a seven-point Likert-type scale from strongly disagree (1) to strongly agree (7) including items like "advertising on a Web site does not influence the information posted." The measure was reverse coded for analysis purposes (seven equaled high skepticism, one equaled low skepticism). Lastly, the media comfort measure retained three items from the pretest and an additional two were developed

based on focus group conversations, including "I have one favorite source I rely on for my news" and "I might try something I read about online without hearing or reading about it anywhere else" measured on a seven-point Likert-type scale from strongly disagree (1) to strongly agree (7).

For control variables, the two items measuring reliance were retained from the original pretest; "I am likely to turn to the Internet when looking for information," and "I am likely to turn to the Internet when looking for information related to my health and wellbeing" measured on a seven-point Likert-type scale from not at all like me (1) to extremely like me (7). The original need for cognition scale (Cacioppo & Petty, 1982; Cacioppo, Petty & Kao, 1984) was retained in its entirety, including 18 items. From the multidimensional health questionnaire (Snell, 1996), two of the four constructs used on the pretest were retained for the final instrument including health efficacy and health motivation as a measure of health engagement. Each construct was measured with five items on a seven-point Likert-type scale from not at all like me (1) to extremely like me (7). (Mistakenly one of the health motivation items was left off of the final instrument, leaving four items to measure this construct). Internal health control and health esteem were dropped from the final questionnaire because they exhibited very little predictive power during pretest analysis. Additionally, not used on the pretest, the Rudmin (1999) short-form of the Marlowe-Crowne social desirability scale was added to the final instrument. This scale includes 10 of the original 33 items found on the Marlow-Crowne scale including "no matter who I'm talking to, I'm always a good listener" and was measured on a seven-point Likert-type scale from not at all like me (1) to extremely like me (7).

Dependent variables again included two critical thinking measures; toward general information and toward health information specifically. This scale was originally developed by Escoffery, (2005) as an information verification scale and contained nine items measured on a seven-point Likert-type scale from not at all important (1) to extremely important (7). Respondents were asked to "please indicate the extent to which you actively considered the importance of each of the following in evaluating the quality of the information on a Web site…whether the author of the information is identifiable." Lastly, as on the pretest, the final instrument included a number of questions asking respondents about a recent health information search, number of search engines accessed, number of Web sites visited, search terms employed and how the information found was ultimately used.

Results: Study 1

Sample Description

The email invitation was sent to a total of 3,531 individuals. Of those, 164 were returned as non-deliverable leaving 3,367 emails that were supposedly received. One drawback to email solicitation, however, is that is impossible to know if in fact the email was received, opened and read. Many university students do not use the email address provided to them by the university and many of the emails may have landed in junk boxes, or been perceived as spam. The online survey was started by 555 subjects. Data from 3 completed surveys was dropped due to ineligibility, along with 64 more breakoffs. Subjects who completed at least the first section, including all general online information seeking and media literacy variables ($n = 25$), were kept in the analysis. Final response rate was calculated at 13.9% according to AAPOR guidelines (AAPOR.org) for response rate two including completed and partial instruments. A rate considered low for a traditional mail or phone surveys but typical for Web surveys (Porter & Whitcomb, 2007; Tourangeau, Couper & Conrad, 2004).

Additionally, 96 subjects completed an identical survey as part of a second study and their data combined with the original sample for a final *n* of 587. The sample population was 27.5% male and 72.5% female, with a mean age of 31, and primarily Caucasian (79.8%). The disparity in gender, with significantly more women (72.5%) responding than men (27.5%), is not unusual in survey research (Gosling, Vazire, Srivastava & John, 2004; Tourangeau, Couper & Conrad, 2004). More Juniors (204) and Seniors (172) completed the study than Freshmen (59) or Sophomores (66). Graduate students, at 16, comprised a small percentage (2.9%) and 39 (6.6%) subjects indicated

they were not currently enrolled in school. The sample population is not consistent with

the average college student population in that online students, 61.6% of the sample, are

generally older and more often upper classmen. A comparison of the online population

to the on-ground students substantiates these differences.

The sample was divided into two groups based on university locale, online ($n =$

362) and on-ground ($n = 186$). Thirty-nine respondents did not indicate their university

locale. Online respondents were significantly more often upperclassmen (88.2%) and

female (77.5 %) than the on-ground respondents (38.1% and 62.4 % respectively), as

well as older ($m = 36$) than on-ground respondents ($m =21.1$).

Because age and gender differed significantly between online and on-ground

universities, one-way multivariate analysis of variance (MANOVA) was conducted to

determine if dependent variables of self efficacy, skepticism, media comfort, critical

thinking by author and by content, differed significantly by age, gender and, or university

location. Originally a continuous variable, age was dichotomized with individuals 28 and

under (50.4%) in the low group and individuals over 28 (49.6%) in the high group.

Differences by university location and age ($p = .055$) were not significant. Differences

by gender were significant Wilk's $\Lambda = .97$, $F(5, 487) = 3.30$, $p<.01$. The multivariate $\acute{\eta}^2$

$= .03$ indicates 3% of multivariate variance of the dependent variables is associated with

gender. Additionally, gender and age were included as control variables in all tests.

Regarding the appropriateness of using an online instrument to collect data for

this study, three of the 587 respondents indicated they did not own a computer and five

did not have Internet access where they lived. Data suggested this sample to be highly

reliant on the Internet for information in general ($m = 6.62$, $sd = .81$, $n = 587$). Slightly

less reliant on the Internet for health information ($m = 5.6$, $sd = .584$, $n = 585$), still 81.5% of respondents had searched for health information for themselves in the past year. As a source of online information, on average respondents considered 49.6% of what is available online to be credible, while 59.2% indicate having made changes in their health behaviors based on information learned in the past year from an online source.

Factor formation

Following the procedure applied during the pretest, each set of items expected to create a construct was subjected to principal component factor analysis with varimax rotation. Items loading at less than .60 were dropped from final factors, and the factors were tested for reliability using Cronbach's alpha. This process was used for scales previously indicated to be valid and reliable as well as new scales. The first factors explained form the components of media literacy for the purpose of this study. Experience, information seeking self efficacy and health information seeking self efficacy performed as expected, retaining all items and forming distinct factors with strong loadings (see table 10). Analysis of the media literacy variables showed no correlations large enough (>.85) to suggest multicollinearity (Brown, 2006) (see table 11). Because the primary question addressed by this research asked about the impact of media literacy in general on health information seeking, the general self efficacy measure, as opposed to the health information seeking self efficacy measure, was used in all analyses. The fact that the two are distinctly different is an interesting topic for future research.

The nine knowledge items created three small factors. The first three items, herein referred to as *knowledge,* related to media influence on behavior and perception.

The second item, named *finance,* included the items "The FCC requires that each television channel be owned by an individual company" and "The U. S. model of media financing is the same media financing model used in other countries." The third knowledge construct, named *media attitudes,* included two items "Alternative Web news sources and blogs are now providing a large percentage of the news and information individuals access" and "Alternative news sources and blogs now provide a refreshing alternative to mainstream news reporting." All three knowledge constructs were kept for analysis in that there was no definitive way to know which, if any, aspect of a person's media knowledge might be predictive of online information credibility formation. Of the original nine item skepticism towards advertising scale, seven items were retained (see Table 10) with two dropped due to low loadings. Four of the five items for the media comfort scale correlated significantly and loaded onto a single factor, but reliability was low at $a= .57$. Therefore only the two items that correlated most highly were used to create a factor. The two items included "I have one favorite source I rely on for my news" and "When looking for online information I can usually find what I need on the first one or two sites I visit." Unlike the other constructs, access is a summed total measure with the higher numbers indicating individuals with greater access.

There were two measures of the dependent variable, critical thinking toward general information and critical thinking towards health information, each consisting of nine items. Loading all 18 items into factor analysis suggested three variables with high cross loadings. Again, because the purpose of this research was to address the primary question regarding media literacy's impact on health information seeking, the general critical thinking items were dropped from the factor and only the 9 items regarding health

information were loaded into factor analysis. One item "whether the site was free of advertising" loaded at .41 and was dropped from further analysis. Consistent with pretest results, the remaining eight items formed two factors, the first containing four items relating to the author, and the second four relating to the information content (see Table 10).

Control variables of health efficacy and health motivation performed as expected, each retaining all items (see Table 10). Unlike the pretest, the nine items belonging to these two health engagement constructs were subjected to factor analysis together and divided cleanly into two different factors. As with the pretest, need for cognition items split into two factors by positive and negatively worded items. Attempts to force the items into one factors resulted in low loadings ranging from .44-.69 for all items. Therefore, the factor analysis was run again, allowing the items to divide into two factors. Four variables were dropped due to low loadings and the single factor with the largest eigenvalue (5.14 vs 2.09) was kept for analysis. The short form of the social desirability scale was not originally subjected to factor analysis and did not perform well as a single factor. Of the original 10 items, 5 were used to form a social desirability construct (see Table 10).

Table 10: final factors

Factor & *a*	eigenvalue	Item	Loading	*M*	*SD*	*N*
Experience	3.86			2.79	1.37	587
a = .89		I have experience updating Web sites	.86	2.88	1.99	584
		I have experience creating Web sites	.90	2.72	1.88	585
		I have experience downloading software	.63	5.15	1.66	583
		I have experience using html	.86	2.41	1.75	587

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		coding				
		I have experience writing my own SQL statements	.74	1.67	1.40	585
		I have experience building data base interactivity within a Web page.	.80	1.93	1.53	586
Self efficacy Information seeking $a = .91$	3.64			5.05	1.18	587
		I am certain I can find information online that I trust	.84	5.37	1.21	586
		I am certain that I can find information online that is thorough	.79	5.33	1.25	586
		I am certain that I can avoid online information that is out of date	.84	4.86	1.52	587
		I am certain that I can avoid online information that is inaccurate	.90	4.84	1.47	587
		I am certain that I can avoid online information that is misleading	.90	4.84	1.48	587
Skepticism Advertising $a = .93$	4.88			4.32	4.29	582
		Advertising information is generally truthful	.83	2.61	1.24	580
		We can depend on getting the truth in most advertising	.88	2.28	1.18	579
		Advertising is truth well told	.86	2.07	1.13	582
		In general, advertising presents a true picture of the product being advertised	.86	2.37	1.17	582
		Most advertising provides consumers with essential information	.82	2.60	1.30	582
		I believe advertising is informative	.78	2.91	1.37	578
		I feel I've been accurately informed after viewing most advertisements.	.81	2.48	1.27	581
Media comfort				4.25	1.37	583

$r = .32**$	$n - 582$	I have one favorite source I rely on for my news.		4.09	1.84	581
		When looking for online information I can usually find what I need on the first one or two sites I visit.		4.42	1.52	583
Media Knowledge $a = .65$	1.78			5.52	.98	583
		Media depictions influence an individual's perception of reality	.84	5.18	1.28	581
		An individual's behavior can be influenced by what is seen or heard in the media.	.81	5.81	1.21	582
		What we think about the world often comes from media examples instead of real life examples.	.67	5.58	1.32	580
Finance $r = .22**$	$n - 576$			5.00	1.10	580
		The FCC requires that each television channel be owned by an individual company. *		4.95	1.52	575
		The U. S. model of media financing is the same media financing model used in other countries. *		5.05	1.26	578
Media Attitude $r= .41**$	$n - 573$			3.34	1.20	583
		Alternative Web news sources and blogs are now providing a large percentage of the news and information individuals' access. *		3.35	1.33	582
		Alternative news sources and blogs now provide a refreshing alternative to main stream news reporting. *		3.32	1.53	581
Critical thinking – author $a = .87$	4.27					
		Whether the author of the information is identifiable	.86	5.01	1.60	511
		Whether contact information for the author or site sponsor if available	.85	4.46	1.64	512

		Whether the author's expertise is identifiable	.84	5.25	1.43	511
		The author's goals for posting the information online	.73	4.56	1.61	511
Critical thinking - content $a = .81$	1.39					
		How current the information is	.61	5.21	1.29	509
		Whether the information represented is opinion or fact	.70	6.00	1.09	510
		Whether the information provided is thorough	.85	5.96	1.00	510
		Whether the information is verified by other sources	.86	5.63	1.27	512
Health Efficacy $a = .88$	3.44			5.55	1.06	561
		I have the ability to take care of any health problems that I may encounter	.78	5.25	1.43	559
		I am competent enough to make sure that my physical health is in good shape.	.83	5.62	1.24	560
		I have the skills and ability to ensure good physical health for myself.	.85	5.65	1.23	560
		I am able to cope with and to handle my physical health needs	.83	5.45	1.28	560
		I have the capability to take care of my own physical health.	.86	5.76	1.19	558
Health Motivation $a = .94$	3.39			4.87	1.40	561
		I'm very motivated to be physically healthy	.94	4.89	1.55	559
		I'm strongly motivated to devote time and effort to my physical health.	.94	1.58	4.78	560
		I have a strong desire to keep myself physically healthy	.88	5.42	1.35	559
		I strive to keep myself in tip-top physical shape	.91	4.37	1.59	559
Need for	5.14			4.66	1.00	562

Cognition $a = .85$		I would prefer complex to simple problems	.75	4.31	1.44	559
		I like to have the responsibility of handling a situation that requires a lot of thinking	.68	4.96	1.28	562
		I find satisfaction in deliberating hard and for long hours.	.66	3.94	1.49	557
		The idea of relying on thought to make my way to the top appeals to me.	.65	5.09	1.33	557
		I really enjoy a task that involves coming up with new solutions to problems.	.71	5.13	1.67	559
		I prefer my life to be filled with puzzles that I must solve.	.76	4.14	1.47	562
		I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.	.67	4.88	1.43	561
Social Desirability	2.23			5.91	1.09	558
$a = .83$		There have been a few occasions when I took advantage of someone.	.66	5.09	1.60	557
		I sometimes try to get even, rather than forgive and forget.	.75	5.25	1.62	556
		There have been occasions when I felt like smashing things.	.68	4.31	1.92	557
		I sometimes think when people have a misfortune they only get what they deserved.	.60	5.05	1.51	553
		I am sometimes irritated by people who as favors of me.	.64	4.53	1.52	555

** $p<.01$
* reverse worded items recoded

Hypotheses testing

The first set of hypotheses explored the relationship between the eight media

literacy constructs, predicting that all but media comfort would exhibit positive

associations with one another and media comfort would associate negatively with all other constructs. Initial correlation analysis indicated significant relationships between media comfort with skepticism, (583) = -.20, $p < .01$, knowledge, $r(583) = .11, p < .01$, media attitude (583) = -.10, $p < .05$, and self efficacy, $r(583) = .13, p < .01$; skepticism with knowledge $r(583) = .09, p < .05$, and finance $r(583) = .14, p < .01$, and self efficacy with media attitude $r(583) = -.19 p<.01$, experience $r(583) = .37, p < .001$, and access $r(583) = .25, p < .01$. Note that relationships between media comfort and skepticism and media attitude, were negative as predicted. In contrast, the relationships between media comfort and self efficacy and knowledge were in a positive direction. (see table 9)

Table 11; Correlations of media literacy variables

	skep	Media attitude	knowledge	finance	Media comfort	experience	access
1. Self efficacy	.02	-.19**	.06	-.07	.13**	.37**	.25**
2. Skepticism	--	.50	.09*	.27**	-.20**	-.02	-.02
3. media attitude		--	-.27**	.14**	-.10*	-.19**	-.16**
4. knowledge			--	.03	.11**	.08	.02
5. Finance				--	-.03	.02	.07
6. Media comfort					--	.07	.02
7. Experience						--	.46**
8. Access							--

   * Correlation is significant at the 0.05 level (2-tailed).
   ** Correlation is significant at the 0.01 level (2-tailed)

The relationships among these constructs were further tested using hierarchical linear regression with forced entry into each block. Hypothesis 1a predicted that knowledge, access, experience, and media comfort would significantly contribute to

skepticism as the first dependent variable. Demographic variables of year, gender and age were loaded into the first block; control variables, need for cognition and social desirability into the second and media literacy variables, knowledge, finance, attitude, self -efficacy, media comfort, experience and access, into the third block. Findings indicated that the final block was significant ($R^2 = .13$, $F(12, 535) = 6.47$, $p < .001$). Finance ($\beta=.23$, $t(535) = 5.44$, $p < .001$) was the largest contributor, followed closely by media comfort ($\beta= -.21$, $t(535) = -5.04$, $p < .001$), then by gender ($\beta= .11$, $t(535) = 2.39$, $p < .05$) and knowledge ($\beta= .09$, $t(535) = 2.14$, $p < .05$).

Hypothesis 1b predicted the media literacy constructs would contribute significantly to media comfort as the dependent variable. Regression analysis followed the pattern above, replacing skepticism as the dependent variable with media comfort and vice versa and again, the third block of variables was significant ($R^2 = .09$, $F(7, 535) = 4.64$, $p < .001$). Significant predictors of media comfort included skepticism ($\beta= -.22$, $t(535) = -5.04$, $p < .001$), knowledge ($\beta = .13$, $t(535) = 2.96$, $p < .01$), self efficacy ($\beta = .11$, $t(535) = 2.40$, $p < .05$) and age ($\beta = -.10$, $t(535) = -2.1$, $p < .05$). The relationship between media comfort and skepticism was negative as predicted, while the others (excluding age) were positive.

Lastly, hypothesis 1c predicted that media literacy variables would significantly contribute to self efficacy for information seeking as the dependent variable and again, the final block of variables was significant ($R^2 = .19$, $F(12, 536) = 10.28$, $p < .001$). Significant predictors included experience ($\beta =.29$, $t(535) = 6.18$, $p < .001$), age ($\beta = -.12$, $t(535) = -2.89$, $p < .01$), need for cognition ($\beta =.10$, $t(535) = 2.41$, $p < .05$), media comfort ($\beta =.10$, $t(535) = 2.40$, $p < .05$), finance ($\beta = -.10$, $t(535) = -2.39$, $p < .05$),

media attitude ($\beta = -.09$, $t(535) = -2.24$, $p < .05$). Therefore, the first set of hypothesis were partially supported in that each is not predicted by all of the media literacy variables, but there were significant interrelationships between the eight variables media comfort, self efficacy, skepticism, knowledge, finance, media attitude, experience and access. It is important to not, however, that the directions of the relationships was not always in the direction predicted in that media comfort negatively associated with skepticism but positively with self efficacy. There was not a significant association between self efficacy and skepticism.

