Credibility by Google:
Do Search Engine Cues Influence Website Credibility and Relevance Assessments?

THESIS

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Abstract
Little work has examined experimentally how and if the search process impacts credibility and relevance assessments of websites. This paper makes contributions to existing literature by examining three concepts: (a) how the rank of a website on a search engine results page impacts judgments of the website’s perceived credibility and relevance to a query, (b) if Internet self-efficacy moderates this relationship, and (c) how credibility and relevance operate as distinct concepts. The data indicate that a website’s rank neither directly influences credibility nor relevance, however, Internet self-efficacy moderates the relationship between a websites rank and perceived relevance. There was also tentative support for credibility and relevance operating independently.
Acknowledgments
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Fields of Study

Major Field: Communication
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Chapter 1: Introduction

Search engines often act as gatekeepers to online information; not only is search engine use one of the most undertaken activities on the web (Rainie & Shermak, 2005), but multiple studies have shown a relationship between the rank of a website on a search engine results page (SERP) and user selection of that website (e.g. Granka et al., 2004; Pan et al., 2007). These studies seem to indicate that the mechanisms behind why search engines influence website selection is due to Internet users utilizing search engine’s rank ordering of results as a heuristic for determining which website is “best”. “Best” is often conceptualized as the result that is most credible or most relevant to the query; however, the majority of studies consider either relevance or credibility but never both simultaneously. Additionally, while the conceptualizations of relevance and credibility are different no researcher has examine if they influence Internet behavior different or if they are influenced by search engines differently. While past research seems to imply that the rank of a website on a search engine results page acts as heuristic for which website is the most relevant and credible this claim has not been tested explicitly.

Of additional consideration is that not all Internet users search equally; there is a wide array of both level of ability and beliefs about what these abilities can accomplish. Past research has shown that user skill and self-efficacy influences Internet behavior. For example, the majority of Internet users have a poor understanding of search engines in
general (Introna & Nissenbaum, 2000), thus the proximal cues supplied by search engines could be employed as heuristics by naïve Web users to make quick decisions regarding the perceived credibility of a Website. It seems that one’s Internet self-efficacy shapes how people respond to search engines.

Thus, the goals of this paper are (a) to assess if people typically select the top-ranked results on search engines because the ranking system employed by search engines acts as a heuristic, (b) to analyze the differences between credibility and relevance and (c) assess if self-efficacy influences how an individual judges a Website’s credibility and relevance. To investigate these questions, this paper will first overview the past research on the Internet and search engines, next the heuristic systematic processing model will be consider as a theoretical explanation for why search engine cues influence website assessments, relevance and credibility will be distinctly conceptualized, then the role of self-efficacy will be considered. Finally, hypotheses and research questions will be posited followed by a discussion of the results.

Chapter 2: An overview of search engines

Before reviewing past research on search engines, it is important to first consider how the majority of search engines work. When default settings are used, most search engine results pages (SERPs) display a ranked list of ten links that are accompanied by 2.
short abstracts (Kammerer & Gerjets, 2010). Search engines attempt to order these results based on how relevant each Website is to the query entered (Pan et al., 2007). However, these algorithms are both highly guarded trade secrets and constantly being changed. In 2010 alone, the algorithm used by Google was expected to change, on average, over once per day (Levy, 2010). Because of the lack of knowledge about how algorithms work and how each search engine’s algorithm differs, it is difficult to measure objectively how relevant the ranked web pages are to users’ queries (Pan et al., 2007). Similarly, while it is standard for SERPs to display ten ranked websites per results page, each search engine uses a unique algorithm for ranking web pages as well as a unique method of displaying the results (Pan et al., 2007).

Chapter 3: Search engines as heuristic cues

Multiple studies have shown that the rank of a website on a SERP (search engine results page) strongly influences website selection (e.g. Pan et al., 2007). These researchers argue that this occurs because trusting search engine results provide a trusted heuristic that is used to simplify and accelerate the evaluation of search results (2007). Metzger et al. (2010) similarly found that web users routinely employ heuristic processing to evaluate both online sources and online information once they have viewed the content of a webpage.
According to Sundar (2008), “A heuristic is simply a judgment rule (e.g., ‘responsiveness is good customer service’) that can result in estimations of content quality.” He identifies three criteria that are necessary for the use of heuristics to occur. First, a cue must be cognitively available. Second, the heuristic must be accessible, and third the heuristic must be applicable to the immediate situation (Sundar, 2008).

