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Health Communication on the Web: The Roles of Web Use Motivation and Information Completeness

Mohan J. Dutta-Bergman

Recent articles on the evaluation of the quality of health information on the World Wide Web reveal an emphasis on the completeness of information. This paper takes a situational approach to Web usage arguing that the impact of completeness on attitude and intention toward the issue is moderated by Web use motivation. Borrowing the analogy between low–high involvement and surfing–searching, it was hypothesized that the effect of completeness would be observed in the searching situation and not observed in the surfing situation. After the initial pretests and pilot studies, 246 respondents were recruited to participate in a 2×3 study design. Not supporting the hypotheses, it was observed that the effect of completeness was significant in both surfing and searching situations. Explanations are provided for the observation, and directions for future research are suggested.

With almost 40% of consumers searching the Internet for health information, the medium has emerged as a key player in healthcare, fundamentally reshaping patient decision making and altering the traditional doctor–patient relationship (Dutta-Bergman, 2003; Eysenbach, Powell, Kuss, & Sa, 2002; Harris, 1997). This explosion of the Internet as a source of health information for the consumer calls for a shift in the way health information is approached and understood, placing emphasis on a consumer-driven perspective (Cline & Haynes, 2001; Hibbard & Weeks, 1987). This paper embodies the consumer-centered perspective by attempting to understand how people process health information on the Web, focusing on an element of health information quality that has received a great deal of attention, information completeness (Eysenbach et al., 2002). Based on a conceptual parallel between involvement and Web use motivation, it applies the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1984, 1986) and the Heuristic Systematic Model (HSM; Chaiken & Eagly, 1976, 1983) to understand how consumers use information completeness to evaluate Internet-based health information under different Web use situations (surfing or searching). The analogy between surfing–searching and low–high involvement is used to draw an ELM-based model of the moderating effect of surfing–searching on the relationship between information completeness and outcome measures.

Web Use Motivation

Defining Surfing—Searching

Web-based behavior is categorized into goal-directed and experiential styles based on differences in consumer motivation (Chen, Houston, Sewell, & Schatz, 1998; Li & Bukovac, 1999). Dichotomous word pairs such as surfing/browsing–searching, hedonistic–utilitarian, sensory–functional, experiential–goal-directed, and play–work capture these two distinct styles of Web navigation (Chen et al., 1998; Li &
Browsing is characterized by its exploratory nature and the absence of planning, goals, or objectives (Chen et al., 1998; Marchionini, 1987; Marchionini & Shneiderman, 1988), as opposed to searching that is goal directed and driven by a problem or a specific information need (Chen et al., 1998).

**Surfing/Searching and Processing Routes**

The classification of Web navigational styles shares common elements with dual processing models that emphasize two distinct routes to information processing (Eagly & Chaiken, 1993; Petty & Cacioppo, 1986). The peripheral route is more superficial than the central processing route and does not generate argument scrutiny, leading to persuasion because of positive or negative associations or because of simple inferential cues present in the information environment (Petty & Cacioppo, 1986, 1990; Petty, Cacioppo, & Schumann, 1983). The central route involves deeper and more effort-intensive processing, leading to persuasion as a result of the diligent consideration of relevant argument-based information (Petty & Cacioppo, 1986, 1990; Petty, Cacioppo, & Schumann, 1983). Extrapolating the ELM to the domain of Web use motivations and Web navigation styles, Murphy (1998) pointed out the analogy between peripheral–central concepts of the ELM and the surfing–searching constructs in Web navigation. Surfing, with its experiential orientation, involves peripheral processing whereas searching, with its focus on goal-directed action, involves central processing (p. 63). Li and Bukovac (1999) drew a similar analogy in their argument that information seekers in searching situations selectively orient their attention to information based on its need relevance. This selective focus on argument-relevant information is different from a more diffuse experiential orientation where the consumer attends to whatever is interesting (Li & Bukovac, 1999). The application of the analogy between involvement (high–low) and Web use motivation (surfing–searching) proposes to explain the different evaluative criteria used by consumers under different situations (surfing–searching) to evaluate health information on the Internet.