Table 12 Regression H1a-c

Dependent var./ Independent var.s	β	R^2	df	F	p
Self efficacy		.19	547	10.28	<.001
Experience	.29				<.001
Age	-.12				<.01
Need for cognition	.10				<.05
Media comfort	.10				<.05
Finance	-.10				<.05
Media attitude	-.09				<.03
Media comfort		.09	547	4.64	<.001
Skepticism	-.22				<.001
Knowledge	.13				<.01
Self efficacy	.11				<.05
Age	-.10				<.05
Skepticism		.13	547	6.47	<.001
Finance	.23				<.001
Media comfort	-.21				<.001
Gender	.11				<.05
Knowledge	.09				<.05

The second set of hypotheses explored the relationship between media literacy constructs, specifically skepticism, media comfort and self efficacy with the application

of critical thinking criteria regarding health information as the dependent variable, predicting that media literacy constructs would significantly contribute to critical thinking. Two hierarchical regression tests were conducted with critical thinking regarding the author as the first dependent variable (H2a) and critical thinking regarding the content (H2b) as the second based on the results of the factor analysis. Again, as for hypothesis one, demographic variables were forced into blocks; control variables, need for cognition and social desirability in the second block; and the media literacy variables, skepticism, media comfort and self efficacy in the third with the dependent variable was critical thinking regarding the author. The third block was significant ($R^2 = .13$, $F(8, 497) = 8.95$, $p < .001$). Significant contributors to critical thinking regarding the author included self efficacy ($\beta = .24$, $t(497) = 5.5$, $p < .001$), media comfort ($\beta = -.14$, $t(497) = -3.15$, $p < .01$), age ($\beta = .13$, $t(497) = 2.88$, $p < .01$), need for cognition ($\beta = .12$, $t(497) = 2.79$, $p < .01$) and gender ($\beta = .11$, $t(497) = 2.56$, $p < .05$).

Regarding hypothesis 2b, predictors of critical thinking towards information content, the final block was significant ($R^2 = .17$, $F(8, 497) = 12.73$, $p < .001$). Significant contributors include self efficacy ($\beta = .25$, $t(497) = 5.85$, $p < .001$), need for cognition ($\beta = .23$, $t(497) = 5.23$, $p < .001$), gender ($\beta = .19$, $t(497) = 4.27$, $p < .001$), age ($\beta = .11$, $t(497) = 2.58$, $p < .05$), and media comfort ($\beta = -.11$, $t(497) = 2.48$, $p < .05$). Thus, both hypotheses were partially supported in that self efficacy and media comfort were found to be significant predictors, but not skepticism towards advertising.

Table 13 Regression H2a & b

Dependent var./ Independent var.s	β	R^2	df	F	p
Critical thinking re: author		.13	505	8.95	<.001
Self efficacy	.24				<.001
Media comfort	-.14				<.01
Age	.13				<.01
Need for cognition	.12				<.01
Gender	.11				<.05
Critical thinking re: content		.17	505	12.73	<.001
Self efficacy	.25				<.001
Need for cognition	.23				<.001
Gender	.19				<.001
Age	.11				<.05
Media comfort	-.11				<.05

The third set of hypotheses predicted that the media literacy constructs would more strongly predict critical thinking towards both the author and the content of online information than would health engagement constructs. To test the third set of hypothesis regression analysis was conducted as in the tests above, with the addition of health efficacy and health motivation added to the second block of variables in addition to need for cognition and social desirability. In support for hypothesis 3a, critical thinking regarding the author, the third block was significant ($R^2 = .16$, $F(10, 495) = 9.06$, $p <$

.001), self efficacy (β =.23, $t(495)$ = 5.23, $p < .001$) media comfort (β = -.16, $t(495)$ = -3.58, $p < .001$), age (β =.15, $t(495)$ = 3.35, $p < .001$), health motivation (β = .14, $t(495)$ = 2.62, $p < .001$), gender (β =.11, $t(495)$ = 2.54, $p < .05$), and need for cognition (β = .10, $t(497)$ = 2.32, $p < .05$) were all significant predictors. Both self efficacy and media comfort, however, explained more variance than did health motivation. Health efficacy was not a significant predictor of critical thinking regarding the author of online health information.

In support for hypothesis 3b, critical thinking regarding content, the third block was significant (R^2 = .21, $F(10, 495)$ = 12.88, $p < .001$), with self efficacy (β=.23, $t(495)$ = 5.49, $p < .001$), need for cognition (β =.20, $t(495)$ = 4.62, $p < .001$), gender (β =.18, $t(495)$ = 4.27, $p < .001$), age (β =.14, $t(495)$ = 3.09, $p < .01$), media comfort (β = -.13, $t(495)$ = -3.08, $p < .01$), and health efficacy (β =.12, $t(495)$ = 2.23, $p < .05$). Again, the media literacy variables of self efficacy and media comfort explained more variance than did health efficacy. Health motivation was not a significant predictor of critical thinking regarding online health information content.

Table 14 Regression H 3a & b

Dependent var./ Independent var.s	β	R^2	df	F	p
Critical thinking re: author		.16	505	9.06	<.001
Self efficacy	.23				<.001
Media comfort	-.16				<.001
Age	.15				<.01
Health motivation	.14				<.01
Gender	.11				<.05
Need for cognition	.10				<.05
Critical thinking re: content		.21	505	12.88	<.001
Self efficacy	.23				<.001
Need for cognition	.20				<.001
Gender	.18				<.001
Age	.14				<.01
Media comfort	-.13				<.01
Health efficacy	.12				<.05

The findings from this study thus suggested that the eight items perceived as measuring facets of media literacy were interrelated and together impact an individuals' level of skepticism, media comfort and self efficacy. Media comfort and self efficacy then, impact critical thinking towards health information, together explaining greater variance in critical thinking than either need for cognition or the health engagement

variables suggesting that critical thinking about online health information is, to some

extent, dependent upon knowledge and understanding of media.

CHAPTER 5: WEB-RESPONSE SURVEY

Method

The results from the online survey provided empirical evidence pointing to a significant relationship between media literacy variables of self efficacy, skepticism and media comfort, with critical thinking regarding health information. If the ultimate goal of media literacy is to positively influence online health information seeking, then media literate individuals should be less likely to select Web sites containing unreliable or poor quality information. Therefore, the purpose of the second study was to test the fourth, fifth and sixth hypothesis further exploring the relationship between critical thinking and media literacy in a real world environment in which the quality of Web sites viewed was known to the researcher. This Web-response survey was intended to test the pattern of findings from the survey data providing greater understanding of the role of media literacy in the selection of quality online health information by information seekers. The overarching research question driving the second study was, "what role does critical thinking play in an individual's actual selection of a Web site as most likely to use in the future?"

In the real world credibility cues are not straight forward. Ideally, Web sites containing high quality information would exhibit all of the recommended credibility criteria and those of questionable quality boasting few or none. In a survey of twenty health Websites rated in 2007 for quality by HealthRatings.org, none however, rated either excellent in all categories or poor in all categories. Sites were rated for credibility by a selection of appropriate experts, based on credibility rating criteria established by health.org sponsors for; identity (is the owner, purpose and mission clearly disclosed?),

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advertising and sponsorship (is advertising clearly distinguished from information and is sponsorship identified?), site design including ease of use, corrections and currency (does the site work to correct false, misleading or incorrect information?), privacy (does the site disclose how personal data from visitors is used?), coverage and contents, authors and interests, references and resources, editorial policies, and health information reliability. Each item was rated excellent, very good, good, fair or poor.

For example, according to these ratings the National Institute of Health Web Site (http://health.nih.gov) provides excellent, reliable health information but does not provide any author information, and while the Mayo Clinic (http://www.mayoclinic.com) also provides excellent information they rarely provide any substantiating references or resources for the information posted. About.com, on the other hand, provides health information rated as fair (as opposed to good or very good), and inconsistent in quality, yet always provides author expertise and contact information and is rated as excellent in "Identity- mission and purpose clearly stated, full contact information provided and ownership disclosed" (healthratings.org). The second step in this research, therefore, was to test the relationship between media literacy and authentic online health information seeking. Based on the previous literature review, individuals high in media literacy should evaluate Web site information based on the expert cues available on the site and be unlikely to favor sites they cannot evaluate as credible, or believable.

This study provided an opportunity for researchers to ask subjects to look at specific health Web sites and express their own content-based credibility perceptions. In similar work, Receiver Oriented Message Analysis (ROMA) has been used to explore what content variables viewers notice in advertisements versus those of a trained coder

(Austin, 2009). From this perspective, Austin suggests, that message meaning is a variable, not a constant (p. 193). Similarly, in the viewing of Websites, receivers may or may not notice the same credibility cues as experts or place the same importance on the cues they do notice. ROMA is similar to a field experiment in that it employs quantitative methods to assess receivers' message content perceptions (Austin, Pinkleton, Hust & Miller, 2007).

Employing a ROMA methodology allowed the research to more thoroughly explore receiver's Web information evaluative priorities providing comparison between expert coders site ratings and those of users. While the assessment of the quality of health information requires an expert, ratings of site design and ease of use are more subjective, leading to the following research question:

RQ1: Will subjects ratings as "best designed" or "easiest to use" correspond with Web site?

The current study employed the objective quality ratings of HealthRatings,org as a means of categorizing the sites into groups of generally poor quality and generally high quality. HealthRatings.org is a joint project of Consumer Reports WebWatch and the Health Improvement Institute. Both organizations are non-profit and the Website itself accepts no advertising or sponsorship. The mission of the Health Improvement Institute, according to information posted on the site, is to improve the quality and productivity of America's health care (healthratings.org).

The information for the current experiment came from the analysis of health Websites conducted in July of 2007. As noted previously, Web sites were rated based on the existence of clearly available information related to; identity of the site owner,

advertising and sponsorship, corrections and currency, privacy, authors and interests, references and resources, and editorial policies. Additionally, site design, ease of use, coverage and contents and health information reliability were evaluated. Each item was rated excellent, very good, good, fair or poor.

For the purposes of the current study, eight sites were selected based on their ratings in the following areas, overall, health information reliability, coverage and contents, authors and interests, references and resources and site design. Four sites were selected that rated either fair or poor in each of the five categories and four sites were selected that rated good to excellent in each of the five categories. The only exception was Prevention.com which rated good in site design but fair or poor in the other areas. (See appendix, Web site ratings). The study employed a repeated-measures design with each subject viewing four sites, two poor and two strong. Eight orders were created using a Latin Square design so that each site appeared once in the row and once in the column (Wimmer & Dominick, 2003), so that site catagories were intermixed and each site appeared in each position, first, second, third, or fourth, in order to eliminate the potential for order effects (Cohen, 2001).

Subjects were recruited from three large undergraduate courses (Communication, Animal Science and General Education) at a public university. They were scheduled to participate in a computer laboratory in groups of twenty, each at their own computer. Each subject was asked to take 5-10 minutes to evaluate each of the four sites, "just as you would as if at home searching for health information."   Subjects were given a choice of searching for information of interest to them or selecting one of five topics; weight loss, muscle building, vitamin supplements, steroid use, or herbal remedies. These

suggestions were taken from focus group observation indicating that these are topics of interest to college students and about which they use the Internet to research.

After viewing each site subjects were asked to answer three open ended questions; "Please list anything that you noticed that gave you confidence in the information posted on this site, "Please list anything you noticed that caused you to question or doubt the information posted" and "Would you recommend this site to your friends or family to use as a source of health information? Please explain why or why not." Subjects were then asked if they were familiar with the site sponsor, had visited the site before and if this was a site they would revisit when in need of health information. Lastly, for each site subjects were asked to rate ease of use, believability of information, attractiveness of the site and thoroughness of the information found, on a seven-point Likert-type scale with 1 representing not at all and 7 representing extremely.

Finally, after viewing all four sites, subjects were asked for overall impressions; site most and least likely to revisit, site they would award "Easiest to Use," "Most Believable," and "Best Web site design." After completing the Website evaluation subjects were asked to complete the survey used in the first study for this research. This allowed the researcher to compare general responses to media literacy variables to authentic Website evaluations.

Results, Study 2

Total number of subjects completing the study was 131. The population was 55% female, 45% male, primarily Caucasian (86.3%) with a mean age of 19.67. None of the eight Web sites selected for the study had been previously visited by more than 6% of the sample, except AOL which 22% of respondents indicated having visited. Additionally, MedHelp was the only site sponsor for which no respondent indicated any prior familiarity. The sponsor indicated as most familiar, after AOL, was Healthology (40%) followed by Prevention 21%.

Prior to testing the hypotheses for this study, open-ended responses to what an individual listed as giving confidence in a Web site, for the site rated as most believable, and for the site rated most likely to revisit were coded for whether or not they contained media literacy related cues, such as comments about author, information currency or site sponsor. For example, the response "A list of references were given at the end of articles. The Department of Health and Human Services appears to endorse the site" was coded as primarily a media literate response while the statement "The information is posted with bullets which makes the information short and concise. Researching asthma I was given a video to watch which further helped my understanding" was coded as not primarily media literate. (see the appendix for a complete list of open ended responses) Intercoder reliability was calculated between two coders for 38 statements from respondents; Scott's Pi equals .78, observed .88.

The fourth hypothesis predicted that individuals with higher means for critical thinking would be more likely to list media literacy responses in selecting the most believable Web site than would those low in critical thinking. The hypothesis was tested

using one-way ANOVA with media literacy response coded into 0 (no mention) and 1 (media literacy items mentioned). Significant differences in means for critical thinking were found for the site deemed most believable (F= 7.65 (1, 104) $p < .01$) with the critical thinking mean 5.33 for those who recorded media literacy responses and 4.86 for those who did not. Therefore hypothesis 4a was supported.
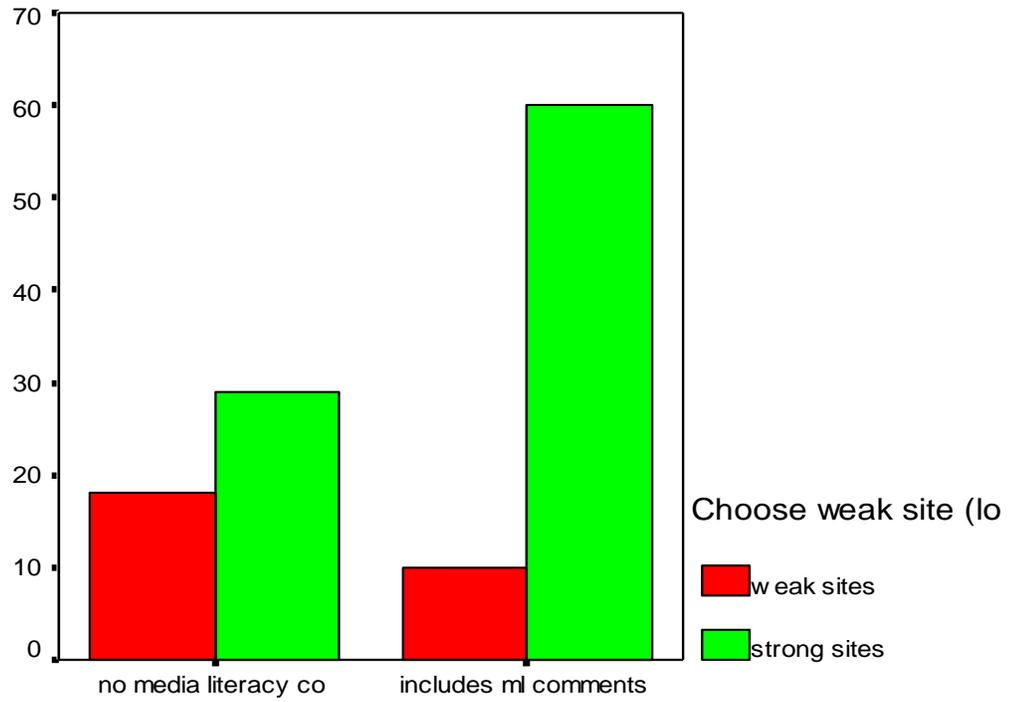
Hypothesis 4b predicted that individuals with higher means for critical thinking would also be more likely to list media literacy responses in selecting the most likely to revisit Web site, than would those low in critical thinking. One-way ANOVA indicated no significant difference in means for critical thinking by site most likely to revisit media literacy responses, so hypothesis 4b was not supported.

Hypothesis 5 predicted that the more believable an individual rated a Web site the more likely the individual would be to rate that site as most likely to revisit. Correlation analysis did indicate the strongest relationship between believable and most likely to revisit $r(130) = .64$, $p < .01$, but it remains clear that "most believable" and "most likely to return to" are not entirely consistent. Again, correlation analysis indicated significant, positive relationships between most likely to revisit and easiest to use $r(119) = .45$, $p < .01$) as well as most likely to revisit and best design $r(130) = .35$, $p < .01$) as compared with the relationships between most believable site and easiest to use $r(130) = .48$, $p < .01$ and most believable and best design $r(130) = .25$, $p < .01$. Further, significant negative correlations exist between least likely to revisit and easiest to use $r(119) = -.28 p < .01$ and $r(119) = -.2$, $p < .05$. There is no significant correlation between least likely to revisit and believability.

The sixth hypothesis predicted that individuals noting media literate responses regarding their most likely to revisit site would be more likely to select a better Web site than would individuals noting no media literacy response. Chi Square analysis indicated that individuals noting media literate responses were significantly more likely to select a better site as most likely to revisit (67.4%) than were individuals recording no media literate responses (35.7%), χ^2 (1, n = 117) = 8.91, p< .01, thus supporting the sixth hypothesis.