Additionally, both the elaboration likelihood model (ELM) and the heuristic-systematic model (HSM) make distinctions about how cues are processed (Sundar, 2008). One type of processing is heuristic processing (HSM) or peripheral processing (ELM) and relies on mental shortcuts to form judgments. For example, the attractiveness of the source or the font color are often processed peripherally. In contrast, central processing (ELM) or systematic processing (HSM) requires more cognitive effort, and is characterized by “attention to and evaluation of message content” (Sundar, 2008). When employed, heuristics can be used to form rapid judgments such as the direct acceptance of a message (heuristic processing) or can be used to guide more cognitively effortful systematic processing.

Additionally, a cue is anything in the context of digital media use that might serve as a trigger for the operation of a heuristic. Interestingly, Sundar (2008) argues that structural cues (instead of content cues) of a Website are becoming increasingly salient to
today’s youth. Structural cues include autogenerated cues, and are provided by search engines:

More complex examples of autogenerated cues appear in the form of navigational aids offered by algorithms used in search-engine and aggregator sites such as Google News, which transmits cues about the relative recency of the information, among other attributes. These appear as part of—or surrounding—the central content of the site, and emit “information scent” helpful in making quick decisions about the quality of the information available for consumption. (p.78)

Sundar (2008) also argues that “proximal cues” (cues that refer to a preview of the actual content) are said to “emit a scent about the information at the other end of the link.” These proximal cues are another type of structural cue, and young Internet users in particular are likely to rely on structurally based heuristics when there is an absence of strong commitments to content or viewpoints on issues. Furthermore, these cues can trigger heuristics that are likely to predispose users to experience content in a particular way. Thus, it seems that the ranking system employed on SERPs will serve as a proximal cue that will influence assessments of a Website’s content.

Similarly Taraborelli, (2005) argues that Internet users increasingly delegate the checking of credibility to technology, such as search engines. “By relying on content filtered, ranked, or selected by these technologies… we integrate these devices as part of our extended cognitive system” (Taraborelli, 2005). Thus, individuals tend to use more cognitive workload evaluating the technologies then the actual source of information,
which, Taraborelli (2005) argues, tends to lead to biasable credibility judgments that are less likely to be long-term beliefs. Interestingly, while many researchers have thus claimed that search engine result pages act as heuristics by which to judge a website, no quantitative study has directly researched these claims.

Chapter 4: Search engines cues and credibility

Interestingly, employing website’s ranking on a SERP as a heuristic during the search process may lead to a decrease in the quality of search results by creating a dynamic relationship where the most popular results are displayed first on SERPs instead of the most credible and relevant results. Hindman, Tsiotsioliklis and Johnson (2003) argue that biases in search engine algorithms, such as prioritizing American, commercial and popular Websites (Kleinber &Lawrence, 2001), establish a rich-get-richer feedback loop, and thus, a handful of Websites dominate the search engine landscape (Hindman, 2009). This occurs because search engines generally position highly popular pages at the top of SERPs, and the majority of Internet users only click on the top few links (Pan et al., 2007). Consequently, the reliance on a search engine that ranks results according to popularity can delay widespread awareness of a high-quality page (Pandey et al., 2005) (this occurrence is referred to as “The Entrenchment Effect” and “Googlearchy”). Such biases have complicated the process of assessing the credibility of online information after the search process (Sundar, 2008):
While an assessment of [...] simple cues was feasible in traditional media, it is next to impossible for an average Internet user to have a well-defined sense of the credibility of various sources and message categories on the Web because of the multiplicity of sources embedded in the numerous layers of online dissemination of content. (p.74)

O’Keefe (1990) conceptualized credibility as “judgments made by a perceiver concerning the believability of a communicator”. Additionally, studies have shown that credibility has two components: expertise and trustworthiness (Metzger et al., 2003). “Expertise refers to a communicator’s qualifications or ability to know the truth about a topic, whereas trustworthiness was conceptualized as perceptions of the communicator’s motivation to tell the truth about a topic” (Metzger et al., 2003).

Flanagin and Metzger (2007) additionally recognized that there are different types of credibility, such as message credibility and sponsor credibility. Message credibility judgments are based on components of the message itself, such as the language intensity used, accuracy, the quality of information, and currency. Sponsor or source credibility judgments are formed when Individuals evaluate a Website’s sponsor. These judgments can be influenced by the reputation of the source or personal experience with the source (2007). Flanagin and Metzger (2007) also note that the concept of source “is complex, because the source of an online message may be attributed to the author of the material on a particular website, aspects of the message, the sponsor of the site, or even the medium itself.” Consequently, they argue that the “source” of Web-based information is
whoever (or whatever) the receiver believes the source to be. Ultimately though, “source, message, and medium (site) credibility serve as nominal cues…that provide mental shortcuts for effortlessly assessing the believability of information being received” (Sundar, 2008). In short, researchers have analyzed how credibility assessments of Websites are formed and how they act as filters that shift out untrustworthy information (Flanagin & Metzger, 2000). However, a triangulated study by Hargittai et al., (2010) is the only work that considers how this is influenced by the search processes.