**Argument Quality**

Throughout the discussion of the dual processing models (ELM and HSM), argument quality emerges as a key variable. The central and peripheral routes differ from one another in the extent to which consumers going through the routes pay attention to argument quality. Despite the central nature of argument quality in the dual processing model, the construct has not been clearly and consistently defined (Areni & Lutz, 1988; Boller, Swasy, & Munch, 1990). Critics of the ELM (Mongeau & Stiff, 1992; Reinard, 1988; Stiff, 1986, 1987) have questioned the categorization of arguments based on the valence of thoughts they generate (favorable or unfavorable, see Petty & Cacioppo, 1986), arguing that this strategy may manipulate message cognitions rather than manipulating argument quality (Mongeau & Stiff, 1992; Stiff, 1987). Scholars have also pointed out that Petty and Cacioppo's (1986) operationalization of argument quality ignores the question of what makes an argument strong or weak (Mongeau & Stiff, 1992; O'Keefe, 1990; Stiff, 1987). The validity of the involvement by argument quality interaction has also come under scrutiny (Mongeau & Stiff, 1992; Reinard, 1988; Stiff, 1986).

Literature from other disciplines can help to overcome some of the criticisms of the dual processing theories by providing alternative criteria for assessing what
makes an argument strong or weak. For example, research from Library and Information Sciences has identified multiple criteria such as novelty, accuracy, completeness, and relevance that may be used to evaluate information (Barry, 1994; Barry & Schamber, 1998). These criteria can be systematically used to differentiate between strong and weak arguments (Barry, 1994; Barry & Schamber, 1998). This paper borrows completeness from the Library and Information Sciences Literature based on its wide circulation in the growing literature on e-health information quality (Cline & Haynes, 2001; Eysenbach et al., 2002).

**Information Completeness**

Consumers of health information often make decisions based on the information they acquire on the Internet (Barry, 1994). A growing body of current research in Internet-based health communication suggests that the completeness of health and medical information is perhaps the most important information criterion in decision-making and choice situations (Cline & Haynes, 2001; Eysenbach et al., 2002). Merriam Webster’s collegiate dictionary (1995) defines completeness as “having all necessary parts, elements, or steps.” For this study it is especially important to emphasize the notion of having all necessary elements. Complete health information includes all the elements that are necessary to establish it. These necessary elements are agent/theory and method (Boller et al., 1990). Agent/theory targets the specific linkages that build the argument and support the claim, and method addresses how the data were gathered. Boller et al. borrowed the Toulmin (1958) model of argument structure to elucidate agent/theory. The Toulmin model suggests that a sound logical argument contains three elements: claim assertions, evidence (grounds), and authority (warrants and backing). The presence or absence of these elements makes an argument strong or weak. A claim asserts the advantages/disadvantages of a proposed action. Evidence (or grounds) is facts presented to back the claim. Warrants provide the link between the claim and the presented evidence, often serving as an explanation. Backing, in turn, is the factual element that supports the warrant. In this study, the complete and incomplete pieces of information differ from each other in the presence of grounds, warrants, backing, and method. The complete version contains all four elements; the incomplete version lacks all four.

**Hypotheses**

The literature review points out that information completeness plays a pivotal role in efforts to monitor information on health-related Web sites. Making completeness evaluations is critical in the process of making a health decision based on that information (Cline & Haynes, 2001; Eysenbach et al., 2002). A survey of the literature suggests that determining the extent to which a piece of information is complete requires considerable cognitive effort (Boller et al., 1990; Petty & Cacioppo, 1986), especially when the message is controlled for easily detectable surface-level heuristic confounds, such as length and number of arguments. Therefore, the usual cognitive miser consumer may be willing to expend the effort to determine completeness only when required to do so by the situation (Eagly & Chaiken, 1993; Petty & Cacioppo, 1986). Only under high levels of involvement will the consumer be motivated to process complete information. The following hypotheses are suggested based on the theoretical framework.
Hypothesis 1a. Information completeness will have greater impact on attitude toward the issue under high rather than under low involvement conditions.

Hypothesis 1b. Information completeness will have greater impact on behavioral intention toward the issue under high rather than under low involvement conditions.

Method

Development of Experimental Materials

Message development. The topic “Tea is Good for Your Heart” was chosen as the target issue because of its low initial relevance for the target population. After the target issue was selected, the researcher embarked on a thorough search of the existing literature to identify key evidence and supporting information connecting tea and the heart. The systematic literature search was conducted between January and March, 2001. For the purpose of generating information, a wide range of sources, including academic indexes, professional medical journals, health archives, health Web sites, tea Web sites, and popular outlets such as newspapers and magazines were explored, resulting in 134 articles on the topic of tea and the heart. When all information was gathered, the researcher synthesized it to generate the fundamental building blocks of the Toulmin model. After these building blocks (warrants, backing, and grounds) were generated, their presence or absence defined the level of completeness of the message (complete and incomplete versions). The incomplete version of “Tea is Good for Your Heart” lacked the grounds, warrants, backing, and method presented in the complete version. Instead, this version contained irrelevant arguments that did not have anything to do with the linkage between tea and heart (instances of such irrelevant information include the use of tea in the East, the growing popularity of tea, patient satisfaction with tea studies, etc.)