Table 15; Media literate response by site selected most likely to revisit

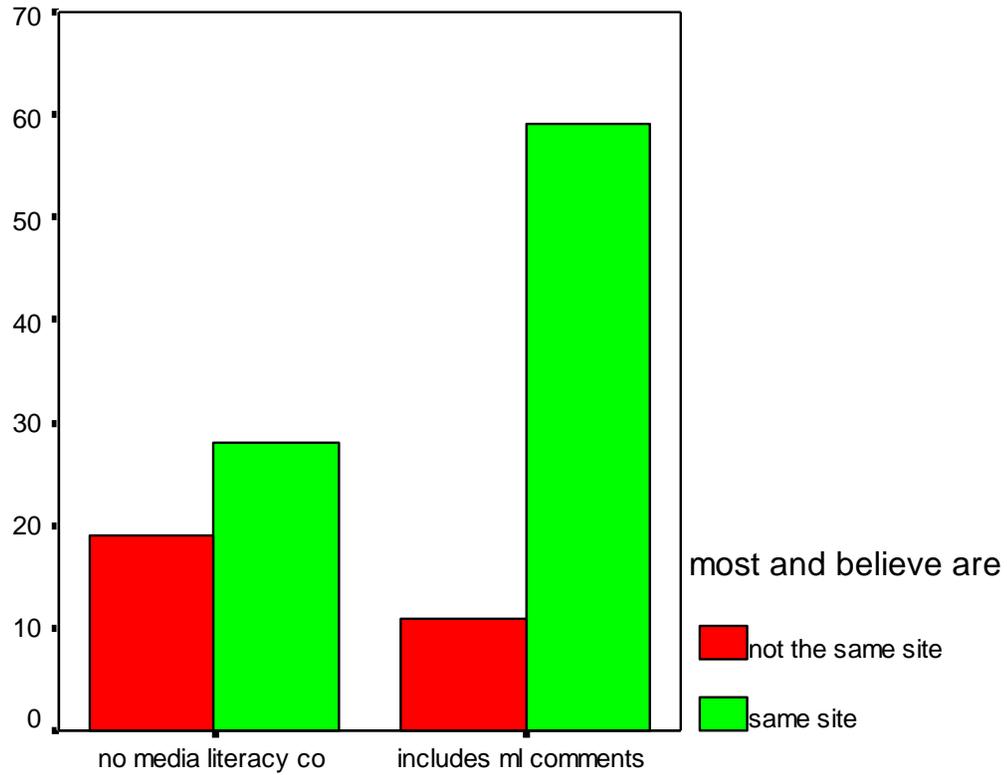| | Media literate response yes /no | | |
	No ML	Yes ML	Total
Most – weak sites	18	10	28
	64.3%	35.7%	100
Most – better sites	59	60	89
	32.6%	67.4%	100%
Total	47	70	117
	40.2%	59.8%	100%

Figure 1: Media literate response by site selected (weak vs strong) most likely to revisit

Finally, since the data suggested that individuals do not always select the site they would most likely to revisit based entirely on believability, that leads to the question as to whether individuals evaluating sites based more on media literacy cues and less on surface cues are more likely to choose the site they find most believable as the site they would be most likely to revisit. In other words, do media literate individuals approach this decision more logically?

Chi square analysis indicated that individuals noting media literate responses were significantly more likely to select the same site as most likely to revisit and most believable (84.3%) than were individuals recording no media literate responses (59.6%), $\chi^2 (1, n = 117) = 9.01, p < .01$.

Table 16; Media literate response as contributor in the relationship between most believable and most likely to revisit.

	Most likely to return site = most believable site		
	Not the same site #	The same site #	total
No media literate cues (most)	19 40.4%	28 59.6%	47 100.0%
Media literate cues (most)	11 15.7%	59 84.3%	70 100.0%
Total	30 25.6%	87 74.4%	117 100%

Figure 2: Media literate response as a contributor in the relationship between most

believable and most likely to revisit.

Lastly the use of ROMA methodology allowed the comparison of respondents' ratings of site design and ease of use with those of expert coders. These ratings did differ in that 22% of respondents rated as easiest to use three of the sites deemed by experts as only fair in this category. Similarly, 29% of respondents rated as best design three sites experts rated as fair to poor.

Table 17; subject site ratings

Site	Most likely to return to	Most believable	Easiest to use	Best design	Least likely to return to
Med Help	3	2	2	8	23
Healthology	3	2	11	9	33
Prevention	13	5	21	23	21
AOL Health	11	6	16	21	15
NIH	30	42	16	13	4
Medicinet	23	24	8	15	11
Aetnea Intellihealth	18	19	21	19	7
Family Doctor	18	19	24	11	5

To summarize, the findings from the second study showed that individuals higher in critical thinking were more likely to indicate media literate responses when selecting a site as most believable. Further, individuals indicating media literacy cues as creating confidence in a site were more likely to select the "better" sites as most likely to revisit and were more likely to mention the site they identified as most believable as the site they were also most likely to revisit. Thus, individuals higher in critical thinking appear to form their evaluations in terms of the site most likely to revisit more logically than those

who are lower in critical thinking. For those lower in critical thinking, while believability

appears to be an important criterion in selecting a site as most likely to revisit, site design

and ease of use also seem to factor into the decision.

CHAPTER SIX: DISCUSSION

The Internet has become a popular source of health information, particularly for those young adults who have grown up with the World Wide Web at their fingertips. Lack of oversight and regulation however, leave the Web open to unknown quantities of poor quality, unreliable or inaccurate information. How best, then, might health professionals and educators positively impact an individual's online health information seeking behaviors to increase the chances of retrieving good quality information and avoiding information that is misleading or inaccurate?

The current study explored the relationship between media literacy, need for cognition, and health engagement, and the impact of these variables on the application of critical thinking criteria about information retrieved online, specifically health information. Individuals are likely to use surface level cues, such as Web site design and ease of navigation when assessing online information. Experts would recommend, however, that individuals apply critical thinking; analyze, evaluate and verify actual credibility of site content.

An understanding of the predictors of the application of critical thinking to evaluation of online information will put health professionals and educators in a better position to positively influence these predictors. Prior theoretical research sheds light on the types of factors that foster systematic thinking such as involvement. The current study explores knowledge, understanding and experience with media itself, the source of the information, as contributing to more systematic processing of online health information. Findings suggest that, media literacy may have greater positive impact on

health information seeking than demographics such as age and gender, health engagement or need for cognition.

Based on a review of the literature, media literacy was conceptualized as a process consisting of knowledge of media messages and industry, level of understanding of persuasive intent significantly associating with levels of skepticism and media comfort, experience with computers and the Internet, access to online information in the form of digital literacy, and self efficacy regarding information seeking. Within the media literacy structure, knowledge, access, and experience were expected to associate positively with outcomes of greater skepticism and less media comfort, and greater self efficacy. In general findings from the study indicated support for these relationships depicted in this process, although not always in the direction expected.

One would predict that knowledge, access, and experience would positively contribute to skepticism and self efficacy, but negatively to media comfort. In other words, the more an individual knows about media the more they would question media messages and the more skeptical and less comfortable they would become. Additionally, more experience and greater access should provide more opportunity to witness discrepancies and inconsistencies in information, thereby increasing skepticism as well as self efficacy. In contrast, the more skeptical a media user, the more caution they should display when searching for online information, thus exhibiting lower media comfort.

As expected, skepticism negatively predicted media comfort, although the relationship between media comfort and self efficacy was unexpectedly positive. There was no significant predictive relationship between self efficacy and skepticism. It may be that an individual can be both high in media comfort and be skeptical. Possibly the

positive association between media comfort and self efficacy suggests that individuals high in media comfort, are efficacious in finding quality information based on greater knowledge of media and greater skepticism. Additionally, the knowledge subvariable, finance, negatively associated with self efficacy, but positively with media comfort, which then associated positively with self efficacy. Potentially, knowledge of media financial models negatively associates with self efficacy if one has insufficient experience or access to instill adequate confidence in one's online searching abilities; that is, the individual has the knowledge but not the skills to feel confident knowing how to apply that knowledge. A person may understand that media is financed by advertising and that advertising on the Web site may bias the site's information content, and yet lack the ability to find information on a site not supported by advertising. On the other hand, one might be comfortable with media because one is efficacious and skeptical. Future research will need to explore causality among these variables, something survey research is not designed to do.
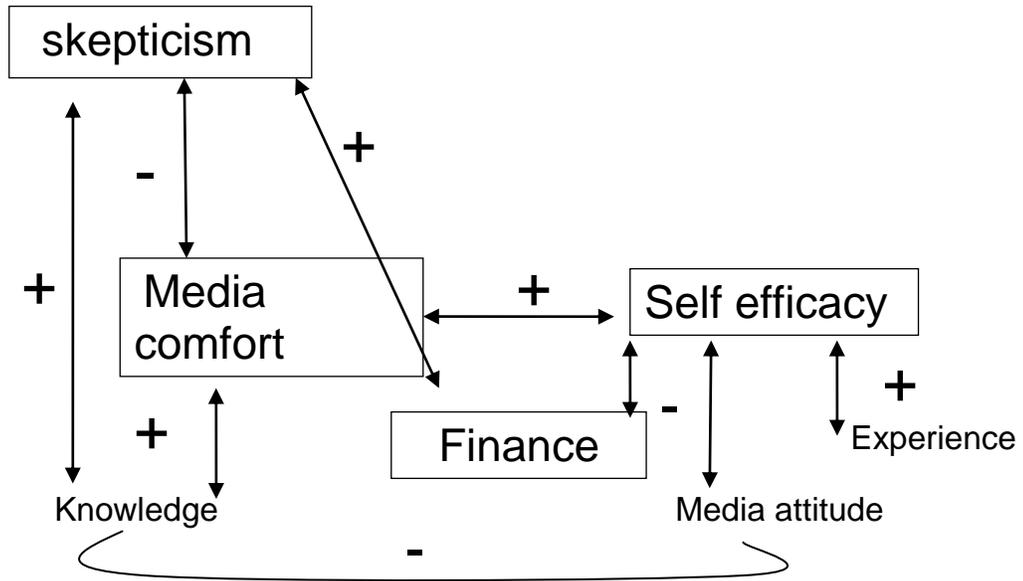
Figure 3: relationship among variables related to media literacy construct.

One goal of media literacy is to foster skeptical, confident information seekers with the motivation and knowledge required to critically evaluate mediated information. For the current study, the dependent variable of critical thinking was operationalized as consisting of several items related to media literacy that individuals should question when accessing information such as who the author of the information is and their expertise. Principle component factor analysis loaded the critical thinking variables into two categories. First, critical thinking about the author of information consisted of determining if the author is identified, if the author's expertise and goals for posting the information are clear, and if contact information is available for the author. Secondly, to critically evaluate information content by questioning how current it is, whether the information represented opinion or fact, whether the information provided is thorough and whether it is verified by other sources or citations. Results of the current study indicated that self efficacy positively, and media comfort negatively, predicted application of these critical thinking criteria regarding both aspects of online health information. In other words, individuals with more self efficacy are more likely to employ critical thinking and individuals high in media comfort, less likely to employ critical thinking when evaluating online health information. The findings were almost identical whether measuring critical thinking about the author or the content.

Parallel to the findings that media comfort associated positively with self efficacy but negatively with critical thinking, were the findings that the relationship between self efficacy and critical thinking was positive. A potential explanation might be that self efficacy moderates the relationship between media comfort and critical thinking, but analysis of the current data set does not support this contention. This is a relationship

that must be more fully explored by future research along with the development of a

stronger media comfort factor, as the current one contains only two significantly
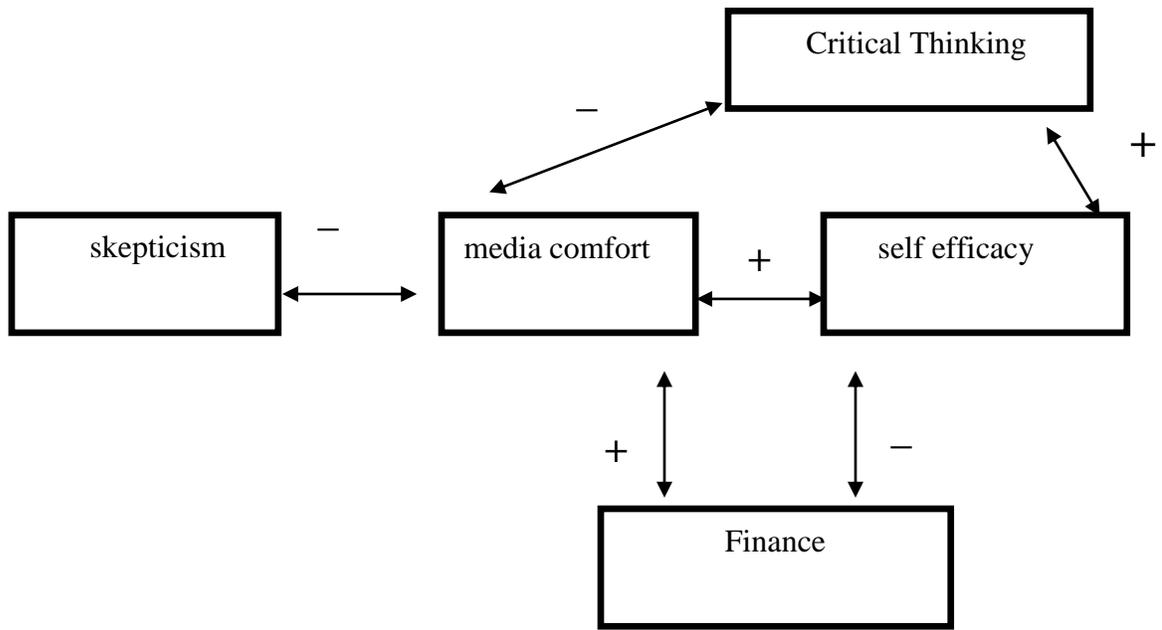
correlated items.

Figure 4: relationship among media literacy variables with critical thinking

Along with media literacy, several other variables were tested for their relationship with critical thinking towards online health information because prior research suggested that they could be important predictors of online information credibility. Looking first, at critical thinking towards the author, linear hierarchical regression results indicated both age and gender as factors that significantly contribute to critical thinking; women and older respondents were more likely to think critically about online health information. Health engagement and need for cognition each contributed significantly as well, although less so than media literacy, to critical thinking, with need for cognition the smallest significant contributor in the analysis.

Findings were slightly different for critical thinking regarding content. Self efficacy was again the largest contributor, explaining 23% of the variance. Need for cognition was next, explaining 20% of the variance, and health efficacy the smallest significant predictor, explaining 12% of the variance. Interestingly, health efficacy was not a significant predictor in critical thinking towards the author, while health motivation was not a significant predictor in critical thinking towards content (although nearly significant at $p = .052$). That critical thinking towards the author and content are different factors with different relationships among the variables might be further investigated with future research. It seems likely that health engagement factors are possibly motivating individuals to evaluate information more carefully, hence the larger relationship with need for cognition. Although not quantified, media literate responses to the open ended questions in the second study seemed to more often mention sponsor or author-related information. Perhaps individuals need to dig more deeply to find the content-related verification criteria including currency and citations, therefore requiring

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greater engagement in one's health. Believing that one has the capacity to control their own health, or health self efficacy, may be the motivating variable that causes an individual to dig deeper to verify the credibility of information found.

For the current study for both author and content, self efficacy for information seeking was the strongest contributor, and media comfort also a strong predictor, validates media literacy as an important component of quality online health information seeking, even for those highly engaged in their health. Health professionals and health educators should work to support media literacy education efforts as a means of protecting the public from inaccurate online health information.

The survey provided empirical evidence in media literacy as a positive relating to the application of critical thinking variables when evaluating online health information. Survey respondents were not, however, asked to evaluate the perceived credibility of any specific information. To what extent the relationships between the media literacy process and critical thinking exist in a real information search was addressed by the findings of the second study.

Web-response survey completed by 131 subjects, asked respondents in a laboratory setting to evaluate believability of authentic Web sites. Each respondent viewed four Web sites and was asked to respond to an open-ended prompt to list the things that gave them confidence in the Web site they were viewing. After viewing all four sites, subjects were asked to select which of the sites they considered most believable and would be most likely revisit, if in need of health information. Open-ended responses to the Web sites selected as most believable and most likely to revisit were then coded for containing media literate cues or not containing media-literate cues.

Identification of media literate cues was consistent with the critical thinking criteria on the survey, including mention of Web site sponsor, author details, currency of the information, noting source cites, potential bias based on the presence of advertising or sponsorship, contact information for experts associated with the site, and comprehensiveness of information posted, as well as quality of external links from the site.

Overall, the population was more likely to mention a media literate cue in evaluating the Web sites determined most believable (62.7%) and most likely to revisit (59.8%) than to only mention surface-level cues such as site design, appearance, or ease of use. Similarly, the mean of critical thinking (5.23) was above the scale mid-point. Whether this mean is typical of adults in the general population, college students, or is consistent with the actual application of critical thinking in the real world environment is not known. One could reasonably expect a college student population to score higher in critical thinking than the general adult population. Research also does suggest that individuals are more likely to say they apply these verification criteria indicative of critical thinking than actually do (Flanagin & Metzger, 2007). This may very well be the same for subjects asked to indicate what gave them confidence; they may more critically evaluate the information in a laboratory setting than they would in their own home on their own time simply because they are being asked to do so.

The fourth hypothesis predicted that critical thinking means would be higher for individuals mentioning media literacy related cues in their evaluation of a Web sites' believability than for those relying on surface cues like site design and ease of navigation. This hypothesis was supported. The first part of the fifth hypothesis predicted that

critical thinking means would also be higher for individuals noting media literacy cues for the site they would be most likely to revisit in comparison with those relying on surface cues. This was not supported. Taken together, these findings suggest that decisions about believability are perhaps more logical than the ultimate decision as to which Web site a person is most likely to use in the future.

Noting that correlations between both the site selected as best designed and easiest to use were stronger with most likely to use than with believability, one's choice of which Web site to return to is perhaps somewhat less logical and more complex than a simple assessment of believability. It would appear that all three items- believability, site design, and ease of use -impact the choice of which site to revisit. This extends previous findings that individuals use information they believe is credible suggesting, all things being equal in terms of believability, individuals will have a preference for information sites that are well designed and easy to use, which seems reasonable. The design of the current study makes this relationship difficult to explore further, but future research designed to shed light on this complex interaction would be useful to media literacy educators. Understanding the degree to which each is important, and potentially the order in which they occur in a Web site evaluation, can help to direct media literacy education efforts.