While scholars have created models of how users assess the credibility of online information (Fritch & Cromwell, 2001; Wathen & Burkell, 2002), these models lack consideration of how the search process impacts judgment of website abstracts on SERPs and judgments of a website’s content. A study conducted by Hargittai et al. (2010) was the first to analyze how the entire process of online information seeking relates to credibility assessments. This study considered how search context, such as search engine selection and the evaluation of search results influenced the credibility assessments of the searcher’s final destination, and found that factors beyond site features influence how users assess credibility (2010). According to the researchers, “A clear theme that emerged from our observational and interview sessions is that the process of information-seeking is often as important as verifying the results when it comes to assessing the credibility of online content” (Hargittai, et a., 2010). Thus, “the process by which users arrive at a site
is an important component of how they judge the final destination” (Hargittai et al., 2010). The study additionally found that particularly important to the evaluation of the final destination of the searcher is the branding of search engines, routines of Internet users, and a reliance on one’s networks (2010). In other words, the search context plays a large role in the credibility assessment of the searcher’s final destination.

H1: The rank of a Website on a SERP will positively influence the perceived credibility of the Website before the Internet users click through to the Website.

H2: The rank of a website on a SERP will positively influence the perceived credibility of the website after the website has been viewed.

Chapter 5: Search engine cues and relevance

Past research has indicated that search engine ranking may also serve as a heuristic for website relevance. Before examining past research on search engines and website relevance, it is important to distinguish between subjective and objective relevance. According to the information retrieval literature, subjective relevance is conceptualized so that “whatever the requester says is relevant is taken to be relevant; the requester is the final arbiter” (Swanson, 1986). Thus, the subjective relevance of a
Website returned by a search engine is based completely on the individual who enter the query.

However, when a request for information is submitted (such as submitting a query to a search engine) it is possible that the request is logically related to a document (Swanson, 1986). When relevance is represented as having a logical link between a written request (query) and a document or Website is said to be objective knowledge (Swanson, 1986). The majority of search engines claim to rank order results based on how relevant each Website is to the query entered, or objective relevance. These search engines use an algorithm to “decide” what is relevant. However, as noted previously, not only are these algorithms highly guarded trade secrets, but they are also constantly being changed. In other words, when search engines rank how relevant a website is to a query based on an algorithm, objective relevance is at work, but when a user assesses how relevant he or she believes a website is to a query then subjective relevance is being employed. This study focuses on subjective relevance.

In a study conducted by Pan et al. (2007), the researchers provide a subjective view of relevance, and argue that relevance represents “the subjective judgments of the likelihood that the information piece is related to the answer of the question or the goal of a search task.” However, Pan et al. (2007) showed that search engine rankings (objective relevance) strongly influence the subjective judgments of perceived relevance. The
researchers stated that, “subjects trust Google’s positioning more than their rational judgments based on the evaluation of different alternatives” (2007). In a triangulated study, Hargittai et al. (2010) found similar findings and quoted a participant as saying, “From my [experience] using Google the most visited Web site is at the top so it’s probably going to be the most relevant Website and I think that’s true” (interestingly, this study was focused on credibility, not relevance). Pan et al.’s eye-tracking data indicated that there might have been some implicit awareness of the conflict between the ranked position and the participants’ evaluations of the abstract’s relevance, but this awareness was not enough (or not strong enough) to override the effects of the ranked position; participants consistently selected the top-ranked website (2007). In other words, while it is difficult to ascertain if search engines accurately rank Websites based on objective relevance, it is clear that what search engines proclaim to be relevant strongly influences which websites Internet users select on a SERP. However, while a website’s relevance to a query seems to have a strong influence on website selection, it is not yet clear that this is due to perceived relevance alone.

H3: The rank of a website on a SERP will positively influence the perceived relevance of the website before the Internet users click through to the website.
H4: The rank of a Website on a SERP will positively influence the perceived relevance of the Website after the Website has been viewed.