To control the heuristic effect of length both versions of the article “Tea is Good for Your Heart” contained approximately the same number of words (equal length), the same number of paragraphs, and approximately the same length of each paragraph. To control the confounding effects of source credibility the same sources were used in both versions. Also, the positioning of the sources within the article was exactly the same across the versions. Yet another heuristic that was anticipated to confound the study was the numbers. The number-based heuristic was controlled by inserting an equal amount of numerical figures in all versions. Moreover, the numbers used were of the same magnitude across both levels of completeness. To control for the effect of a visual heuristic no pictures were included in the articles.

Web site development. To create a real Web scenario the test article needed to be embedded within a larger health Web site. Two different versions of the Web site contained different versions (incomplete and complete) of the article “Tea is Good for Your Heart,” and served as the manipulation of information completeness. Each version of the Web site was titled “ABC’s of Health.” Special attention was paid to make sure that each Web site looked like a real-life health Web site, especially the health information content. In addition to the article on tea, thorough research of 58 health Web sites led to the selection of seven health articles from different Web sites. All versions of the Web site contained three feature articles and five news articles. The additional articles were identical across the conditions. In concordance with the
usual layout of information in popular health sites, the feature articles were placed at
the top of the Web page and the news articles were placed toward the bottom.

**Involvement Manipulation.** The level of involvement of the consumer with the topic
was manipulated in this study. The involvement manipulation was embedded in the
introductory page and role playing was used to create the manipulation. Involvement
was dichotomized into high and low levels. The two involvement situations
differ in the amount of goal directedness. The high involvement respondents were
asked to imagine a scenario where they have been found to have heart disease.
 Pretending as if they were looking for specific heart-related information, the
respondents were asked to search the Web site. These instructions created a high
level of goal directedness, with respondents focusing their attention on heart-related
issues. Given the topic “Tea is Good for Your Heart,” heart disease was chosen as
the goal situation to create a high level of relevance/involvement. As opposed to the
high involvement situation, the role-playing instruction in the low involvement
situation completely lacked goal directedness. Low involvement subjects were simply
asked to imagine that they were browsing the Web site for fun. The surfing/search-
ing instructions were checked in pilot studies and pretests.

**Main Experiment**

**Overview of procedures.** A $2 \times 3$ (Web use motivation $\times$ Completeness) factorial
design was employed to test the hypotheses. Approximately 40 subjects were
randomly assigned to each of the cells in the $2 \times 3$ design. Subjects participated
individually or in groups varying in sizes from 12 to 50 in computer laboratories
equipped with computer stations that could access the Web site. The subjects were
isolated from each other so they could complete the experiment independently, and
respondents in each session participated in different experimental conditions. The
availability of enough subjects in a single session allowed the researcher to conduct
all experimental conditions simultaneously, i.e., within each session participants
were randomly assigned to one of the six conditions. This procedure avoided
confounding session with experimental condition. After spending approximately 10
minutes at the Web site, respondents were asked to complete a questionnaire,
evaluating the Web site. This questionnaire included both measures of the depen-
dent variables (attitudes, and intentions) as well as measures used to assess the
experimental manipulations (completeness and involvement).

**Participants.** Two-hundred-and-forty-six undergraduates enrolled in Journalism
classes in a large Midwestern university participated. There were 151 females and 87
males. The mean age of the sample was 21 years, and the mean number of hours
spent by this sample on the Net each day was 1.93 with a median of 2.00 hours. The
average amount of experience with the Internet was 6 years. Seventy-four per cent
had previously used the Internet for health information. Usable data for the analyses
was obtained from 159 participants.

**Measures for Manipulation Checks**

**Involvement: Surfing vs. Searching.** The manipulation of surfing and searching was
checked in three ways: article involvement (i.e., with the article “Tea is Good for
Your Heart”), general Web site involvement, and article readership. To check the
manipulation a one-way analysis of variance was conducted on the involvement
(self-reported cognitive effort) measure with the Web use motivation (surfing/search-
ing) manipulation serving as the independent variable. The items measuring self-reported cognitive effort were borrowed from existing ELM research (Petty & Cacioppo, 1981, 1984, 1986).