Ultimately, the goal of media literacy would be to increase the likelihood that an individual would select the better health information Web sites for future use, based on the verification criteria indicative of critical thinking, ensuring accuracy and reliability of the information contained on the site. Chi square results form the third hypothesis supporting this contention. Individuals noting media literate cues were significantly more

likely to select one of the four better sites than were those recording only surface-level cues. Additionally, individuals noting media literacy cues were more likely to select the same site as both most believable and most likely to revisit. This finding might suggest that media literacy increases one's logical evaluation of a site, decreasing the more emotional aspects of choice in terms of liking site design or finding the site easy to use. This suggests that, within the limitations of this research, media literacy appears to make a difference in the positive direction. In other words, according to the findings of this study, media literacy works. Individuals who pay attention to the types of items media literacy programs emphasize appear to be better online health information seekers, selecting stronger sites as their choice of an information resource.

In sum then, the findings from the two studies taken together suggest that components addressed in media literacy curricula relating to knowledge, understanding of persuasive intent, and experience, potentially offering increased access, significantly relate to increased skepticism and media self efficacy regarding media use, which significantly relate to the application of verification criteria indicative of critical thinking towards online health information. The application of these criteria then associates positively with the likelihood of an individual's retrieving information from a more credible Web site. It is important to emphasize here that these relationships, while significant do not suggest causality. These relationships should be conceptualized as a process, likely circular or spiraling in nature.

Additionally, the relationships in evidence in this study are likely to be impacted by underlying processes identified in prior information searching research. Both the Elaboration Likelihood Model and Systematic Heuristic Theory suggest that individuals

will think more deeply, and possibly critically, about subjects in which they are more involved. Hence, the relationship between health engagement and critical thinking is not surprising. That this more systematic thinking is also positively impacted by variables related to media literacy is a new addition to prior research.

This research is not without its limitations. First, the intent for the online survey was that the sample be a probability-based random sample which was, in the end, impossible to achieve. As to how one might actually reach this goal with a college student population is unclear. Not only are universities non-cooperative in providing access to students' contact information, when access is granted response rates are so low as to raise concerns regarding non-response error and the validity of the results. A collaborative research project among faculty at disparate institutions might improve both response rates and the generalizability of the results, but still would be considered a nonprobability sample. Certainly the response rate was highest for those students associated with not only the author's institution but place of work as well. Response rates from this population were 15.8% without a follow-up email. Response rates for the other in-state institution with a follow-up email were 11.2%. The lowest response rates were at the two institutions where follow-up emails could not be sent, 2.6% and 5.5%, as would be predicted by the literature on increasing online survey response rates.

This research is limited, also, in the ways of all survey research: researchers are dependent on respondents to "tell it like it is" while knowing that an individuals' survey response is not always entirely reflective of actual behavior. That said, the social desirability construct was not a significant predictor in any of the analyses. Further, survey research cannot indicate causality. This may be critically important in

investigating the relationship between the media literacy items in that the direction of associations did not always intuitively make sense. Specifically, media comfort associated negatively with skepticism and critical thinking so that higher media comfort predicted both lower skepticism and lower critical thinking, as would be expected. Between media comfort and self efficacy, however, the relationship was positive, so that higher media comfort associated with higher self efficacy positively predicted greater critical thinking. Skepticism did not associate significantly with either self efficacy for information seeking or critical thinking regarding health information. This may be related to the fact that the skepticism scale measures skepticism towards advertising specifically, while media comfort measures items related to the trust of online information directly.

Similarly, the relationships among the three knowledge variables were somewhat unexpected. The attitude questions about perceptions of alternative news sites and blogs as a positive contribution, "providing a refreshing alternative" to "a large percentage of the population." High scores on this variable would indicate a positive feeling about media communication, possibly an overly optimistic view of the state of the current media in providing a variety of viewpoints. As would be expected, this variable associated negatively with knowledge, media comfort and self efficacy, which all associated positively. Surprisingly, however, the finance items, "The FCC requires that each television channel be owned by an individual company" and "The U. S. model of media financing is the same media financing model used in other countries" were recoded as reverse worded and computed into the factor finance. It was anticipated that an understanding of the financial model of the U.S. media as owned by a small number of corporations and financed by advertising, unlike the model used in most other countries

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with large government subsidies and control, would associate negatively with attitude and positively with knowledge, trust and self efficacy. The opposite was found, however, with finance exhibiting a positive relationship with attitude and a negative one with the other three variables. Either the finance items were not well constructed and therefore did not measure what they were intended to, or an understanding of the financial model of the U.S. media is accompanied by acceptance of this as the preferred model, rather than understanding the potential negative impact on media messages and lack of variety available when media channels are owned by a small number of entities and supported primarily with advertising dollars.

Greater understanding of how the items measuring facets of media literacy interact and predict self efficacy, media comfort and skepticism will help clarify the relationship between these three variables and their contribution to critical thinking. It is early days yet, in the measurement of media literacy, with much still to learn and work to do to replicate and strengthen the findings from the current study. This current study stands with only one other author who has attempted to measure media literacy outside of an intervention. Yet, we must determine the extent to which media literacy is important in a real world setting, and what aspects of media literacy need to be emphasized or strengthened, in order to reach the highest level of literacy required. Further, the findings from the current study are the first to suggest that there is likely carry-over effect from media literacy education. Knowing why and how to critically evaluate one type of media message appears to strengthen an individual's ability to apply these same skills to other subject areas. The current study explored the relationship between generic media literacy variables, unrelated to topic beyond media itself, and its impact on health information

seeking specifically finding significantly positive associations between media literacy level and critical thinking regarding online health information.

As a scale in and of itself, the individual components representing media literacy need far more work in order to be considered truly valid and reliable. Findings from this study will need to be replicated and the factors subject to confirmatory factor analysis for more thorough testing. We are not there yet. The original knowledge construct consisted of nine items that factored into three factors with three, two, and two items, respectively. Further exploration as to what each is actually measuring and what of aspect of knowledge is most predictive of desired media literacy outcomes will be important for media literacy educators developing curriculum and providing programs. According to the guidelines used in this study multicollinearity, evidenced when items correlate significantly at >.90 or factors at >.85, was not a problem. More in-depth analysis, considering tolerance and Variance Inflation Factor (VIF), an indicator of standard error, of the factors did indicate that five of the seven skepticism factors and three of the six self efficacy factors displayed low tolerance (<.40) and high VIF which may impact statistical analysis involving either of these two factors (Allison, 1999) According to Allison, inflation of the standard error caused by multicollinearity and indicated by a large VIF, is "an accurate reflection of uncertainty" and can produce misleading results (p. 142). (See appendix).

As with the survey, the Web-response survey contains limitations inherent in the method itself. Although attempting to replicate actual online health information seeking behaviors, individuals in a laboratory setting do not behave exactly as they would in their own environment. In the current study, individuals were given specific sites to visit,

therefore not replicating the type of search they would likely do at home, by entering key words into a generic search engine. Further, although allowed to search on a topic of their own interest, they were not internally motivated by a need to search for online health information. Their motivation was, instead, to earn extra credit which suggests an individual's searching behavior might differ from that of a true health information search. Additionally, subjects were asked to document their evaluation process and so may have been inclined to think more critically about the Web sites than in another situation or environment, suggesting the possibility that the media literacy cues noted could be less influential in another time and place.

Despite these limitations and acknowledging that all research is subject to limitations, the findings from the current study are relevant and make a positive contribution in a number of ways. Media literacy educators and promoters can be optimistic in the significant findings of this study establishing a positive relationship between media literacy, external of an intervention, and positive online health information seeking behaviors. Further, informing media literacy education programs are the findings related to the difference between the choice of Web site as believable and most likely to return to. Media literacy programs need to incorporate this knowledge into their teachings, making learners aware that their decisions are not always logical and talking about the meaning of Web site design and navigation when evaluating the credibility of Web site information. This information should also be of interest to health educators designing Web sites for use by the general public, particularly in light of findings employing the ROMA method, that users and expert coders did not always agree as to the quality of the design or ease of use. It is important that designers of health Web

sites have sites evaluated on these criteria by the target audience to increase the likelihood that individuals will use, and revisit, the site they are designing.

The findings of this study also provide a foundation for a fruitful research program, first in the continued development of the establishment of a valid and reliable media literacy scale and second, in the predictive validity of that scale related to media use. For example, what is the impact of media literacy level on youth accessing Web sites intended to educate about nutrition, alcohol, tobacco or media literacy itself? Many of these Web sites are created with games and entertainment designed to make learning fun. How is the site used? What information is accessed and believed? Does media literacy level make a difference? If, as found in the current study, media literacy increases critical thinking, are individuals higher in media literacy more likely to learn from the site, versus those lower in media literacy, who may simply enjoy the entertaining aspects? A combination of the type of Web-response survey, combined with screen capture software, could enlighten both Web site designers and educators as to how to make this type of information most accessible to those who need it most.

In conclusion, the findings of this study are relevant and make a positive contribution in several ways. First, they provide empirical evidence in support of media literacy programs for those working to influence educators, communities, state and federal policy makers and grantors. Second, they provide a foundation from which future research in media literacy can build, extending opportunities for research outside the boundaries of media literacy interventions. Lastly, they provide guidance for health educators interested in promoting both online health information and healthy online health information seeking behaviors.

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APPENDIX

Human Subjects Approval:
MEMORANDUM

TO: Erica Austin and REBECCA VANDEVORD,

FROM: Patrick Conner (for) Kris Miller, Chair, WSU Institutional Review Board (3005)

DATE: 11/18/2008

SUBJECT: Certification of Exemption, IRB Number 10637-001

Based on the Exemption Determination Application submitted for the study titled Media Literacy as a Predictor of Critical Online Health Information Seeking, and assigned IRB # 10637, the WSU Institutional Review Board has determined that the study satisfies the criteria for Exempt Research contained in 45CFR 46.

Exempt certification does not relieve the investigator from the responsibility of providing continuing attention to protection of human subjects participating in the study and adherence to ethical standards for research involving human participants.

This certification is valid only for the study protocol as it was submitted to the IRB. Studies certified as Exempt are not subject to annual review. If any changes are made to the study protocol, you must submit the changes to the IRB for determination that the study remains Exempt before implementing the changes. Request for Amendment forms are available online at http://www.irb.wsu.edu/forms.asp.

In accordance with federal regulations, this Certification of Exemption and a copy of the study protocol identified by this certification must be kept by the principal investigator for THREE years following completion of the project.

It is important to note that certification of exemption is NOT approval by the IRB. The study materials should not include the statement that the WSU IRB has reviewed and approved the study for human subject participation. Please remove all statements of IRB Approval and contact information from study materials that will be disseminated to participants.

Washington State University is covered under Human Subjects Assurance Number FWA00002946 which is on file with the Office for Human Research Protections.

If you have questions, please contact the Institutional Review Board at (509) 335-3668. Any revised materials can be mailed to the Office of Research Assurances (Campus Zip 3005), faxed to (509) 335-6410, or in some cases by electronic mail, to irb@mail.wsu.edu.

Review Type: New Protocol
Review Category: Exempt
Date Received: 11/7/2008
Exemption Category: 45 CFR 46.101 (b)(2)
OGRD No.: N/A
Funding Agency: N/A

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I. Pretest materials

▪ *Pretest Indices:*
Prior to developing the final instrument the following indices will be pretested with focus groups.

1. Predictors of media literacy (based on concepts frequently included in media literacy curriculumn).
    a. Knowledge of media;
        i. The U.S. is just one of many countries whose media is financed with advertising dollars.
        ii. Advertisers have total control over the content of the media where there ads are placed.
        iii. There are currently more TV, radio stations and Web sites providing consumers with the largest variety of entertainment, news and information ever available.
        iv. Research suggests that what we see and hear from the media influences the way individuals see the world.
        v. Alternative Web sites and blogs, offering a diversity of opinions and information are used by what percent of the population? (multiple choice)
        vi. All of what is currently available via American television is owned by how man corporations? (multiple choice)
    b. Media experience
        i. Total number of hours spent online each week.
        ii. Total number of hours spent social networking (email, face book, My space, chat rooms, blogging etc.) each week.
        iii. Total number of hours "surfing" the Net each week.
        iv. Total number of hours spent searching for specific information each month.
        v. I have experience creating Web sites. (none -> a lot)
        vi. I have experience updating Web sites.

      vii. I have experience creating a blog.
     viii. I have experience downloading software.
      ix. Using html coding
       x. I have experience building data base interactivity with in Web page.
      xi. I have experience visiting a virtual world such as Second Life.
     xii. I have experience using Google Scholar.
    xiii. I have experience using Google Advanced search functions.

c. Access: digital Llteracy; 7-point scale from no understanding to full understanding (proxy measure of skill) Hargittai (2005, 2006)

Silver Light	RSS Feed	PDF
Spam	Phishing	Podcasting
Real Simple Syndication	Social Bookmarking	JPG
Tabbed Browsing	Bookmark	Torrent
MMORG	Tagging	Web Stream
Browser	Avatar	Twitter
Whois		

d. Understanding persuasive intent. (nine item SKEP; Obermiller, Spangenberg 1998) Strongly disagree to strongly agree.
       i. Advertising on a Web site does not influence the information available on the site.
      ii. The aim of advertising is to inform consumers about a product
     iii. Advertising information is generally truthful
     iv. Advertisements can be a reliable source of information.
      v. We can depend on getting the truth in most advertising.
     vi. Advertising is truth well told
     vii. In general, advertising presents a true picture of the product being advertised.
    viii. Most advertising provides consumers with essential information
     ix. I believe advertising is informative.
      x. I feel I've been accurately informed after viewing most advertisements.

e. Media comfort
       i. There is really no single piece of media information I trust.
      ii. I have just a couple favorite online sources for my news.
     iii. When looking for online information I can usually find what I need on the first one or two sites I visit.
     iv. I would never try something I read about online without checking several other sources.
      v. I primarily use online information so that I know what questions to ask an expert (ie, Doctor, lawyer, financial planner)
     vi. The media are a great source of information about people and places I may never see

f. Self Efficacy (re: finding credible information online)
       i. I am certain I can find information online that I trust

ii. I am certain that I can find information online that is comprehensive.
iii. I am certain that I can avoid online information that is out of date.
iv. I am certain that I can avoid online information that is inaccurate
v. I am certain that I can find information online that is complete
vi. I am certain that I can avoid online information that is misleading

2. (Credibility perception basis) Thinking about the last time you searched for information online, **rank in order of importance**, the extent to which you considered each of the following to be important
   a. Ease of locating the site and information I needed.
   b. Appearance of the site- organized, well designed, easy to use.
   c. Details were available about the content like author, sponsor, date last updated..
   d. Presence or lack of advertising
   e. The information posted made sense to me.
   f. The information posted seemed comprehensive and complete.

   Potential Critical Thinking Measures regarding media information in general
3. (Critical Thinking outcomes) In regard to information you have found online, please indicate the extent to which you consider each of the following items:
   a. Whether the author of the information is identifiable
   b. Whether contact information for the author or site sponsor is available
   c. Whether the author's expertise is identifiable
   d. The author's goals for posting the information online
   e. How current the information is
   f. Whether the information is verified by other sources
   g. Whether the site contains an official "stamp of approval"
   h. Whether the information represented is opinion or fact
   i. Whether the information provided is complete
   j. Whether the information provided is comprehensive.
   k. Whether the site was advertising free

4. Need for Cognition (Cacioppo & Petty, 1982; Cacioppo, Petty & Kao, 1984)
   a. I would prefer complex to simple problems
   b. I like to have the responsibility of handling a situation that requries a lot of thinking.
   c. Thinking is not my idea of fun*
   d. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities*
   e. I try to anticipate and avoid situations where there is likely chance I will have to think in depth about something. *
   f. I find satisfaction in deliberating hard and for long hours.
   g. I only think as hard as I have to.*
   h. I prefer to think about small, daily projects to long-term ones.*
   i. I like tasks that require little thought once I've learned them.*
   j. The idea of relying on thought to make my way to the top appeals to me.

k. I really enjoy a task that involves coming up with new solutions to problems.
l. Learning new ways to think doesn't excite me very much.*
m. I prefer my life to be filled with puzzles that I must solve.
n. The notion of thinking abstractly is appealing to me.
o. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much tought.
p. I feel relief rather than satisfaction after completing a task that required a lot of mental effort.*
q. It's enough for me tthat something gets the job done; I don't care how or why it works.*
r. I usually end up deliberating about issues even when they do not affect me personally.
    (*reverse score)

5. Health Perspective- factors from the multidimensional Health Questionnaire (Snell 1991, 1992, 1997). –The extent to which a person takes responsibility for and/or is involved in their own health status (efficacy, internal locus of control, health consciousness
    a. Health Efficacy
        i. I have the ability to take care of any health problems that I may encounter
        ii. I am competent enough to make sure that my physical health is in good shape
        iii. I have the skills and ability to ensure good physical health for myself
        iv. I am able to cope with and to handle my physical health needs
        v. I have the capability to take care of my own physical health
    b. Motivation for healthiness
        i. I am very motivated to be physically health.
        ii. I am strongly motivated to devote time and effort to my physical health.
        iii. I have a strong desire to keep myself physically healthy.
        iv. It's really important to me that I keep myself in proper physical health.
        v. I strive to deep myself in tip-top physical shape.
    c. Health Esteem
        i. I derive a sense of self-pride from the way I handle my own physical health.
        ii. I am proud of the way I deal with and handle my health.
        iii. I am pleased with how well I handle my own physical health.
        iv. I have positive feelings about the way I approach my own physical health.
        v. I feel good about the way I cope with my own physical health needs.
    d. Internal Health control:
        i. I feel like my physical health is something that I myself am in charge of
        ii. My health is something that I alone am responsible for.

     iii. The status of my physical health is determined largely by what I do (and don't do)

     iv. What happens to my physical health is my own doing

     v. Being in good physical health is a matter of my own ability and effort.

6. Self Efficacy (re: finding credible health information online)
    i. I Am certain I can find health information online that I trust
    ii. I am certain that I can find health information online that is comprehensive.
    iii. I am certain that I can avoid online health information that is out of date.
    iv. I am certain that I can avoid online health information that is inaccurate
    v. I am certain that I can find health information online that is complete
    vi. I am certain that I can avoid online health information that is misleading

7. Which of the following best describes you- (to what extent do you agree/disagree with each)
    a. In the past year I have looked online for health information but only to form questions for my Doctor.
    b. (adoption) In the past year I have tried something I learned from an online source related to my health (yes/no)
    c. In the past year I have searched for health information online, but only for other people.