Chapter 6: Credibility and relevance

Interestingly, to date, studies have either primarily considered how search engines influence perceptions of website relevance (e.g. Pan et al., 2007) or credibility (e.g. Hargittai et al., 2010). No study has directly examined both concepts simultaneously which leads one to wonder if search engine result pages act as heuristic cues for credibility, relevance or both, and if search engine cues influence relevance and credibility differently. For example, if an Internet user is searching for information on health related topics, such as cancer then credibility will likely be of paramount importance, but if an Internet user is searching for an entertaining game then relevance would likely be more important than credibility. Thus, in order to understand wholly how the search process influences both assessments of and selection of websites researchers must consider both credibility and relevance and examine how they work together. This leads to research questions one and two:
RQ1: Will judgments of an abstract’s credibility and relevance be influenced differently by the website’s SERP ranking before the Internet users click through to the website?

RQ2: Will judgments of a website’s credibility and relevance be influenced differently by the website’s SERP ranking after the Website has been viewed?

Chapter 7: The role of self-efficacy in online search

Research has shown that the majority of Internet users’ have a poor understanding of search engines in general (Introna & Nissenbaum, 2000; Grehart, 2004; Fallows, 2005), and that not all Internet users search equally, but different user groups use search engines differently. For example, a study conducted by Bilal and Kirby (2002) illustrated that adults and children have different information search patterns, and consequently different success rates at answering their queries.

When asked about their search abilities, Internet users are confident (Fallows, 2005), yet the majority of users do not take a particularly sophisticated approach to searching. For example, the majority of Internet users rely on only one or two terms in their queries (Spink et al., 2002), 67% of users only enter one query per search session
(Jansen et al., 2000), and the majority of users only click on one result per query (Granka et al., 2003).

Additionally, search engine users are not particularly knowledgeable about how search engines work (Hargittai, 2007), and know little about the implications of algorithms (Grehart, 2004). When asked if they were aware of the distinction between paid and un-paid results, 62% of participants responded that they were not (Fallows, 2005). In a study conducted by Hargittaii (2007), over 37% of respondents claimed never to have heard that search engines are “paid to list some sites more prominently than others in their search results”. Researchers have argued that the majority of Internet users do not possess the expertise required to search the Web efficiently or critically assess the credibility of what they find (Bilal, 2001).

As mentioned earlier, 67% of Internet users do not go beyond their first query (Jansen et al., 2000). However, this means that 33% of users do go beyond their first query and 14% of these users enter three or more queries (2000). According to Jansen et al. (2000), “These percentages…are not insignificant proportions of system users. It suggests that a substantial percentage of Web users do not fit the stereotypical naïve Web user. These [users]…could represent sub-populations of Web users with more experience or higher motivation who perform query modification on the Web.”
Sundar (1998) found a positive correlation between an individual’s experience with a medium and the level of scrutiny to the information they obtain from that medium. Similarly, Flanagin and Metzger (2000) suggested that more knowledgeable Internet users tend to verify online information more stringently than less experienced users. Flanagin and Metzger (2007) also found a positive relationship between online experience and both credibility ratings and verification of a Website’s credibility.

Just as there exists a wide variety of Internet skill level among web users, differences also appear among individuals’ belief in their ability to use the web; in other words differences exist among individual’s Internet self-efficacy. Self-efficacy refers to “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997). In general, “People who have little confidence in their ability to use the Internet, who are dissatisfied with their Internet skills or who are uncomfortable using the Internet may be said to have weak self-efficacy beliefs” (Eastin, 2000).

In general, studies using Internet self-efficacy posit the higher one’s self-efficacy the more successful the individual will be at utilizing ICTs. For example, Tsai and Tsai (2003) found that there is a positive relationship between the level of one’s self-efficacy and employing more sophisticated search strategies and Thompson et al. (2002) found those with higher self-efficacy retrieve more relevant results. Furthermore, research has
shown that within an information seeking context, a correlation exists between self-efficacy and perceptions of source credibility, and that Internet self-efficacy is directly associated with expectations of finding credible information (Eastin & LaRose, 2000).

Thus, it seems likely that one’s level of self-efficacy could influence the degree to which cues (such as the ranking system employed by search engines) influence the credibility assessments of Websites. Individuals with high Internet self-efficacy (compared to those with low Internet self-efficacy) may believe they understand Internet technology well, and be more likely to trust search engine rankings of Website and rate a Website that is ranked first on a SERP as being very credible and relevant. On the other hand, individuals with high Internet self-efficacy may place more trust in their personal search abilities and consequently be more critical of a search engine’s ranking. This could in turn lead to more critical judgments of top ranked results (particularly when the result has moderate credibility and relevance).