The four items that emerged from the pilot studies to measure article involvement on a 1–7 scale, with 1 representing "strongly disagree" and 7 representing "strongly agree," were "tried hard to evaluate the communication," "thought a lot about the arguments in the message," "spent a lot of effort evaluating the arguments," and "put a lot of effort into evaluating the communication." When the four items representing article involvement were subjected to a principal component factor analysis with Varimax rotation, all four items were retained. The items were highly intercorrelated and had factor loadings between .89 and .92, explaining 81% of the variance. Only one factor emerged with an Eigenvalue greater than one; the Eigenvalue of the four-item factor was 4.05. Cronbach's alpha for article Web use motivation was high at .94.

The four items for the measurement of Web site involvement on a 1–7 scale, with 1 representing "strongly disagree" and 7 representing "strongly agree," were "put a lot of effort into evaluating the site," "was highly involved in evaluating the site," "tried hard to evaluate the information on the site," and "thought a lot about the arguments presented in the articles in the site." Principal component factor analysis with Varimax rotation of the four items yielded a single factor, with an Eigenvalue of 3.37. Cronbach's alpha for the scale was .94. Article readership was measured on a 1–6 scale.

**Completeness and Argument Quality**

Before embarking on a large-scale study to check the completeness manipulation, exploratory focus groups were conducted to get (a) preliminary consumer input into the completeness of the message and (b) to assist with the development of a scale to measure completeness. Thus, focus groups were used as the method of study to generate in-depth feedback to the manipulations of the article "Tea is Good for Your Heart."

Based on the exploratory results the eight items that were used to measure completeness on a 1–7 scale with 1 representing "strongly disagree" and 7 representing "strongly agree" were: "thorough," "contains sufficient information," "contains all the necessary elements," "contains sufficient evidence," "supported," "complete," "extensive," and "sufficient." These items were subjected to a principal component factor analysis with Varimax rotation. A single factor with an Eigenvalue of 5.72 was generated from the factor analysis. Each item had a factor loading of greater than .72, and the factor accounted for 68% of the sample variance. Cronbach's alpha of the aggregated scale was .93.

Argument strength serves as a conduit for introducing completeness into the ELM-based theoretical framework of the study. By demonstrating that completeness is directly related to argument strength, it is established that completeness is indeed a central criterion. Argument strength of the article was measured using four items on a 1–7 scale, which were "convincing," "well supported," "persuasive," and "contains strong arguments." When subjected to principal component factor analysis with Varimax rotation, the four items representing article argument strength formed a single factor. The minimum factor loading was .67, and the factor explained 74% of the sample variance. The Eigenvalue of the single factor was 2.98. The aggregated scale had a high reliability with a Cronbach's alpha of .87.
**Dependent Variable Measures**

**Attitude toward issue.** Based on the results of the pilot studies and pretests, seven items were retained to measure attitude toward the issue. These seven items were “tea is healthy for the heart,” “tea is beneficial to the heart,” “tea is good for the heart,” “tea is useful for the heart,” “tea is healthy,” “tea is useful,” and “tea prevents heart attack.” When subjected to a principal component factor analysis with Varimax rotation, a single factor with Eigenvalue of 6.12 and Cronbach’s alpha of .98 was produced.

**Intention toward issue.** The pretests and pilot studies revealed a single-factor structure when the three items representing conative response were factor analyzed. The three items, “intend to start drinking tea to prevent heart attack,” “intend to recommend tea to a friend or relative who has heart disease,” and “intend to search for more information on tea,” were subjected to a principal component factor analysis with Varimax rotation, and a single factor was generated with an Eigenvalue of 2.36 and Cronbach’s alpha of .86. Intention toward the issue was highly correlated with attitude toward the issue ($r = .76, p < .01$).

**Results**

Hypotheses 1a and 1b posited that Web use motivation (surfing/searching) moderated the relationship between information completeness and the dependent variables. After assessing the experimental manipulations, each of the hypotheses were tested with separate ANOVAs.