8. (Credibility perception basis) Thinking about the last time you searched for health information online, **rank in order of importance**, the extent to which you considered each of the following
    a. Ease of locating the site and information I needed.
    b. Appearance of the site- organized, well designed, easy to use.
    c. Details were available such as the authors contact information and date info was last updated were readily available.
    d. The site appeared to be professional designed
    e. I could identify the site sponsor.
    f. I trusted the site sponsor.
    g. The site seemed to contain the most comprehensive and complete information.

9. Critical Thinking regarding online health information specifically
    a. Search Scenario- Please tell us about the search you conducted the last time you looked for health information online
        i. Search Engine(s)
        ii. Search Term(s)
        iii. # of Web Sites accessed
        iv. How information found was used
        v. Discussed information found with anyone?

vi. Length of time spent searching

b. In regard to health information you have found online, please indicate the
extent to which you consider each of the following items:
i. Whether the author of the information is identifiable
ii. Whether contact information for the author or site sponsor is available
iii. Whether the author's expertise is identifiable
iv. The author's goals for posting the information online
v. How current the information is
vi. Whether the information is verified by other sources
vii. Whether the site contains an official "stamp of approval"
viii. Whether the information represented is opinion or fact
ix. Whether the information provided is complete
x. Whether the information provided is comprehensive.
xi. Whether the site was advertising free

Pretest instrument
Part I: Computer use
1. Please give us an indication of your experience with the Internet:

a. Do you own a computer   No   Yes
b. Do you have Internet access where you live?   No   yes   don't know
c. On average how many hours do you spend online (Internet or Web) each day? _____
d. How many of those hours are spent searching for some type of information? _____
e. I have an email address.   No   Yes

2. Circle the response that most closely describes you:

	Not at all like me						Extremely like me
I am likely to turn to the Internet when looking for information.	1	2	3	4	5	6	7
I am likely to turn to the Internet when looking for information related to my health and wellbeing (including nutrition and physical fitness information)	1	2	3	4	5	6	7

3. Circle the response that most closely describes your computer experience:

	None						Extensive
I have experience updating Web sites.	1	2	3	4	5	6	7
I have experience creating Web sites.	1	2	3	4	5	6	7
I have experience downloading software.	1	2	3	4	5	6	7
I have experience using html coding.	1	2	3	4	5	6	7
I have experience writing my own SQL statements	1	2	3	4	5	6	7
I have experience building data base interactivity within a Web page	1	2	3	4	5	6	7
I have experience visiting a virtual world such as Second Life	1	2	3	4	5	6	7
I am proficient in the use of Microsoft Office products (Word,	1	2	3	4	5	6	7

Excel, PowerPoint)

4. Thinking about when you search online for any type of information to what extent do you disagree or agree with each of the following:

	strongly disagree						strongly agree
I am certain I can find information online that I trust	1	2	3	4	5	6	7
I am certain that I can find information online that is thorough.	1	2	3	4	5	6	7
I am certain that I can avoid online information that is out of date.	1	2	3	4	5	6	7
I am certain that I can avoid online information that is inaccurate	1	2	3	4	5	6	7
I am certain that I can avoid online information that is misleading	1	2	3	4	5	6	7

5. Please indicate whether or not you are familiar with each of the terms on this list:

a. Silver Light	No	Yes	Not sure
b. Jpg	No	Yes	Not sure
c. Saging	No	Yes	Not sure
d. Phishing	No	Yes	Not sure
e. Real simple syndication	No	Yes	Not sure
f. Social bookmarking	No	Yes	Not sure
g. Tabbed browsing	No	Yes	Not sure
h. Torrent	No	Yes	Not sure
i. tagging	No	Yes	Not sure
j. Avatar	No	Yes	Not sure
k. MMORG	No	Yes	Not sure
l. Web Stream	No	Yes	Not sure
m. RSS Feed	No	Yes	Not sure
n. Twitter	No	Yes	Not sure
o. WHO IS	No	Yes	Not sure
p. Podcasting	No	Yes	Not sure
q. Health portal	No	Yes	Not Sure

6. Thinking about the last time you searched for information online, <u>rank in order of importance</u>, how important you considered each of the following to be from 1 to 4 with 1 being most important and 4 being least important.

_____ The information made sense to me.
_____ Presence or lack of advertising
_____ Appearance of the site- organized well designed, easy to use.
_____ Details available on the site about the author's expertise, contact information etc.
_____ Ease of locating the site and information I needed.
_____ Information about the content, like source cites and date last updated, were available.

Part II: Media
7. Please indicated to what extent you strongly disagree (1) or strongly agree with each of the following statements

	strongly disagree						strongly agree
Advertising on a Web site does not influence the information posted	1	2	3	4	5	6	7
The aim of advertising is to inform consumers about a product.	1	2	3	4	5	6	7
Advertising information is generally truthful	1	2	3	4	5	6	7
Advertisements can be a reliable source of information.	1	2	3	4	5	6	7
We can depend on getting the truth in most advertising.	1	2	3	4	5	6	7
Advertising is truth well told	1	2	3	4	5	6	7
In general, advertising presents a true picture of the product being advertised.	1	2	3	4	5	6	7
Most advertising provides consumers with essential information	1	2	3	4	5	6	7
I believe advertising is informative.	1	2	3	4	5	6	7
I feel I've been accurately informed after viewing most advertisements.	1	2	3	4	5	6	7

8. Please indicate how truthful you believe each of the following statements to be:

	Not at all true						Totally true
Advertisers provide the primary financing for all media production (Web sites, TV, movies, newspapers, magazines, radio) in the U.S.	1	2	3	4	5	6	7
The U.S. model of media financing is the	1	2	3	4	5	6	7

same media financing model used in other countries.							
Advertisers have substantial control over the content of the media where their ads are placed.	1	2	3	4	5	6	7
An individual's behavior can be influenced by what is seen or heard in the media	1	2	3	4	5	6	7
Alternative Web news sources and blogs are now providing a large percentage of the news and information individuals access	1	2	3	4	5	6	7
All of what is currently available via American television is owned by less than 10 corporations	1	2	3	4	5	6	7
Product placement in movies and TV shows is not the same as advertising.	1	2	3	4	5	6	7
Media depictions influence an individual's perception of reality.	1	2	3	4	5	6	7
Alternative news sources and blogs now provide a refreshing alternative to main stream news reporting.	1	2	3	4	5	6	7

9. Please select the correct answer:

a. Alternative web sites and blogs, offering a diversity of opinions and information are used by what percent of the population?

        _____ 10%

        _____ 20-25%

        _____ 15-20%

        _____ 25-30%

b. All of what is currently available via American television is owned by... (select one)

        _____ less than 10 corporations

        _____ between 25 & 50 corporations

        _____ about 100 different companies

        _____ Each channel is required by the FCC to be owned by a single corporation.

10. In regard to any type of information you have found online, please indicate the extent to which you considered each of the following to be important:

	Not at all important						Extremely important
Whether the author of the information is identifiable	1	2	3	4	5	6	7
Whether contact information for	1	2	3	4	5	6	7

the author (or site sponsor) is available							
Whether the author's expertise is identifiable	1	2	3	4	5	6	7
The author's goals for posting the information online	1	2	3	4	5	6	7
How current the information is	1	2	3	4	5	6	7
Whether the information is verified by other sources	1	2	3	4	5	6	7
Whether the information represented is opinion or fact	1	2	3	4	5	6	7
Whether the information provided is thorough.	1	2	3	4	5	6	7
Whether the site was free of advertising	1	2	3	4	5	6	7

11. In general, thinking about your approach to life, indicate the extent to which you disagree or agree with each of the following statements:

	strongly disagree						strongly agree
I would prefer complex to simple problems	1	2	3	4	5	6	7
I like to have the responsibility of handling a situation that requires a lot of thinking.	1	2	3	4	5	6	7
Thinking is not my idea of fun*	1	2	3	4	5	6	7
I would rather do something that requires little thought than something that is sure to challenge my thinking abilities*	1	2	3	4	5	6	7
I try to anticipate and avoid situations where there is likely chance I will have to think in depth about something. *	1	2	3	4	5	6	7
I find satisfaction in deliberating hard and for long hours.	1	2	3	4	5	6	7
I only think as hard as I have to.*	1	2	3	4	5	6	7
I prefer to think about small, daily projects to long-term ones.*	1	2	3	4	5	6	7
I like tasks that require little thought once I've learned them.*	1	2	3	4	5	6	7
The idea of relying on thought to make my way to the top appeals	1	2	3	4	5	6	7

to me.							
I really enjoy a task that involves coming up with new solutions to problems.	1	2	3	4	5	6	7
Learning new ways to think doesn't excite me very much.*	1	2	3	4	5	6	7
I prefer my life to be filled with puzzles that I must solve.	1	2	3	4	5	6	7
The notion of thinking abstractly is appealing to me.	1	2	3	4	5	6	7
I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.	1	2	3	4	5	6	7
I feel relief rather than satisfaction after completing a task that required a lot of mental effort.*	1	2	3	4	5	6	7
It's enough for me that something gets the job done; I don't care how or why it works.*	1	2	3	4	5	6	7
I usually end up deliberating about issues even when they do not affect me personally.	1	2	3	4	5	6	7

12. Thinking generally about media to what extent do you disagree or agree with each of the following statements?

	strongly disagree						strongly agree
What we think about the world often comes from media examples instead of real life examples.	1	2	3	4	5	6	7
I have one favorite source I rely on for my news.	1	2	3	4	5	6	7
When looking for online information I can usually find what I need on the first one or two sites I visit.	1	2	3	4	5	6	7
I might try something I read about online without checking other sources.	1	2	3	4	5	6	7
Media are a good source of information about people and places you may never see for	1	2	3	4	5	6	7

	Not at all like me						Extremely like me
yourself.							
News stories about the Iraq war provide an accurate picture of events.	1	2	3	4	5	6	7

Part III: Health

13. The following items refer to your health and wellbeing, including diet and exercise concerns. Please decide to what extent each statement is characteristic of you

	Not at all like me						Extremely like me
I have the ability to take care of any health problems that I may encounter	1	2	3	4	5	6	7
I'm very motivated to be physically healthy	1	2	3	4	5	6	7
I am competent enough to make sure that my physical health is in good shape	1	2	3	4	5	6	7
I'm strongly motivated to devote time and effort to my physical health.	1	2	3	4	5	6	7
I have the skills and ability to ensure good physical health for myself.	1	2	3	4	5	6	7
I have a strong desire to keep myself physically healthy.	1	2	3	4	5	6	7
I am able to cope with and to handle my physical health needs.	1	2	3	4	5	6	7
It's really important to me that I keep myself in proper physical health	1	2	3	4	5	6	7
I have the capability to take care of my own physical health	1	2	3	4	5	6	7
I strive to keep myself in tip-top physical shape.	1	2	3	4	5	6	7

14. Which of the following best describes you (check only one)?

_____I have not searched for online health information in the past year.

_____In the past year I have searched for health information online, but only for someone else.

_____In the past year I have looked online for health information for myself.

14 a. For those who have searched for health information online, have you made any changes in your personal health behaviors based on information you found.

Yes   No

15. Check the <u>one</u> that most closely approximates the number of search terms you may have used.

_____ One or two key search terms.
_____ I selected several key terms.
_____ I used an advanced search function so I could make use of a large number of search terms.
_____ I used a complete sentence describing what I was looking for.
_____ I searched on the actual question I want answered

a. Number of Web Sites you read [____]

b. How was the information you found used
No   Yes   Changed the way I do something
No   Yes   Talked with a health professional about it.
No   Yes   Talked with friends or family about it.
No   Yes   Read it but did not act on it.
c. How long, in minutes, were you likely to spend searching? [____]

16. When searching specifically for HEALTH information online how strongly do you disagree or agree with each of the following statements?

	strongly disagree						strongly agree
I am certain I can find <u>health</u> information online that I trust	1	2	3	4	5	6	7
I am certain that I can find <u>health</u> information online that is thorough.	1	2	3	4	5	6	7
I am certain that I can avoid online <u>health</u> information that is out of date.	1	2	3	4	5	6	7
I am certain that I can avoid online <u>health</u> information that is inaccurate	1	2	3	4	5	6	7
I am certain that I can avoid online <u>health</u> information that is misleading	1	2	3	4	5	6	7

17. Thinking about the last time you searched for health information online, <u>rank in order of importance</u>, the extent to which you considered

each of the following with 1 being most important and 4 being least important.

_____ The information made sense to me.

_____ Presence or lack of advertising

_____ Appearance of the site- organized well designed, easy to use.

_____ Details available on the site about the author's expertise, contact information etc.

_____ Ease of locating the site and information I needed.

_____ Information about the content, like source cites and date last updated, were available.

18. If you were to read a Web site with health information <u>rate</u> the importance of each of the following factors.

	strongly disagree						strongly agree
Whether the author of the information is identifiable	1	2	3	4	5	6	7
Whether contact information for the author or site sponsor is available	1	2	3	4	5	6	7
Whether the author's expertise is identifiable	1	2	3	4	5	6	7
The author's goals for posting the information online	1	2	3	4	5	6	7
How current the information is	1	2	3	4	5	6	7
Whether the information is verified by other sources	1	2	3	4	5	6	7
Whether the site contains an official "stamp of approval"	1	2	3	4	5	6	7
Whether the information represented is opinion or fact	1	2	3	4	5	6	7
Whether the information provided is thorough.	1	2	3	4	5	6	7
Whether the site was advertising free	1	2	3	4	5	6	7

19. What percent of online health information do you think is credible?
_____

20. Please tell us a little about yourself

   a. _____ Age

   b. Gender: Male   Female

   c. Race:

_____ Black, Non-Hispanic

_____ American Indian or Alaskan Native (Native American)

_____ Asian or Pacific Islander

_____ Hispanic

_____ White, Non-Hispanic

_____ Prefer not to state

d. Mother's highest year of education

_____ Less than high school graduate

_____ High school graduate

_____ Some college, Jr College or technical school

_____ Four year college graduate

_____ Post graduate work or degree

II. Study One – Online survey

▪ *Final Indices*

A. Predictors of media literacy (based on concepts frequently included in media literacy curriculum).

1. Media experience
   a. I have experience building data base interactivity with in Web page.
   b. I have experience downloading software.
   c. I have experience writing SQL statements
   d. I have experience creating Web sites. (none -> a lot)
   e. I have experience using html coding
   f. I have experience updating Web sites.

2. Access; 7-point scale from no understanding to full understanding (proxy measure of skill) Hargittai (2005, 2006)

RSS Feed	JPG	Social bookmarking
Whois	Torrent	Silver Light
Tagging	Twitter	Health portal
Podcasting	Saging (dummy)	Web Stream
Tabbed	Phishing	MMORG
browsing	Real Simple Syndication (RSS)	Avatar

3. Knowledge of media;
   a. The U.S model of media financing is the same media financing model used in other countries.
   b. The FCC requires that each television channel be owned by an individual company.
   c. Advertisers provide the primary financing for all media productions (Web sites, TV, movies, newspapers, magazines, radio) in the U.S.
   d. Alternative Web news sources and blogs are now providing a large percentage of the news and information individuals' access.
   e. Alternative news sources and blogs now provide a refreshing alternative to main stream news reporting.
   f. Media depictions influence an individual's perception of reality.
   g. Advertisers have substantial control over the content of the media where there ads are placed.
   h. An individual's behavior can be influenced by what is seen or heard in the media.
   i. What we think about the world often comes from media examples, instead of real life examples.

4. Understanding persuasive intent. (nine item SKEP; Obermiller, Spangenberg 1998) Strongly disagree to strongly agree.
    a. Advertising on a Web site does not influence the information available on the site.
    b. The aim of advertising is to inform consumers about a product
    c. Advertising information is generally truthful
    d. Advertisements can be a reliable source of information.
    e. We can depend on getting the truth in most advertising.
    f. Advertising is truth well told
    g. In general, advertising presents a true picture of the product being advertised.
    h. Most advertising provides consumers with essential information
    i. I believe advertising is informative.
    j. I feel I've been accurately informed after viewing most advertisements.

5. Media comfort:
    a. News stories about the Iraq war provide an accurate picture of events.
    b. I have one favorite online source I rely on for my news.
    c. When looking for online information I can usually find what I need on the first one or two sites I visit.
    d. I might try something I read about online without checking the information with other sources other sources.
    e. Media are a good source of information about people and places you may never see for yourself.

6. Self Efficacy (re: finding credible information/ Health information online)
    a. I am certain I can find information online that I trust
    b. I am certain that I can find information online that thurough.
    c. I am certain that I can avoid online information that is out of date.
    d. I am certain that I can avoid online information that is inaccurate
    e. I am certain that I can avoid online information that is misleading

B. Critical Thinking
    2. Credibility perception basis: Thinking about the last time you searched for information/health information online, **rank in order of importance**, the extent to which you considered each of the following to be important
        a. Ease of locating the site and information I needed.
        b. Appearance of the site- professional, organized, well designed.
        c. Information about the content like source citations and date last updated were available.
        d. Details were available about the author like expertise and contact information.
        e. Presence or lack of advertising
        f. The information made sense to me.

    3. Critical Thinking outcomes: In regard to information you have found online, please indicate the extent to which you consider each of the following items:

a. Whether the author of the information is identifiable
b. Whether contact information for the author or site sponsor is available
c. Whether the author's expertise is identifiable
d. The author's goals for posting the information online
e. How current the information is
f. Whether the information represented is opinion or fact
g. Whether the information provided is thorough.
h. Whether the information is verified by other sources
i. Whether the site was free of advertising

C. Control Variables
   1. Reliance
      a. Total number of hours spent online each day.
      b. Percentage of hours spent searching for information of some type
   2. Need for Cognition (Cacioppo & Petty, 1982; Cacioppo, Petty & Kao, 1984)
      a. I would prefer complex to simple problems
      b. I like to have the responsibility of handling a situation that requries a lot of thinking.
      c. Thinking is not my idea of fun*
      d. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities*
      e. I try to anticipate and avoid situations where there is likely chance I will have to think in depth about something. *
      f. I find satisfaction in deliberating hard and for long hours.
      g. I only think as hard as I have to.*
      h. I prefer to think about small, daily projects to long-term ones.*
      i. I like tasks that require little thought once I've learned them.*
      j. The idea of relying on thought to make my way to the top appeals to me.
      k. I really enjoy a task that involves coming up with new solutions to problems.
      l. Learning new ways to think doesn't excite me very much.*
      m. I prefer my life to be filled with puzzles that I must solve.
      n. The notion of thinking abstractly is appealing to me.
      o. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much tought.
      p. I feel relief rather than satisfaction after completing a task that required a lot of mental effort.*
      q. It's enough for me tthat something gets the job done; I don't care how or why it works.*
      r. I usually end up deliberating about issues even when they do not affect me personally.
   (*reverse score)

   3. Health Engagement- factors from the multidimensional Health Questionnaire (Snell 1991, 1992, 1997). –The extent to which a person takes responsibility for and/or is involved in their own health

    a. Health Efficacy
       i. I have the ability to take care of any health problems that I may encounter
      ii. I am competent enough to make sure that my physical health is in good shape
     iii. I have the skills and ability to ensure good physical health for myself
     iv. I am able to cope with and to handle my physical health needs
      v. I have the capability to take care of my own physical health
    b. Motivation for healthiness
       i. I am very motivated to be physically health.
      ii. I am strongly motivated to devote time and effort to my physical health.
     iii. I have a strong desire to keep myself physically healthy.
     iv. It's really important to me that I keep myself in proper physical health.
      v. I strive to deep myself in tip-top physical shape.