This leads to the research questions:

**RQ3:** Will Internet self-efficacy positively or negatively moderate the relationship between a SERP ranking and the perceived a) credibility and b) relevance scores of a Website on a SERP?
RQ4: Will Internet self-efficacy positively or negatively moderate the relationship between a SERP ranking and the perceived a) credibility and b) relevance scores of a Website after viewing both the Website’s search engine rank and viewing the content of the Website?

Chapter 8: Methods

This study employed a 2 (rank of website) by 2 (SERP only versus SERP and content viewed) design. Most studies consider search behavior in a lab setting, and data suggests that these results can be generalized to a larger context (Espstein et al., 2001). In order to test the hypotheses proposed here an experiment was used to examine the relationship between SERP ranking, relevance, credibility and Internet self-efficacy.

Participants

Two hundred and twenty-two undergraduate students from a large Midwestern university were recruited to participate in exchange for extra credit. Participants who spent less than 20 seconds viewing the manipulated SERP or the content of the website were dropped from the study, leaving 180 participants for the analyses.

Materials & Procedures

When beginning the study, participants were told the study was about Website relevance and were shown a modified Google SERP. Participants were told that this was
a direct copy of Google’s SERP for the query “Meningitis Deaths of College Campuses”. This query was chosen because of its high relevance to college students. Google was used because it is one of the most commonly used search engines, responsible for 72.11% of all U.S. searches conducted over a four-week period in February 2009 (Garner, 2009).

Each page showed the query in the Google search bar participants were able to see the top fifteen Websites and abstracts by scrolling (see appendix B). Participants were able to scroll through the created SERP similarly to how they can scroll through a Google SERP, however, all links on the SERP were deactivated.

The website participants judged was pretested to have moderate sponsor credibility ($M=4.74$, $SD=1.52$), message credibility ($M=4.65$, $SD=0.83$) and moderate relevance ($M=4.79$, $SD=1.52$). Interestingly, the researcher selected six sites for the pretest that greatly varied in terms of their apparent relevance and credibility; however, the ratings for all six were clustered around the scales’ midpoint. This was true for all of the dependent variables when the Websites were rated on the SERP: relevance ($M=5.33-4.05$), sponsor credibility ($M=5.07-3.72$), and message credibility ($M=4.91-3.98$), and when the Websites’ content was rated: relevance ($M=5.65-4.36$), sponsor credibility ($M=5.53-4.19$), and message credibility ($M=4.91-3.98$). Because the means were all clustered near the midpoint of the scales, it appears that participants were hesitant to rate any Website as either extremely credible/relevance or extremely not credible/relevant.
Participants were randomly assigned to view one of two SERPs. The SERPs were identical except on one of the top ranked Website link and abstract was removed and a Website that was pretested to have moderate relevance and moderate credibility to the query entered was placed in the number one ranked spot. Another SERP had the fifteenth ranked Website and abstract removed and was replaced with the same moderately relevant and moderately credible Website. All of the other listed Websites and abstracts were identical for both of the SERPs. Participants were randomly assigned to one of two groups and further randomly assigned to view one of these two SERPs.

All participants were given as much time as they liked to examine the SERP, and were allowed to scroll through the results. The researchers instructed participants to pay particular attention to either the first or fifteenth ranked Website. Once the SERP had been examined, the participants in group one completed a questionnaire that measured both sponsor and message credibility, relevance and Internet self-efficacy. The participants in group two first viewed the SERP and then the content of the website itself before assessing the website’s credibility and relevance. Group two participants did not assess the website before viewing its content in order to avoid testing effects.

After viewing the stimuli, all participants completed a brief questionnaire measuring general demographic information (gender, age, level of education, race and income). Finally, the salience of the information on the Website was measured through a
scale developed by Flanagin and Metzger (2007) as salience has been shown to influence credibility assessments.

The data showed that the Internet self-efficacy scores of men (M=5.41, SD=1.27) were significantly different than women (M=4.54, SD=1.24); t=3.470, p=0.001. However, this effect was not predicted and gender did not directly influence any of the dependent variables. Thus, these gender effects were excluded from further analyses.

Chapter 9: Measures

Sponsor and message credibility were measured as two different types of perceived credibility. In order to measure these aspects of credibility, scales previously developed by Flanagin and Metzger (2007) were used. Nine items were used to measure sponsor credibility. Participants were asked to judge the extent to which the sponsor of the Website was perceived to: be credible, have high integrity, have a positive reputation, be successful, be trustworthy, offer products of services of superior quality, be prestigious, have a sincere interest in important affairs, and the extent to which an individual would be willing to work for the sponsor. These items were measured on a seven-point scale (higher values will correspond to higher sponsor credibility). Following the methods employed by Metzger and Flanagin (2007), the mean was used to derive the measure of sponsor credibility (α=.91).
Five items were used to measure message credibility. These items have been used in multiple studies (Flanagin and Metzger, 2007; 2000; Austin & Dong, 1994; Gaziano, 1988; West 1994). All items were measured on a seven-point scale, and higher scores on all dimensions indicated a greater perception of credibility. The mean of the five scores was used as the participant’s perception of message credibility. These items measured the participants’ perceptions of: believability, accuracy, trustworthiness, bias (reverse-coded), and completeness ($\alpha = .73$).