**Manipulation Checks**

**Involvement.** The ANOVA showed that the searchers processed the issue-relevant article (“Tea is Good for Your Heart”) to a significantly greater extent than the surfers did. Participants assigned to the searching group had a significantly, $F(1, 157) = 79.99, p < .001, \eta^2 = .34$, higher level of article involvement ($M = 4.76, SD = 1.02$) than those participants who were assigned to the surfing group ($M = 3.16, SD = 1.18$). Participants assigned to the searching condition ($M = 4.63, SD = 1.18$) reported a significantly greater, $F(1, 157) = 41.14, p < .001, \eta^2 = .13$, level of Web site involvement than the participants assigned to the surfing condition ($M = 3.62, SD = 1.42$). Finally, the searchers ($M = 5.88, SD = 1.04$) read the article significantly more thoroughly, $F(1, 157) = 39.86, p < .001, \eta^2 = .13$ than did surfers ($M = 4.89, SD = 1.55$).

**Completeness.** To check the completeness manipulation a one-way ANOVA was conducted with the completeness measure being the dependent variable. The completeness manipulation (complete and incomplete) served as the independent variable. Subsequently, post hoc tests were conducted using the Bonferroni method. The complete version of the article was evaluated as being significantly more complete than the incomplete version. Respondents assigned a significantly, $F(1, 157) = 120.40, p < .001, \eta^2 = .43$ higher mean to the complete version ($M = 5.04, SD = .80$) than the incomplete version ($M = 3.48, SD = .99$). The pilot studies and pretests had shown support for the completeness–argument strength link. To assess further the proposed relationship between completeness and argument strength, a one-way ANOVA was conducted. Argument strength was the dependent variable and completeness was the independent variable. The complete version was
significantly, $F(1, 157) = 214.68, p < .001, \eta^2 = .57$, stronger in argument quality ($M = 5.55, SD = .90$) than the incomplete version ($M = 3.16, SD = 1.16$).

**Hypotheses**

A two-way analysis of variance (ANOVA) was conducted to test Hypothesis 1a. The interaction effect of Web use motivation and information completeness was not statistically significant, $F(1, 157) = 2.79, p = .14, \eta^2 = .01$, supplying no support for the argument that the effect of Web use motivation on the relationship between information completeness and attitude toward the issue is meaningful. The direct effect of Web use motivation on attitude toward the issue was significant, $F(1, 157) = 4.20, p < .05, \eta^2 = .03$. Also, information completeness significantly and substantially impacted the attitude toward the issue, $F(1, 157) = 298.58, p < .001, \eta^2 = .60$. Complete ($M = 5.79, SD = .92$) information had the stronger effect on attitude toward the issue than incomplete version ($M = 3.06, SD = 1.32$).

Hypothesis 1b predicted that Web use motivation (surfing/searching) would interact with information completeness in the context of behavioral intention toward the issue. Hypothesis 1b was not supported by the data, $F(1, 157) = 1.80$, n.s., $\eta^2 = .00$. Significant main effects of Web use motivation, $F(1, 157) = 14.63, p < .01, \eta^2 = .04$, and completeness, $F(1, 157) = 168.23, p < .001, \eta^2 = .34$, on intention toward the issue were observed, however. Those who surfed ($M = 3.99, SD = 1.93$) had a more positive conative response toward the issue than those who were searching the Web ($M = 3.37, SD = 1.61$). Those receiving complete information ($M = 4.70, SD = 1.65$) were more likely to have a positive response to the issue than those receiving the incomplete version ($M = 2.65, SD = 1.29$).

**Discussion**

This project explored the Internet health information processing of college students. Given its growing importance in the domain of health information, information completeness was selected as the focal independent variable of the study (Eysenbach et al., 2002). The argument was made that a complete message has higher argument quality than an incomplete one and that the strength of the argument is greater for a complete message than that for an incomplete message. The logical conclusion that structural completeness lies at the crux of argument strength was supported by the results of the manipulation check. Having applied a situational perspective and having borrowed the idea of dual processing from psychology into the domain of Internet health information evaluation (Petty & Cacioppo, 1986), this research followed the prevalent analogy that surfing is low involvement and searching is high involvement (Li & Bukovac, 1999). Results from the manipulation check were consistent with this claim.

When it was ascertained that information completeness was indeed a central criterion, and that surfing and searching significantly differed in their levels of involvement, the next question was: does the dual processing model apply to the domain of Internet health information evaluation? The results of the ANOVAs did not support the dual processing perspective in the context of completeness. No support was found for the interaction between Web use motivation and information completeness. Instead, the experimental tests suggest a sizeable main effect of information completeness on attitude toward the issue. This outcome suggests that under both surfing and searching scenarios (low and high involvement) consumers
attend to message-based characteristics and are able to differentiate between the complete and incomplete versions. Although surfing turned out to produce significantly less involvement than searching, it focused consumer attention on completeness (a message characteristic), as did searching.