4. Which of the following best describes you- (to what extent do you agree/disagree with each)
    a. In the past year I have looked online for health information but only to form questions for my Doctor.
    b. (adoption) In the past year I have tried something I learned from an online source related to my health (yes/no)
    c. In the past year I have searched for health information online, but only for other people.
5. Critical Thinking regarding online health information specifically
    a. Search Scenario- Please tell us about the search you conducted the last time you looked for health information online
    b. Search Engine(s)
    c. Search Term(s)
    d. # of Web Sites accessed?
    e. How information found was used?
    f. Discussed information found with anyone?
    g. Length of time spent searching?

- *Email invitation*

I am a graduate student at Washington State University asking for you to please help me in a research study exploring your computer and media use. The data from this research will be used in my doctoral dissertation. The online survey will take 20-30 minutes and as a token of my appreciation, I will randomly draw two students who will win a $50.00 gift card each from their University bookstore. Please complete the survey prior to February 22, 2008.

You can access the survey by clicking on this link, or cut and past the link into your Internet browser

http://www.surveymonkey.com/s.aspx?sm=cVKgn2kCdi69btYWYG1RuA_3d_3d

Your participation is critical to the quality of this study and I thank you in advance for helping me out. If you have questions please contact me at bvandevord@wsu.edu or the WSU Institutional Review Board at irb@wsu.edu. The University of Michigan has approved sending this email invitation.

Thank You,

Rebecca Van de Vord
Doctoral Candidate
Murrow College of Communication
Washington State University
(509) 335-4027

- *Final Instrument*

Welcome and thank you for being willing to participate in this research exploring attitudes and experience with the Internet and media in general. The survey should take about 20-30 minutes to complete and your input is invaluable to this research study.

There are no right or wrong answers for the questions that follow. I simply ask for your honest opinion. All responses will be kept strictly confidential.

This research has been approved by the Institutional Review Board (IRB) of Washington State University. For more information, please contact the author at bvandevord@wsu.edu or the WSU IRB (http://www.irb.wsu.edu/) at (509) 335-3668 or irb@wsu.edu.

Just to clarify, any reference to "health" information in the following questionnaire includes diet, nutrition, physical fitness, or any information related to your physical or mental wellbeing.

Again, thank you for your time and input. As a fellow University student, I understand the demands on your time and limit to your resources. In appreciation for your taking time to complete this survey all respondents who provide their email address on the last question will be entered into a raffle for one of two $50.00 gift cards from your University bookstore. Email addresses will be separated from the questionnaire to maintain confidentiality.

Rebecca Van de Vord Doctoral Candidate Edward R. Murrow College of Communication Washington State University
Other

The following questions ask about your experience with computers and the Internet.

1. Do you own a computer?

No Yes

2. Do you have Internet access where you live?

No Yes Don't know

3. On average how much time (in hours) do you spend online (Internet or Web) each day?

4. Of the time you spend online, what percentage (0-100) is spent searching for information (of any type)?

5. For each of the following statements please check the response that most closely describes you.

	Not at all like me 1	2	3	4	5	6	Extremely like me 7
I am likely to turn to the Internet when looking for information.	◯	◯	◯	◯	◯	◯	◯
I am likely to turn to the Internet when looking for information related to my health and wellbeing.	◯	◯	◯	◯	◯	◯	◯

6. On a scale from 1 being none to 7 being extensive, how much experience do you have with each of the following?

	None 1	2	3	4	5	6	Extensive 7
Experience visiting a virtual world such as Second Life.	◯	◯	◯	◯	◯	◯	◯
Experience creating a Web site.	◯	◯	◯	◯	◯	◯	◯
Experience building data base interactivity within a Web page.	◯	◯	◯	◯	◯	◯	◯
Experience updating a Web site.	◯	◯	◯	◯	◯	◯	◯
Experience writing SQL statements.	◯	◯	◯	◯	◯	◯	◯
Experience downloading software.	◯	◯	◯	◯	◯	◯	◯
Experience using html coding.	◯	◯	◯	◯	◯	◯	◯

7. Thinking about when you search online for any type of information, how certain are you that you can...

	Not at all certain 1	2	3	4	5	6	Extremely certain 7
find information online that you trust.	◯	◯	◯	◯	◯	◯	◯
avoid online information that is inaccurate.	◯	◯	◯	◯	◯	◯	◯
avoid online information that is misleading.	◯	◯	◯	◯	◯	◯	◯
find information online that is thorough.	◯	◯	◯	◯	◯	◯	◯
avoid online information that is out of date.	◯	◯	◯	◯	◯	◯	◯

8. Please indicate whether or not you are familiar with each of the terms on the following list.

	No	Yes	Not Sure
JPG	◯	◯	◯
Real Simple Syndication	◯	◯	◯
Silverlight	◯	◯	◯
Avatar	◯	◯	◯
Health Portal	◯	◯	◯
Whois	◯	◯	◯
Saging	◯	◯	◯
Twitter	◯	◯	◯
Phishing	◯	◯	◯
Torrent	◯	◯	◯
RSS Feed	◯	◯	◯
Podcasting	◯	◯	◯
Tabbed Browsing	◯	◯	◯
Web Stream	◯	◯	◯
MMORPG	◯	◯	◯
Tagging	◯	◯	◯
Social Bookmarking	◯	◯	◯

9. Rank from 1-6, using each number only once, the following items in the order you considered each to be important the last time you searched online for information. Consider 1 to be LEAST important and 6 MOST important.

Ease of locating the site and the information I needed.	◯	◯	◯	◯	◯	◯
The information made sense to me.	◯	◯	◯	◯	◯	◯
Information about the content, like source cites and date last updated, were available.	◯	◯	◯	◯	◯	◯
Appearance of the site- professional, organized, well designed.	◯	◯	◯	◯	◯	◯
Presence or lack of advertising.	◯	◯	◯	◯	◯	◯
Details were available about the author like expertise, and contact information.	◯	◯	◯	◯	◯	◯

3. In regard to any type of information you have found online, please indicate the extent to which you actively considered the importance of each of the following in evaluating the quality of the information on a site.

	1	2	3	4	5	6	7
Whether the author's expertise is identifiable.	○	○	○	○	○	○	○
Whether the information represented is opinion or fact.	○	○	○	○	○	○	○
The author's goals for posting the information online.	○	○	○	○	○	○	○
Whether contact information for the author (or site sponsor) is available.	○	○	○	○	○	○	○
Whether the author of the information is identifiable.	○	○	○	○	○	○	○
Whether the information provided is thorough.	○	○	○	○	○	○	○
Whether the information is verified by other sources.	○	○	○	○	○	○	○
How current the information was.	○	○	○	○	○	○	○
Whether the site was free of advertising.	○	○	○	○	○	○	○

4. Thinking generally about media, to what extent do you disagree or agree with with each of the following statements.

	1	2	3	4	5	6	7
Advertising on a Web site does not influence the information posted.	○	○	○	○	○	○	○
The aim of advertising is to inform consumers about a product.	○	○	○	○	○	○	○
Advertising information is generally truthful.	○	○	○	○	○	○	○
We can depend on getting the truth in most advertising.	○	○	○	○	○	○	○
Advertising is truth well told.	○	○	○	○	○	○	○
In general, advertising presents a true picture of the product being advertised.	○	○	○	○	○	○	○
Most advertising provides consumers with essential information.	○	○	○	○	○	○	○
I believe advertising is informative.	○	○	○	○	○	○	○
I feel I've been accurately informed after viewing most advertisements.	○	○	○	○	○	○	○

2. How truthful you believe each of the following statements to be?

	1	2	3	4	5	6	7
Advertisers provide the primary financing for all media productions (Web sites, TV, movies, newspapers, magazines, radio) in the U.S.	◯	◯	◯	◯	◯	◯	◯
Alternative Web news sources and blogs are now providing a large percentage of the news and information individuals access.	◯	◯	◯	◯	◯	◯	◯
An individual's behavior can be influenced by what is seen or heard in the media.	◯	◯	◯	◯	◯	◯	◯
Advertisers have substantial control over the content of the media where their ads are placed.	◯	◯	◯	◯	◯	◯	◯
Alternative news sources and blogs now provide a refreshing alternative to main stream news reporting.	◯	◯	◯	◯	◯	◯	◯
The FCC requires that each television channel be owned by an individual company.	◯	◯	◯	◯	◯	◯	◯
Media depictions influence an individual's perception of reality.	◯	◯	◯	◯	◯	◯	◯
The U.S. model of media financing is the same media financing model used in other countries.	◯	◯	◯	◯	◯	◯	◯

To what extent to you agree to disagree with each of the following statements?

	1	2	3	4	5	6	7
Media are a good source of information about people and places you may never see for yourself.	◯	◯	◯	◯	◯	◯	◯
News stories about the Iraq war provide an accurate picture of events.	◯	◯	◯	◯	◯	◯	◯
I have one favorite source I rely on for my news.	◯	◯	◯	◯	◯	◯	◯
I might try something I read about online without hearing or reading about it anywhere else.	◯	◯	◯	◯	◯	◯	◯
When looking for online information I can usually find what I need on the first one or two sites I visit.	◯	◯	◯	◯	◯	◯	◯
What we think about the world often comes from media examples instead of real life examples.	◯	◯	◯	◯	◯	◯	◯

The following questions ask about your personal approach to life.

1. **Thinking generally about how you feel MOST of the time, indicate the extent to which you disagree or agree with each of the following statements.**

	1	2	3	4	5	6	7
I prefer to think about small, daily projects to long-term ones.	◯	◯	◯	◯	◯	◯	◯
I like to have the responsibility of handling a situation that requires a lot of thinking.	◯	◯	◯	◯	◯	◯	◯
I only think as hard as I have to.	◯	◯	◯	◯	◯	◯	◯
I prefer my life to be filled with puzzles that I must solve.	◯	◯	◯	◯	◯	◯	◯
I feel relief rather than satisfaction after completing a task that required a lot of mental effort.	◯	◯	◯	◯	◯	◯	◯
I find satisfaction in deliberating hard and for long hours.	◯	◯	◯	◯	◯	◯	◯
Learning new ways to think doesn't excite me very much.	◯	◯	◯	◯	◯	◯	◯
The notion of thinking abstractly is appealing to me.	◯	◯	◯	◯	◯	◯	◯
I would prefer complex to simple problems.	◯	◯	◯	◯	◯	◯	◯
I usually end up deliberating about issues even when they do not affect me personally.	◯	◯	◯	◯	◯	◯	◯
It's enough for me that something gets the job done; I don't care how or why it works.	◯	◯	◯	◯	◯	◯	◯
I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.	◯	◯	◯	◯	◯	◯	◯
I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something.	◯	◯	◯	◯	◯	◯	◯
I like tasks that require little thought once I've learned them.	◯	◯	◯	◯	◯	◯	◯
The idea of relying on thought to make my way to the top appeals to me.	◯	◯	◯	◯	◯	◯	◯
Thinking is not my idea of fun.	◯	◯	◯	◯	◯	◯	◯
I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.	◯	◯	◯	◯	◯	◯	◯
I really enjoy a task that involves coming up with new solutions to problems.	◯	◯	◯	◯	◯	◯	◯

2. **The following items refer to your health and wellbeing, including diet and exercise concerns. Please decide to what extent each statement below is characteristic of you.**

	1	2	3	4	5	6	7
I have the capability to take care of my own physical health.	◯	◯	◯	◯	◯	◯	◯
I am able to cope with and to handle my physical health needs.	◯	◯	◯	◯	◯	◯	◯
I have the ability to take care of any health problems that I may encounter.	◯	◯	◯	◯	◯	◯	◯
I'm very motivated to be physically healthy.	◯	◯	◯	◯	◯	◯	◯
I am competent enough to make sure that my physical health is in good shape.	◯	◯	◯	◯	◯	◯	◯
I'm strongly motivated to devote time and effort to my physical health.	◯	◯	◯	◯	◯	◯	◯
I have the skills and ability to ensure good physical health for myself.	◯	◯	◯	◯	◯	◯	◯
I strive to keep myself in tip-top physical shape.	◯	◯	◯	◯	◯	◯	◯
I have a strong desire to keep myself physically healthy.	◯	◯	◯	◯	◯	◯	◯

3. Which of the following best describes you? (select only one)

I have not searched for health information online in the past year.

In the past year I have searched for health information online, but only for someone else.

In the past year I have looked online for health information for myself.

Please note that the questions below refer specifically only to information related to your health or wellbeing.

1. Have you ever changed any of your health related behaviors based on information found from an online search?

ₘNo ₘYes

2. Thinking about a recent time you searched for health information online, how many search engines did you use?

[ ]

3. Which search engine(s) would you have been most likely to use? Check all that apply.

[ ] Google

[ ] Ask.com

[ ] MSN

[ ] Wiki

[ ] Yahoo

[ ] WebMD

[ ] Other (please specify)

[_____]

4. Thinking about a recent time you searched for health information online, check the one statement that most closely approximates how you initiated your search.

( ) One or two key search terms.

( ) I used an advanced search function so I could make use of a large number of search terms.

( ) I used a complete sentence describing what I was looking for.

( ) I searched on the actual question I wanted to answer.

( ) Other (please specify)

[_____]

5. In this health information search how many Web sites would you have read?

[ ]

6. How did you use the information you found?

	No	Yes
Changed the way I do something	( )	( )
Talked with a health professional about it.	( )	( )
Talked with friends or family about it.	( )	( )
Read it, but did not act on it.	( )	( )

Other (please specify)

[_____]

7. Thinking about when you search online for HEALTH information how certain are you that you can...

	Not at all certain 1	2	3	4	5	6	Extremely certain 7
find health information online that is thorough.	◯	◯	◯	◯	◯	◯	◯
find health information online that you trust.	◯	◯	◯	◯	◯	◯	◯
avoid online health information that is inaccurate.	◯	◯	◯	◯	◯	◯	◯
avoid online health information that is out of date.	◯	◯	◯	◯	◯	◯	◯
avoid online health information that is misleading.	◯	◯	◯	◯	◯	◯	◯

8. Rank from 1-6, using each number only once, the following items in the order you considered each to be important the last time you searched online for HEALTH information. Consider 1 to be LEAST important and 6 MOST important.

	Least important 1	2	3	4	5	Most important 6
Ease of locating the site and the information I needed.	◯	◯	◯	◯	◯	◯
Presence or lack of advertising.	◯	◯	◯	◯	◯	◯
Appearance of the site- professional, organized, well designed.	◯	◯	◯	◯	◯	◯
The information made sense to me.	◯	◯	◯	◯	◯	◯
Details were available about the author like expertise, and contact information.	◯	◯	◯	◯	◯	◯
Information about the content, like source cites and date last updated, were available.	◯	◯	◯	◯	◯	◯

9. In regard to any type of information you have found online, please indicate the extent to which you actively considered the importance of each of the following in evaluating the quality of the information on a site.

	Not at all important 1	2	3	4	5	6	Extremely important 7
Whether the author of the information is identifiable.	◯	◯	◯	◯	◯	◯	◯
Whether contact information for the author (or site sponsor) is available.	◯	◯	◯	◯	◯	◯	◯
Whether the author's expertise is identifiable.	◯	◯	◯	◯	◯	◯	◯
The author's goals for posting the information online.	◯	◯	◯	◯	◯	◯	◯
When the information had been posted.	◯	◯	◯	◯	◯	◯	◯
Whether the information is verified by other sources.	◯	◯	◯	◯	◯	◯	◯
Whether the information represented is opinion or fact.	◯	◯	◯	◯	◯	◯	◯
Whether the information provided is thorough.	◯	◯	◯	◯	◯	◯	◯
Whether the site was free of advertising.	◯	◯	◯	◯	◯	◯	◯

10. Of health information available online, what percent (%) do you consider to be credible?

[____]

Please tell me a little about yourself.

1. For each of the following items please indicate to what extent each is characteristic of you from "not at all like me" (1) to "extremely like me" (7).

	1	2	3	4	5	6	7
I have never deliberately said something that hurt someone's feelings.	○	○	○	○	○	○	○
I have almost never felt the urge to tell someone off.	○	○	○	○	○	○	○
There have been a few occasions when I took advantage of someone.	○	○	○	○	○	○	○
I never resent being asked to return a favor.	○	○	○	○	○	○	○
When I don't know something, I don't at all mind admitting it.	○	○	○	○	○	○	○
There have been occasions when I felt like smashing things.	○	○	○	○	○	○	○
I am sometimes irritated by people who ask favors of me.	○	○	○	○	○	○	○
I sometimes try to get even, rather than forgive and forget.	○	○	○	○	○	○	○
I sometimes think when people have a misfortune they only get what they deserved.	○	○	○	○	○	○	○
No matter who I'm talking to, I'm always a good listener.	○	○	○	○	○	○	○

2. Age

[ ]

3. Gender

○ Male

○ Female

4. Race (check all that apply)

☐ African American, Non-Hispanic

☐ American Indian or Alaskan Native (Native American)

☐ Hispanic

☐ Asian or Pacific Islander

☐ Caucasian, Non-Hispanic

☐ Prefer not to state

☐ Other (please specify)

[ ]

5. University you are attending   6. Year in school

- *c. Sample excerpts from rejection emails:*

   1. **Gonzaga**

I did finally hear back. Jolanta (Ast. VP) did get back to me in the middle of the week I just didn't have a minute to email (we have 3 candidates on campus). She said that they are not going to allow outside access to students. I am really sorry. I hope you have some other leads on getting other students. I would still be very interested in reading what you came up with or even what you currently have. I wish you the best during the final stages of your diss. Please be sure to keep in touch from time to time.