In order to measure participant’s self-efficacy, an Internet self-efficacy scale created by Eastin and LaRose (2000) was employed. This scale was specifically created to be a reliable operational measure of Internet self-efficacy. The items developed were based on suggestions from Campeau and Higgins (1995), the GVU 10th survey (GVU, 1999), and Nahl (1996). The items were adjusted to fit the conceptualization of Internet self-efficacy by phrasing them as individuals’ judgments of their ability to use the Internet to produce overall attainments. The Internet self-efficacy scale consists of eight items that are measured on an agree-disagree Likert-type scale. Higher numbers represented stronger levels of agreement. The mean score of the items represented the Individual’s self-efficacy score ($\alpha = .94$). The exact items are listed in the appendix.

A scale created by Yang et al. (2002) was used to measure relevance. Yang et al. (2002) developed a comprehensive methodology for assessing overall information quality.
(IQ), and one measure of IQ is the information’s relevance. This scale was composed of four items measuring usefulness, relevance, appropriateness, and applicability (α=.95) (see appendix for question wording). These items were measured by a Likert-type scale, where higher numbers represent greater perceptions of relevance.

Chapter 10: Results

The first hypothesis predicted that the higher a website was ranked on a Google result page the higher participants would rate the sponsor and message credibility of the website based on the abstract shown in the SERP, while the third predicted that the higher a website was ranked on a Google results page the higher participants would rate the relevance of the website based on the abstract shown on the SERP. Independent t-tests were used to test both hypotheses. Support for these predictions was mixed, but primarily did not support either hypothesis.

Rank had a marginally significant effect on sponsor credibility; credibility was slightly higher when the website was ranked first on the SERP than when it was ranked fifteenth (see Table 1). The effect of rank on message credibility was not significant, $t(101)=1.04, p=.149$: it was in the predicted direction, but this difference could easily have been due to chance. Not only was perceived relevance uninfluenced by whether the abstract was ranked first or fifteenth, $t(101)=0.621, p=0.268$, but the trend was in the
opposite direction of what was predicted. Thus, there was tentative support for hypothesis 1, but hypothesis 3 was not supported.

Table 1 Influence of rank on credibility and relevance based on SERP only

<table>
<thead>
<tr>
<th>Based on viewing search engine results page (SERP) only</th>
<th>n</th>
<th>Sponsor Credibility</th>
<th>SD</th>
<th>Message Credibility</th>
<th>SD</th>
<th>Relevance</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Rank</td>
<td>(51)</td>
<td>4.47</td>
<td>1.01</td>
<td>4.58</td>
<td>0.93</td>
<td>4.88</td>
<td>1.42</td>
</tr>
<tr>
<td>15th Rank</td>
<td>(52)</td>
<td>4.16</td>
<td>0.91</td>
<td>4.40</td>
<td>0.87</td>
<td>5.04</td>
<td>1.28</td>
</tr>
<tr>
<td>Difference</td>
<td></td>
<td>0.31</td>
<td></td>
<td>0.18</td>
<td></td>
<td>-0.16</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>t=1.617</td>
<td></td>
<td>t=1.04</td>
<td></td>
<td>t=-0.621</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>p=0.055</td>
<td></td>
<td>p=0.149</td>
<td></td>
<td>p=0.268</td>
<td></td>
</tr>
<tr>
<td>No Rank a</td>
<td>(49)</td>
<td>4.49</td>
<td>0.97</td>
<td>4.67</td>
<td>0.83</td>
<td>5.09</td>
<td>1.09</td>
</tr>
<tr>
<td>Compared to 1st rank</td>
<td></td>
<td>-0.02</td>
<td></td>
<td>-0.09</td>
<td></td>
<td>-0.21</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>t=-0.119</td>
<td></td>
<td>t=-0.504</td>
<td></td>
<td>t=-0.829</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>p=0.905</td>
<td></td>
<td>p=0.615</td>
<td></td>
<td>p=0.409</td>
<td></td>
</tr>
<tr>
<td>Compared to 15th rank</td>
<td></td>
<td>0.33</td>
<td></td>
<td>-0.270</td>
<td></td>
<td>-0.050</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>t=-1.76</td>
<td></td>
<td>t=-1.614</td>
<td></td>
<td>t=-0.183</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>p=0.082</td>
<td></td>
<td>p=0.110</td>
<td></td>
<td>p=0.855</td>
<td></td>
</tr>
</tbody>
</table>

Notes: One-tailed significance tests shown. a. Post-hoc analyses. Data collected when pretesting sites used SERP manipulation. b. Levene’s test showed F=6.455, p=0.013, thus, equal variance is not assume for these results.