Instead of two routes to processing the results propose a single unified route when considering a central criterion such as completeness in the Internet environment. This finding departs from the conventional wisdom, leading to the conclusion that surfing is not simply passive processing of information with suspension of all central processing. In turn, the evidence here points to the idea that central cognitive-based processing can and does occur when surfing, suggesting the idea of processing threshold. Although the relative levels of cognitive effort differed between surfing and searching, both processes generated cognitive effort above the information processing threshold (for central processing) such that both surfers and searchers attended to completeness. The possible reasons behind this anomaly are further discussed in detail in the next section.

Explanations

To understand this phenomenon better, one needs to understand the characteristics of the Internet that make it a distinctly different medium from traditional outlets. The Internet requires a high level of consumer involvement because the consumer has to make constant choices and exercise control when moving through the material. Given the great deal of control exercised by the consumer when surfing on the Internet, surfing is not an exact replica of passive television viewing or passive magazine reading. Active consumers, when in an Internet health information environment where they can make a free choice, are likely to click only on those articles that they are intrinsically motivated to read. Therefore, a certain level of curiosity and intrinsic motivation (involvement) is required for the consumer to click on a link and follow it to read the article. Although this motivation may be quantitatively lower than the motivation in searching, it may be substantive above a certain threshold level required to generate cognitive processing. The experimental manipulation did generate differences in effort between surfing and searching, and involvement had a small main effect on behavioral intentions, so apparently at some point beyond a certain threshold, an increase in involvement does not lead to an increase in the effect of information completeness. Some Internet scenarios that do not require clicking, such as exposure to banner ads, may be closer to the passive involvement of other media.

Yet another possible explanation for the anomalous results could be the context within which the information is provided and consumed. The health-based and information-oriented context of the Web site creates a cognitive scenario in which the consumer processes the information centrally even when surfing the Web site. The study design might also explain the departure in the findings from traditional ELM research. First, although involvement was successfully manipulated by creating differences between the surfing and searching groups, it is still possible that both conditions still reflect a high level of involvement when compared to earlier ELM studies. Second, the manipulation of information completeness is perhaps more extensive than manipulations of argument quality in prior ELM studies.

Significance and Implications

This research took a step away from the traditional ELM/HSM research to
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attempt to operationalize argument quality using an information evaluation criterion, completeness. The use of completeness provided a starting point for exploring the impact of different information criteria on argument quality. Researchers have often been at a loss trying to operationalize argument quality, drawing attention to the fact that current approaches lack an understanding of what makes an argument strong or weak. Typical approaches, such as the ones widely used by Petty and Cacioppo (1986, 1990), have manipulated the valence or desirability of arguments rather than manipulating argument structure. By looking at the structure of the argument, specifically its completeness, this paper provides a partial and preliminary answer to the question of what strengthens an argument. Information completeness, as suggested by the tests, is a key ingredient in defining strength of the message and the strength increases with an increase in completeness. Also, measures of completeness were developed that may be applied in future research on completeness and for the construction of a quality metric for Web site assessment. Pragmatically, the data suggest that health-related Web sites would profit from focusing on providing complete health information regardless of how users process Internet information.

Limitations

The research design applied in this study had a certain degree of artificiality. Only limited information was provided on the Web site “ABC’s of Health.” Limited links were provided and the number of articles was limited to eight to prevent the consumer from wandering away to other sites. The use of role play for the manipulation of involvement may be questioned by critics because role play does not capture all situational dynamics. The manipulation checks applied in this study point out that the role-playing manipulation worked, however. The generalizability of the results is another issue that might be questioned. Using students as participants, it may be argued, does not reflect real-life characteristics of health information search. The topic relevance with the population also affects the external validity of the study. Information completeness was manipulated with a heart-related article. Given the nearly negligible risk of college students contracting heart disease, the manipulation, it may be argued falls short of creating a real-life situation because students would not be able to imagine the real implications of a heart disease. To address such concerns, future studies must look at other health information topics to measure the impact of completeness on attitude.

Footnote

1 The original research also included a jargon version to control for the effect of the “It sounds scientific heuristic.” Supporting the conceptual framework, the manipulation checks and the results demonstrated no significant difference between the jargon and the incomplete versions. Therefore, the jargon version is not reported in this article.

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