   2. **Boise State:**

In regards to your request, I regret that Boise State will not be able to participate. Our office maintains a tight control on the amount of e-mails that we allow sent to our students from our campus community, quite simply due to that complaints we receive from students in regards to the amount of e-mail they already receive. The same is especially true in regards to surveys and off campus requests.

Stephanie Neighbors
Management Assistant
Office of the Vice President for Student Affairs
Boise State University, 1910 University Drive, Boise, ID 83725-1300
Administration Bldg - Room 208 (2nd floor)
sneighbo@boisestate.edu
(208) 426-1484 or 426-1418 phone / 208-426-1062 fax

   3. **Western Washington University**

Thank you for your inquiry of February 3, 2009 to survey all students enrolled at Western. We have received much criticism from students enrolled that they are asked to participate in too many surveys. In an effort to limit their interruption, we evaluate all requests that we receive to ascertain if the information collected in the survey is necessary to assessing our learning outcomes and effectiveness. We turn down many requests from on-campus entities because of our interest in protecting the time of our students as well as ensuring that when we do survey them that they will take the time to provide us the feedback we need for our own programs.
We do not feel that we can participate in an outside survey in support of a doctoral dissertation and respect the criteria we have established.
Susanna Yunker
Assistant Vice President for Student Affairs and Registrar
Western Washington University

   4. **Edinboro University**

While we try to support dissertation endeavors, we have had our students participate in so many projects this year, we are going to have to turn down your request. Your project sounds meaningful and your survey is well done.

Pearl W. Bartelt, PhD

Provost and Vice President for Academic Affairs
Edinboro University of PA
Meadville Street
Edinboro, PA 16444
(814) 732-2729
pbartelt@edinboro.edu

5. Eastern Washington University

I apologize for just getting back to you. I needed a little time to sort out an answer to your request with our personnel in Student Affairs. Currently, EWU is not responding to any requests, either internal or external, to contact our students for research purposes. With the popularity of Surveymonkey and other on-line survey tools, we are fielding a number of requests to email our students invitations and links to participate in various surveys. Since there are also resource implications because someone has to send the information out on the researcher's behalf as well as the issue that we might be inundating the students with requests, we have put such activities on hold until we can come up with a formal process (or policy) for evaluating and approving such requests. So, while we cannot disseminate your recruitment information through our student email system at this time, I would suggest the following possibilities for reaching our students. Ad in The Easterner (the student newspaper). Contact (509) 359-6270 or advertising@theeasterner.info
Ad in the Focus (a daily hardcopy announcement page distributed across campus). Contact Grace Callahan at (509) 359-2514 or Grace.Callahan@mail.ewu.edu.
Flyers distributed in the Pence Union Building and dorms. These need to be reviewed and approved before being posted and I am no sure who does this, but Grace Callahan (identified above) may.
Sincerely, Ruth Galm

6. Utah State

I've discussed your request with one of our Vice Presidents in Information Technology and Security. USU does not provide email addresses nor does USU collaborate with outsiders by providing email addresses on request.

7. University of Maryland

Thank you for your email. I regret to inform you that the University of Maryland does not provide student contact information for survey activities such as yours unless the research project has received IRB approval from the University of Maryland and is co-sponsored by a Maryland faculty member.

If you or Dean Austin would like to pursue co-sponsorship with a Maryland faculty member, I can provide you with contact information.
David Robb, University Registrar

Related comments from Don Dillman

I am not surprised that other institutions would refuse to provide email addresses, and suspect someone from outside WSU would have the same problem here. IRB rules differ greatly, but I doubt that you will be able to get email addresses. I don't believe they are subject to "public information" requests. If universities gave out email addresses to whoever wanted them, I have a hunch spammers would be first in line to get them, and without an internal control process (someone inside the university who is responsible) it's pretty hard to maintain some degree of control that prevents such uses. Thus, I'm not optimistic that you can do this.

Also, there is a strong norm (some would describe it as a requirement, especially if one is a surveyor) that it is inappropriate to use email to contact a potential survey respondent unless there is a "prior relationship" with them. A student in this university would be considered as having a prior relationship with a university sponsored research study, but there is not relationship that you have with students at other universities. The standards organization that has developed that code is the Council of American Survey Research Organizations (CASRO). This is why on general public surveys we have to make a contact by some other mode (e.g. mail) even when we want them to respond via the web. The reason is that email providers are not a "utility" in the same way postal addresses and landline telephones are—private providers have a right to block email from whoever they wish to block.

When a student at WSU makes a request I think it has to in essence come from a faculty member who explains how the email addresses will and will not be used., and provide assurance that they are not used or released inappropriately.

Hope this is helpful.

Don
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Don A. Dillman, Regents Professor and
The Thomas S. Foley Distinguished Professor of Government and Public Policy
in the Departments of Sociology and Community and Rural Sociology and
Deputy Director of the Social and Economic
Sciences Research Center
Washington State University
Pullman, WA 99164-4014
dillman@wsu.edu
http://www.sesrc.wsu.edu/dillman/

▪ *Table of correlations; primary variables of interest*

	Self efficacy	comfort	CT author	CT content	health motivation	health efficacy	Need for cog
1. Self efficacy	--	.13*	.23**	.26**	.10*	.17**	.21**
2. Media comfort		--	-.13**	-.09	.08	.14**	-.02
3. CT author			--	.71**	.18**	.16**	.18**
4. CT content				--	.21**	.23**	.26**
5. Health motivation					--	.64**	.08
6. Health efficacy						--	.14**
7. Need for Cognition							--

▪ *University Response rates*

University	Contacted	Finished	completion rate	Follow-up sent
Columbus State	300	29	9.60%	yes
University of Michigan	600	16	2.60%	no
University of Washington	330	37	11.20%	yes
University of Idaho	200	11	5.50%	no
WSU - DDP	2281	361	15.8%	no
WSU (study participants)		96		na
Not Currently enrolled		29		na
total	**3531**	**589**	**12.9%**	

- *Tolerance & VIF*

DV	R^2	Tolerance	VIF
Setrst	.60	.40	2.5
Seacct	.78	.22	4.54
Semsld	.78	.22	4.54
Skptrfl	.63	.37	2.7
Skpdpnd	.74	.26	3.84
Skppic	.64	.36	2.77
Skpesn	.59	.41	2.43
Crhauth	.64	.36	2.77
Crhxprt	.68	.32	3.12

III. Study two: Web-response survey

- *Website ratings*

Site	Overall Rating	Coverage & Content	Authors & Interests	References & Resources	Health Information	Site Design
Medhelp.org	Poor	Poor	Poor	Poor	Poor	Fair
AOLhealth.com	Fair	Fair	Fair	Fair	Fair	Fair
Healthology	Fair	Fair	Good	Poor	Fair	Fair
Prevention.com	Poor	Fair	Poor	Poor	Fair	Good
Aetna Intellihealth	Excellent	Excellent	Excellent	Very Good	Very Good	Very Good
Medicinenet.com	Excellent	Excellent	Excellent	Good	Excellent	Very Good
NIH.gov	Excellent	Excellent	Good	Very Good	Excellent	Very Good
Familydoc.org	Very Good	Excellent	Very Good	Good	Excellent	Good

- *Web Site Raters for HealthRatings.org:*

    1. Lois Ambash PhD, President, Metaforix Inc.
    2. Stephen Barrett, M.D., Board Chairman, Quack Watch
    3. Deborah Clark, Hospital Librarian Stephens Memorial Hospital
    4. Ana Fonfa, President Annie Appleseed Project
    5. Susan Freeburn, R.N., Director Credentials Verification Program
    6. Ahmed Haque, Webmaster, American Hospital Association
    7. George B. Linzer, Executive Producer, American Association for Clinical Chemistry
    8. Betty Jung, Webmaster http://bettycjung.net
    9. Khalid Moidu MSLS, Associate Professor HIS, Purdue
    10. Fay Cobb Payton PhD., Association Professor IT/IS, North Carolina State University
    11. Janet Reis, PhD, Professor Family Medicine, University of Illinois

- *Consent Form*

WASHINGTON STATE UNIVERSITY
Murrow College of Communication
Research Study Consent Form

Study Title: Media Literacy as a predictor of online information seeking in college students.

Researchers:

Erica Austin, Dean, Murrow College of Communication 335-1556 eaustin@wsu.edu

Rebecca Van de Vord, Doctoral Candidate, 335-4027 bvandevord@wsu.edu

You are being asked to take part in a research study carried out by *Erica Austin & Rebecca Van de Vord.* This form explains the research study and your part in it if you decide to join the study. Please read the form carefully, taking as much time as you need. Ask the researcher to explain anything you don't understand. You can decide not to join the study. If you join the study, you can change your mind later or quit at any time. There will be no penalty or loss of services or benefits if you decide to not take part in the study or quit later. This study has been approved for human subject participation by the Washington State University Institutional Review Board.

What is this study about?

This research study is being done to further our understanding of how college students use the Internet and their attitudes about media in general. You are being asked to take part because the primary focus of this research is college students use of media and online information Taking part in the study will take about 60- 75 minutes.
You cannot take part in this study if you are under 18 or participated in similar research fall semester.

What will I be asked to do if I am in this study?

If you take part in the study, you will be asked to
- View several Web sites, as instructed by the researcher, and provide your opinion about those sites. This is expected to take 30-40 minutes.
- Complete a questionnaire regarding your attitudes toward media and your health. This should take 20-30 minutes. You may refuse to answer any question on the questionnaire.
- Overall the study is expected to last 60 – 75 minutes.

Are there any benefits to me if I am in this study?

There is no direct benefit to you from being in this study, but your participation in this research is essential for researchers to learn about college student's use of the media and the Internet as a source of information.

Are there any risks to me if I am in this study?

The potential risks from taking part in this study are….
- There are no sensitive questions in this study, but you may feel some anxiety about answering questions. Remember, you do not need to answer anything you are not comfortable with and can stop the study at any time.
- If you should feel a great deal of anxiety you can contact student health or the counseling center here at WSU.

Will my information be kept private?

The data for this study will be kept confidential to the extent allowed by federal and state law. No published results will identify you, and your name will not be associated with the findings.
- The data will be available only to the two researchers and kept off campus in a home office

The results of this study may be published or presented at professional meetings, but the identities of all research participants will remain anonymous

The data for this study will be kept for no more than 3 years.

Are there any costs or payments for being in this study?

There will be no costs to you for taking part in this study.

You will receive extra credit in your class for taking part in this study. If you decide to quit the study you will still receive your extra credit.

Who can I talk to if I have questions?

If you have questions about this study or the information in this form, please contact the researcher, Rebecca Van de Vord @ bvandevord@wsu.edu 335-4027, or Erica Austin, eaustin@wsu.edu, 335-1556. If you have questions about your rights as a research participant, or would like to report a concern or complaint about this study, please contact the Washington State University Institutional Review Board at (509) 335-3668, or e-mail irb@wsu.edu, or regular mail at: Albrook 205, PO Box 643005, Pullman, WA 99164-3005.

What are my rights as a research study volunteer?

Your participation in this research study is completely voluntary. You may choose not to be a part of this study. There will be no penalty to you if you choose not to take part. You may choose not to answer specific questions or to stop participating at any time.

What does my signature on this consent form mean?
Your signature on this form means that:
- You understand the information given to you in this form
- You have been able to ask the researcher questions and state any concerns
- The researcher has responded to your questions and concerns
- You believe you understand the research study and the potential benefits and risks that are involved.

Statement of Consent

I give my voluntary consent to take part in this study. I will be given a copy of this consent document for my records.

_____   _____

Signature of Participant   Date

_____

Printed Name of Participant

Statement of Person Obtaining Informed Consent

I have carefully explained to the person taking part in the study what he or she can expect.

I certify that when this person signs this form, to the best of my knowledge, he or she understands the purpose, procedures, potential benefits, and potential risks of participation.

I also certify that he or she:
- Speaks the language used to explain this research
- Reads well enough to understand this form or, if not, this person is able to hear and understand when the form is read to him or her
- Does not have any problems that could make it hard to understand what it means to take part in this research.

_____

Signature of Person Obtaining Consent   Date

_____

Printed Name of Person Obtaining Consent   Role in the Research Study

- *Study 2 instrument*

Health Web site evaluation 1
Powered By: Skylight Matrix Survey System

Health Web site evaluation 1
You are being asked to conduct an information search on 4 different Web sites and answer a couple of questions after you view each site as to how you would evaluate that site as a source of health information.

Before beginning this survey please read and sign the consent form on the desk in front of you.

Tracking details
Please enter your ID number so that your Professor can be notified of your participation in this study.

1. Web site evaluation
Web site #1: Please visit: Medhelp.org
Before answering any questions please take 5-10 minutes on the site looking for information of interest to you related to your health. If you need a suggestion try weight loss, muscle building, vitamin supplements, steroid use or herbal remedies.

a. Please list anything that you noticed that gave you confidence in the information posted on the site.

b. Please list anything you noticed that caused you to question or doubt the information posted.

c. Would you recommend this site to your friends or family to use as a source of health information? - Please explain why OR why not.

d. Are you familiar with this Web site or sponsor?
        No   Yes   Unsure

e. Have you visited this site before?
        No   Yes   Unsure

f. Is this a site you would use in the future as a source of health information?
        No   Yes   Unsure

g. What did you think of this Web site?
                        Not at all   2   3   Neutral   5   6   extremely
i. How easy was it to use?
ii. How believable was the information?
iii. How attractive was the site?
iv. How thorough was the information you found?

2. Web site #2: Please visit: healthology.com
Before answering any questions please take 5-10 minutes on the site looking for information of interest to you related to your health. If you need a suggestion try weight loss, muscle building, vitamin supplements, steroid use or herbal remedies.

a. Please list anything that you noticed that gave you confidence in the information posted on the site.

b. Please list anything you noticed that caused you to question or doubt the information posted.

c. Would you recommend this site to your friends or family to use as a source of health information? - Please explain why OR why not.

d. Are you familiar with this Web site or sponsor?
      No   Yes   Unsure

e. Have you visited this site before?
      No   Yes   Unsure

f. Is this a site you would use in the future as a source of health information?
      No   Yes   Unsure

g. What did you think of this Web site?
                 Not at all   2   3   Neutral   5   6   Extremely
i. How easy was it to use?
ii. How believable was the information?
iii. How attractive was the site?
iv. How thorough was the information you found?

3. Web site #3: Please visit: NIH.gov
Before answering any questions please take 5-10 minutes on the site looking for information of interest to you related to your health. If you need a suggestion try weight loss, muscle building, vitamin supplements, steroid use or herbal remedies.

a. Please list anything that you noticed that gave you confidence in the information posted on the site.

b. Please list anything you noticed that caused you to question or doubt the information posted.

c. Would you recommend this site to your friends or family to use as a source of health information? - Please explain why OR why not.

d. Are you familiar with this Web site or sponsor?
      No   Yes   Unsure

e. Have you visited this site before?
      No   Yes   Unsure

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f. Is this a site you would use in the future as a source of health information?
        No   Yes   Unsure

g. What did you think of this Web site?
                Not at all   2   3   Neutral   5   6   Extremely
i. How easy was it to use?
ii. How believable was the information?
iii. How attractive was the site?
iv. How thorough was the information you found?

4. Web site #4: Please visit: Medicinenet.com
Before answering any questions please take 5-10 minutes on the site looking for information of interest to you related to your health. If you need a suggestion try weight loss, muscle building, vitamin supplements, steroid use or herbal remedies.

a. Please list anything that you noticed that gave you confidence in the information posted on the site.

b. Please list anything you noticed that caused you to question or doubt the information posted.

c. Would you recommend this site to your friends or family to use as a source of health information? - Please explain why OR why not.

d. Are you familiar with this Web site or sponsor?
        No   Yes   Unsure

e. Have you visited this site before?
        No   Yes   Unsure

f. Is this a site you would use in the future as a source of health information?
        No   Yes   Unsure

g. What did you think of this Web site?
                Not at all   2   3   Neutral   5   6   Extremely
i. How easy was it to use?
ii. How believable was the information?
iii. How attractive was the site?
iv. How thorough was the information you found?

5. Part 2: Web site comparison
a. Of the four sites you have just explored, which would you be most likely to use in the future as a source of health information?
 Medhelp.org   Healthology.com   NIH.Gov   Medicinenet.com

b. Of the four sites you have just explored which would you be least likely to return to as a source of health information?
 Medhelp.org   Healthology.com   NIH.Gov   Medicinenet.com

c. Of the four sites you have just explored which would you award "Easiest to Use"?
 Medhelp.org   Healthology.com   NIH.Gov   Medicinenet.com

d. Of the four sites you have just explored which would you award "Most believable"?
 Medhelp.org   Healthology.com   NIH.Gov   Medicinenet.com

e. Of the four sites you have just explored which would you award "Best Web site design"?
 Medhelp.org   Healthology.com   NIH.Gov   Medicinenet.com

You have finished the first half of this study. Next please complete an online survey. When you have finished close the online survey window and click the "finish" button here. Click Here to take survey

- *Open ended response coding sheet*

0 Not media literate
1 media literate response
2 equal – first and second level cues
3 No response
4 can't code

First level – superficial cues May reflect the quality of the SITE	Second level – media literate cues Speaks to the quality of the INFORMATION
Design	Authors and interest
Ease of navigation	Currency/ up to date
Presentation style of material	References and resources
Marketing claims (eg "best on the Web")	Advertising and sponsorship

Credibility Cues:
Whether contact information for the author is available.
Whether the information is verified by other sources
The authors' (or site sponsors') goals for posting the information online.
Whether the author of the information is identifiable.
Whether the author's expertise is identifiable.
How current the information is.
Whether the information provided is thorough.
Whether the information represented is opinion or fact.