Similarly, independent t-tests were used to test a second pair of hypotheses that predicted the higher a website was ranked on a Google results page the higher the website’s credibility and relevance would be judged after participants viewed both the website abstract provided on the SERP and the front page of the site. These predictions were not supported. The website’s rank on the Google SERP neither impacted judgments of the content’s sponsor credibility, t(97)=-1.11, p=.135, nor message credibility, t(97)=-.23.
In fact, participants rated both the sponsor and message credibility slightly higher when the website was ranked fifteenth than when it was ranked first. Similarly, rank had no influence on perceptions of the website’s relevance to the query: $t(97)=.026$, $p=.49$. In sum, neither hypothesis was supported. There is no evidence that top-ranked sites are perceived as more credible or relevant than lower-ranked sites once users have viewed the sites’ content.

Table 2 Influence of rank on credibility and relevance after viewing content

<table>
<thead>
<tr>
<th></th>
<th>$n$</th>
<th>Sponsor Credibility</th>
<th>SD</th>
<th>Message Credibility</th>
<th>SD</th>
<th>Relevance</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on viewing SERP and page content</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st rank</td>
<td>(51)</td>
<td>4.37</td>
<td>1.22</td>
<td>4.36</td>
<td>1.04</td>
<td>4.16</td>
<td>1.21</td>
</tr>
<tr>
<td>15th rank</td>
<td>(48)</td>
<td>4.60</td>
<td>0.93</td>
<td>4.47</td>
<td>1.12</td>
<td>4.16</td>
<td>1.33</td>
</tr>
<tr>
<td>Difference</td>
<td></td>
<td>-0.23</td>
<td>0.93</td>
<td>-0.11</td>
<td>1.12</td>
<td>0.05</td>
<td>0.53</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$t=-1.11$</td>
<td></td>
<td>$t=-0.513$</td>
<td></td>
<td>$t=0.026$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$p=0.135$</td>
<td></td>
<td>$p=0.345$</td>
<td></td>
<td>$p=0.490$</td>
<td></td>
</tr>
<tr>
<td>No rank $^a$</td>
<td>(49)</td>
<td>4.74</td>
<td>1.13</td>
<td>4.89</td>
<td>1.04</td>
<td>5.01</td>
<td>1.09</td>
</tr>
<tr>
<td>Compared to 1st rank</td>
<td></td>
<td>-0.38</td>
<td>1.13</td>
<td>-0.53</td>
<td>1.04</td>
<td>-0.85</td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$t=-1.58$</td>
<td></td>
<td>$t=-2.567$</td>
<td></td>
<td>$t&lt;-3.827$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$p=0.117$</td>
<td></td>
<td>$p=-0.012$</td>
<td></td>
<td>$p&lt;0.001$</td>
<td></td>
</tr>
<tr>
<td>Compared to 15th rank</td>
<td></td>
<td>-0.17</td>
<td></td>
<td>-0.4</td>
<td></td>
<td>-0.85</td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$t=-0.621$</td>
<td></td>
<td>$t=-1.957$</td>
<td></td>
<td>$t&lt;-3.827$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$p=0.517$</td>
<td></td>
<td>$p=0.053$</td>
<td></td>
<td>$p&lt;0.001$</td>
<td></td>
</tr>
</tbody>
</table>

Notes: One-tailed significance tests shown. $a$. Post-hoc analyses. Data collected when pretesting sites used in SERP manipulation.

In light of these unexpected results, the researcher also conducted post hoc analyses that included the data from the stimuli pretest in order to examine if systematic...
differences existed between the website’s ratings when it was judged on Google and without reference to search. The pretest asked participants to view the stimuli used in the experiment absent of any reference to Google or rank. Participants were asked to judge the sponsor credibility, message credibility and relevance of the website’s abstract and later the website’s content. Roughly 50 individuals participated in each of the experiment’s conditions and about 50 different individuals participated in the stimuli pretest. Thus, the researcher was interested in seeing if judgments that were influenced by Google differed from judgments that were not influenced by a search engine. The pretest data will be referred to as the “no rank” conditions as the assessments of the website were not influenced by Google.