- *Open ended responses for confidence in most likely to revisit and most believable sites:*

Code   Comment

0   "There is a list of doctors involved with this site, and they have photos, so they can be more real if you're looking for help. Members on the site can talk to each other and share similar medical situations."

0   The NBC's mark .

0   Yes of all the sites previewed I would most likely use this one because of all the different features. I really liked the symptoms and signs section along with the procedures and tests section. The symptoms and signs was nice to use for trying to figure. "There is only video and health topic, no other introduction in this site. "

0   It seemed to be a very well thought out website with a variety of ways to get to some of the same information.

0   All of the information was very thorough and clear.

0   A lot of professional information.

0   The site seemed to provide sensible information based on statistics and information. It appeared professional.

0   Baby Teeth-Save Them or Pull Them? Baby teeth not always should be pulled.

0   The footer at the bottom of the page and also that the address is a org site

0   The information is posted with bullets which makes the information short and concise. Researching asthma I was given a video to watch which further helped my understanding.

0   "Nothing in the site seemed to pander to vain or 'non-serious' medical concers, like how to loose weight fast or how to become more verile. I greatly appreciated that."

0   Skin Disorders. To wear sunscreen is not completely safe from the sun.

0   Some of the stories seemed correct and believable

0   I read prevention magazine and find it trust worthy. although its sponsored it also shows you how to home cook meanls and what sort of exercises to do for the results you want.

0   The fact that it is AOL makes me confident in the site. Nothing else needed to be there.

0   "The fact that the site listed different categories of people in terms of what their specific health needs are. For example it listed 'Child & Teen Health, Men's Health, Minority Health, Seniors' Health, Women's Health.' Also, the site gave numerous links "

0   "It gave me confidence that this site provided detailed search information. You can browse using multiple categories such as alphabetically, by bodily location, or by gender/age. The site seems very trustworthy in that it provides a mission and history"

0   I gained confidence in the site when I looked at it because of the variety of people and illnesses that it included. It also had good information in a good quantity.

0   Helpul information on women's health. Ex. Disease and cancer

0   "I found this site believable because I had a personal trainer and i reconized lots of the excercises, which made the site believable to me and made me think that the people who wrote the site had good information and were specialists."

0   Interesting articles

0   Information was very good. In a matter of seconds i had several of my basic health questions answered.

0   diet and fitness: such as free diet diary health living

0   "I like that familydoctor.org website is more interactive than other health related sites. The main page came up with a video. Below, it has a 'Conditions A-Z' section to be able to easily access everything you are looking for"

0   The webiste seemed very informative. It gave me a definition of all different health causes as well as personal encounters with each health problem. When i clicked on asthma it gave me a video and many other subtopics to inform me on the health issue

0   This website seems to have a lot of valuble information. I believe what gave me most confidence in this site was the 'find a doctor' link in which you can find a doctor anywehre in the US. There is also a lot of information on a great variey of conditions

0   "I decided to look up food allergies, the top results when I searched were relevant and informative. They gave a definition, signs of food allergies, and what to do in case of a reaction. "

0   "Definitely a stimulating website because of the videos, but when I typed in a medication, it had no results. When I typed in food allergies, there were a lot of results. Watching a video is definitely more fun than reading a webpage. "

0   I reallly liked this website. There were sooo many topics on the website and everything had a good amount of information to make me believe that the website was reliable. I first clicked on 'Womens Health' and the alphabet was on the side and I found out

0   the many links entitled: -science education -mission -public involvement -organizational structure -RESEARCH –NEWS

0   In this site I researched caffine and the different aspects of caffine. It gave me confidence in my knowledge now on the different ways caffine affects our bodies and our minds.

0   "I liked how the website was put together. It looked very professional and contained all the information i searched for. I looked up things that I already knew to be factual and cases that occur with my body, and they were true on the website as well. Also"

0   The website looked to be set up in an easy to read and professional manner.

0   That dreams may have signs. Universal flu drug.

0   it looked very perfessional and there was a lot of information provided. There wasn't any random adds on the side.

0   "Nothing specific really stuck out to me, but I felt like the site was trust worthy, seeing as the the majority of articles that I skimmed through held correct information, advice, and concerns. "

0   "Pictures, very detailed information, many helpful links from one type of diseease to another, ways to treat diffrent problems, ways to prevent problems."

0   had slideshows of pictures to go along with some info so it was eye catching and easier to read as well as comprehend. had lots of info links on homepage - all topics that would appeal to todays target market of health junkies and people looking for solu

0   The source seemed very credible as well aas reliable. I read the article about how much exercise is needed to maintain weight. 150 minutes per week to maintain weight is exactly the right amount i've noticed.

0   "related medical articles to my search, quick list of medications to control disorder, clearly explains in detail what causes a disorder, lists related disorders, and gives helpful hints to stay healthy. "

0   The information made sense and seemed attainable to do myself.

0   It had factual information and easy to find.

0   "The video about weight loss and fitness gave me confidence in the information on the site because it told me what the health clubs are trying to do to keep memberships in these hard financial times. For example, giving people a three month free membership"

0   "Although the site seemed mainly information-prone and difficult to use, the quick links on the side made it very simple."

0   The website had a lot of information that would be helpful if i wanted to know anything about a healthy lifestyle.

0   Women's health section Child/teen health Excersize/physical fitness Mental health

0   "It had a lot of information on various topics, so it seemed very credible."

0   "What I liked about this site was that it offered many different things related to medicine. It didnt just tell you different diseases, it helped ways to treat different things and how to prevent different things."

0   gave alot of information on topics many people are interested in. it gave me tips on how to keep strong bones and symptoms of different things

0   "For starters I noticed that the website is working with the television show 'The Biggest Loser', which is a pretty popular show. This gave me confidence, and also the women were attractive and fit."

0   "It had great information on things an average person can do, prevent, and diet."

0   "It is a .org site, .com means they are selling something. the a-z list."

0   Brain fitness.

0   The title.

0   I can get information about the difference the types of diseases between female and men. I didn't know them well before I visited this sites. These information are so useful for me!!!

0   This website was extremely resourceful. I was able to look up women's health and look over various topics such as birth control and pap smeers. Each topic had a lot of information to give that was a step by step process. I had a lot of confidence in what

0   Healthy life style.

0   it showed that getting in shape is very important.

0   healthy food on the list

0   "It was much more 'medical' than the last site, it had more things about physical health and diseases rather than things about weight loss and fun tips."

0   "I search the word sleepiness. And the results i recieved were easy and fast. I got several questions anwered that I've been curious for the pass week and instead of setting up a doctors appointment, I got some anwers questions from the site."

0   i realize that i have to be aware of my health

0   This websight seemed very professional in the way the websight was set up.

0   It was sort of a mixture between the last two website. It was really easy to navigate and had common medical problems but also more advanced and still kept the weight loss/recipe section

0	"Being a product of AOL, right off the bat makes you think this web site is legit. Ensuring that your geting top of the line advice from AOL, who has been trusted for years. The information also had good depth, which made it very believable."
0	i have been heard of aol and been on aol before. i personally trust aol becasue i have used it for so long. Aol also uses athings such as mens health magazine and i have read this before.
0	Eating breakfast Improve performance on memory-related tasks and Enhance school performance in children and young adults. I often skip breakfast but I decided to have it as much as I can.
1	The website gives you the chance to talk to a doctor. A doctor's advice on a health question that I would have would be more credible to me then any other source. Also the quote from a real person who visited the site made me more confident in it:
1	.gov and the title: National institute of health give you a feeling of confidence that this information should have been double checked.
1	Since this site is a .gov site I immediately felt a sense of confidence in the site. As well as the lay out and the general direction and flow of the site.
1	the thing that gave me the most confidence about this site was the fact that it was United States department of health site so you know its true to its word.
1	that at the bottom of the page it had the department of health and human services symbol along with usa.gov and it was a national institute
1	This website is produced by the U.S. Department of Health and Human Services
1	A list of references were given at the end of articles. The Department of Health and Human Services appears to endorse the site.
1	It looks very credible because at the top it say US Department of Health and Human Services.
1	"This site is run by the U.S. Department of Health and Human Services and that gives me confidence that the information will be useful, reliable and accurate. The fact that the site contains links to thei Research gives me confidence that the information I"
1	I felt this website was reliable due to the fact that the individuals who have written the articles about health problems are doctors and have some sort of medical degree.
1	"Information seems to be thourough. It states that the website is part of the WebMD network, a very familiar name in society."
1	"'The Trusted Source', 'Harvard Medical School Partner', 'Medical Content Reviewed by the faculty of Harvard Medical School', Has 'today's news' so you know its frequently updated and maintained, "
1	"On the home page, there was a banner that stated that the websites content partner was the Harvard Medical School, which is known to the public as one of the leading health institutions in the country."
1	They are partnered with Harvard Medical School.
1	"'American Academy of Family Physicians', has more info in some areas (smoking), and other organizations are listed for more or different info."
1	it was endorsed by the American Academy of Physicans

1	At the end of one of the articles it had the name of the writer and that they were a M.D. It helps to know who wrote what you are doing.
1	"The affiliation posted with Kids Health and Revolution Health as well as being a website of the American Academy of Family Physicians, makes this website appear to have credible information. The vast amount of information makes the viewer confident"
1	It is from the National Institute of Health which is a very reliable source. I trust all of the information on this website because it is a government site.
1	It's by the Department of Health and Human Services. The site was pretty clean looking and had lots of articles when I ran a search. The articls looked mostly new and current. It's a government site.
1	I noticed that the website had been approved by the: National Institutes of Health (NIH) Department of Health and Human Services USA.gov
1	"The fact that it was a government website, gives confidence where the information on the website should be accurate and well researched. "
1	"The site has resources and phone numbers someone could call if they had questions about a certain topic, disease, illness, ex. There are also health newsletters and databases someone could visit. "
1	"Since the website was from the US Department of Health and Human services, I have confidence that the site is legitimate with truthful facts and information."
1	The fact the site has U.S. befor the department of health and its a .gov site
1	I looked up information particularly on Allergies and the editors of the tips and facts were MD's or RN's. That made me feel like they knew what they were talking about because they are medical professionals.
1	"It was by The American Society of Health-System Pharmacists, Inc. This is a credible source. I also liked how thourough the information was. "
1	on the first page it says to the left 'our content partner Hardvard Medical School'. I feel this is a more credible site
1	"I noticed that much of the information presented was backed up by research which leads me to believe the infomation. Also, the atricle broke down nutrition into specific parts and recommended serving sizes of different foods, which are important to know f"
1	"A goverment ran website, much confidence in the information posted. very easy to navigate."
1	the 'U.S. department of Health and Human Services' at the top of the page. The suggestions section also give me confidence because if I can't find something in particular that I'm looking for I can ask for it.
1	"The National Institutes of Health website is developed by the US Department of Health and Human Services. The website offers numerous links to health newsletters, health databases as well as a variety of health catagories."
1	This website is a government website which makes me feel like it is a good source to view.
1	"The fact that this site is dedicated to health. It is not owned or opporated by a large media company such as NBC, CBS, or AOL."

1	The first thing was that the url had a '.gov' instead of a '.com' meaning it is a government ran website. But also that it is the National Institute of Health gave me even more confidence.
1	US Department of Health Services The Nation's Medical Research Agency
1	"On an article I read, they listed the author, as well as the MD who reviewed the article. "
1	"I noticed that the articles that I read were all backed up with expert opinions. These opinions were objective, which makes me feel better about the quality of the opinions. Also, the studies were carried out with solid scientific method. "
1	After each article there was a source provided. All sources for the website were either doctors or foundations doing research.
1	The plannel of doctors and there information on the fount told you that you could hold someone accountable and maybe research them if you have questions. The John Hobkins medical information. They are a familer and well known medical group
1	"It was a .org website and when i searched a topic, all of the websites found were .org as well."
1	It has the label of American Academy of Family Physicians. I think this is very prominent and makes me feel confident in the website. It is also a .org website.
1	"This website proved to be very in depth. After any article I had read, there were countless more related articles to read afterwards."
1	"the titles that included, 'us department of health...' and 'national institutes...', it is a '.gov' site, you can get grants from this company, had address at bottom and other logos that looked viable."
1	What I first noticed on this website that helped ensure the information on the site was that it was from 'The Nation's Medical Research Agency'.
1	I liked that it was a government agency. Gives me a lot of confidence in their reserearch. They are not swayed by any outside source.
1	"For starters, the website url was .gov as opposed to .com which makes me begin to feel that it is a credible site. I went on to read about college drinking and the information they presented seemed relevent. I clicked on the link about NIH and it took me"
1	It's a government website. It's part of the United State Department of Health and Human Services.
1	The site was endorsed by the Us departement of health and human services.
1	- It's a '.gov' meaning its credible infomration - Run through the National Institutes of Health and department of health and human services - Gives a list of employee info
1	The parts that gave me confidence was that it is a government health website and there is a lot of information that you can have access to.
1	"they have a newsletter, news feed, dates, an about me page and a notices and legal disclaimer link."
1	The information provided was accurate to what my medical doctor told me about my physical problem. All the symptoms stated are similar.
1	I noticed was that it was a .org website which showed that it had credibility.

1   "IT is a .org website, which means it has at least some validity, and it is sponsered by the AMerican Acadamy of family physicians, which gives it some valuable credibility. "

1   "lots of topics covered thuroughly, Lots of citing and recomended sites for more info"

1   "At the bottom of the pages was a link that stated the article or information was established trought the family doctor team. When you click on that link, it brought you to a page that listed the members of that team, and all of the medical personale had M"

1   it said it got some of its information from Harvard Medical School.

1   Harvard Medical School is a content partner.

1   "Something that really made me believe the information was the fact that it was linked with NBC, which is a trusted channel that my mother watches daily. "

1   "'We Bring Doctors' Knowledge to You' Focuses more on condition, their symptons, and medications "

1   "It looked like it was put together by doctors. Had a very inclusive list of medications, making me think they REALLY did their homework."

1   their connection with WebMD which i have heard of as a reputable site and used before

1   AOL

1   "Content partner: Harvard Medical School The name Aetna, InteliHealth, looks more credible Not as many advertisements Thorough information on conditions/symptoms/treatments "

1   "There were links to the Harvard Medical site, and links to specific research. "

1   When I went to this site I gained confident in the information that was posted on the site because it had Harvard which is a very prestigious college in the lower left hand corner. Right off the bat that told me a lot of the information that they would be

2   I liked how they broke up the differant age levels so that it is easy for everyone of all ages to come on here and research information about themselves. What made this site credible was that it is funded by the government

2   "This was extremely easy and organized, and all the information was very detailed and used easy-to-follow medical terms. It was also written by doctors. "

2   I like the fact it is reviewed by Harvard Medical School. The information on the website is organized and contains solid health tips.

2   You can ask the experts questions. On each different information category there is a picture with a Dr. and his information given. There are top news headlines which makes me feel like they know what is going on in the world and care. They are updated.

2   "The site credits its sources from such prestigious offerings such as Harvard Medical School and Colombia University. Also, its articles were up to date and varied, with a plethora of writing styles. Overall, the site itself was professoinal in its presence"

2   "One of the first things that popped up when I visited the site was a video with the president of the American Academy of Family Physicians, which gave me quite a bit of confidence in the site, and I also noticed how organized the site was"

2   "I liked the heath tip on the side, hopefully they change that everyday because it would show that they pay attention and update their own site everyday. I also like that it gave the effect of talking to a doctor, 'Family Doctor.' It also had a '.org"

2   "Names of experts, research, the fact that it is a published magazine helps make it seem credible"

2   "There are many different solutions for losing weight right from the get go. This makes me feel like the site has done its research and knows what it is talking about. It has ideas about how to keep your heart healthy, along with eating right, and exercise"

2   "The site seemed very professional, and said it was part of the U.S. Department of Health."

2   "It is a government based website, which prooves to me that all the information on it must be entirely correct, or else it would not be posted. Also, it claims to be the 'Nations' Medical Research Agency, which gives me confidence in that the 'Nation' come"

2   This site also is very reliable because it is from a trusted source in AOL. The information was very easy to access and had pictures of things to eat to improve memore and a calorie calculator that i used.

2   it had lots of pictures and it is aol so it made it seem liable

2   "The information was thurough and it answered questions that most people would be likely to ask. They were believable, clear, and spoke in lamence terms so the audience could understand. "

2   "The website was well organized and some of the titles gave me confidence like 'health ENCYCLOPEDIA' Also i know a little about some topics like weight loss and allergies, and the information provided was correct so that also gave me confidence. "

2   "The site claimed to have its medical content reviewed by the faculty of Harvard Medical School, which gave me a lot of confidence that the informtion was accurate and overall good advice. Also, I found this site easier to navigate than the AOL site."

2   The site had a much bigger variety of options that weren't just related to weight or exercise based problems. All of the information carried plenty of info on the writer or supplier of the article as well. It was very clear and well laid out.

2   It's the national Institue of health and it's got a buch of other fancy things on the site.

2   Right under the name of the site it says bringing doctors knowledge to you which makes me feel that a lot of the information in reliable. In some of the artcles it also talks about recent studies that have been shown.

2   "the layout was calming and professional the logo at the bottom 'american academy of family physicians' could be a huge sign of valuable info for most peple it was easy to use, had a wide array of topics, presented them in categories that were helpful to"

2   "The name of the webpage, 'National Institute of Health' is a very good sign, and the pages have clean compositions. The search is well spread into very specific categories, and an extensive list of health-related terms is available."

2   Owned and operated by WebMD. Been around since 1996. Really good about us information. Lots of advertisements on the pages-makes me think a lot of ppl must visit it for a lot of companies to pay to have advertisements on it.

2   "The website not only provides the viewer with health advice, but the latest health advice as well as news. Medicine.Net is very comprhensive and interesting."

2   "its a website from a magazine that ive heard of, has sources and copyright dates, the layout looks professional done."

2   Aetna- it is part of my medical insurance and I am confident in it. I like the organization of the page as well; the tabs in the upper left hand corner provide quick and easy navigation.

2   Easy to use-find whta youi wanted on the site. Simple layout. Liked the interactive option! Partners with Harvard Medical school

2   "There were many different articles relevant to each section of the website. There is tons of information from different people who are specialized and educated in the specific areas. For example, fitness coaches and nutrition experts."

2   i liked that the information was in depth and descriptive. no pop up ads too!

2   A lot of doctoral advice. Symptom Checker Box. Lots of slideshows and pictures.

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