Independent t tests were used to compare evaluations from the no rank condition and the experimental conditions (both the abstract judgments were compared and the content judgments were compared). When judgments of the abstract judgments were compared, results showed that there was no significant differences between judgments of the abstract when it was ranked (regardless of being ranked first or fifteenth) and when it was not ranked. This was true for sponsor and message credibility and relevance (see the bottom half of tables 1). One additional observation is that while the means were not significantly different for any of the dependent variables when only the abstract was judged with and without being ranked, the means were more densely clustered around the
mean in the ranked cases than the unranked cases when relevance was tested. Thus, although the means were not significantly different, participants’ responses were more diverse when the abstract was viewed absent of rank.

Independent t tests were also used to compare evaluations from when the content was assessed absent of rank and when the content was assessed after seeing the website ranked. Regardless of rank, ratings of both message credibility and relevance were significantly higher when the website was judge without reference to rank (see the bottom half of table 2). While the mean of sponsor credibility in the no rank condition (M=4.74, SD= 1.13) was higher than the mean of the first ranked website (M=4.37, SD=1.22) and the fifteenth ranked website (M=4.60, SD=.93) the difference was not significant. These post hoc analyses will be returned to in the discussion section.

Research question one asked if credibility and relevance judgments of the website on the SERP would be influenced differently by the rank of the website. Independent t tests showed that only sponsor credibility was positively predicted by rank; as a website was ranked nearer the top of a SERP, the more credible the website was judged as being. While a similar pattern was found for message credibility, the results were not significant. Interestingly, relevance displayed a pattern in the opposite direction; relevance assessments increased when the website was ranked towards the bottom of a SERP. However, this pattern was not significant and could have been due to chance.
Thus, while these results do not seem to answer research question one, later results seem to indicate a distinction between credibility and relevance.

Similarly, research question two asked if credibility and relevance judgments of the website after the content of the website had been viewed influenced differently by rank. However, rank did not significantly predict any of the dependent variables. Once again, though, sponsor and message credibility followed the same pattern (credibility judgments increased as the website’s position on the SERP decreased) while relevance judgments held constant regardless of rank. Thus, while a pattern seems to exist it could be due to chance.

Additionally, the data showed that relevance was highly correlated to both sponsor credibility ($r=.22, p<.01$), and message credibility ($r=.341, p<.01$). However, the methodology employed in thus study did not allow researchers to tease apart if credibility predicted relevance or vice versa. Other results (reported below) indicate that credibility and relevance are distinct constructs.

Research question three asked if Internet self-efficacy moderates the relationship between SERP rank and credibility and relevance judgments. Similarly, research question four asked if Internet self-efficacy moderates the relationship between rank and credibility and relevance judgments after the content of the website has been viewed. Regression was used to test both of these research questions. Before the analyses were
conducted, however, Internet self-efficacy scores were centered; collinearity statistics indicated an unacceptably high variance inflation factor of 17.088 when using uncentered data. Additionally, controls for a variety of demographic factors were tested (e.g. internet stress, age, gender, and income), but none achieved significance, and so they have been omitted from the models shown.

When judgments were based only on the rank of the website abstract, the interaction of rank and Internet self-efficacy was not a significant predictor of either sponsor or message credibility. However, Internet self-efficacy had a main effect on both sponsor and message credibility; \( b = .203, t(97) = 2.288, p = .005 \) and \( b = .233, t(97) = 3.590, p = .001 \) respectively). Similarly, a main effect was found for Internet self-efficacy and relevance \( b = -.402, t(97) = 4.168, p < .01 \). However, the interaction of Internet self-efficacy and rank also significantly predicted relevance when the abstract was viewed \( b = -.400, t(96) = 2.099, p = .038 \); the perceived relevance of top-ranked site decreased as Internet self-efficacy increased, but the relationship between Internet self-efficacy and relevance was not significant when the site was ranked 15\(^{th} \). Thus, the interaction effect accounts for the majority of the main effect of Internet self-efficacy on relevance (see table 3). The fact that the interaction only significantly predicted relevance provides additional evidence that credibility and relevance judgments operate independently.
Table 3 Internet self-efficacy as predictor of credibility and relevance after the abstract was viewed.

<table>
<thead>
<tr>
<th></th>
<th>Sponsor Credibility</th>
<th>Message Credibility</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main effect</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top-ranked result a</td>
<td>.242</td>
<td>.142</td>
<td>-.256</td>
</tr>
<tr>
<td>Internet self-</td>
<td>.203*</td>
<td>.233*</td>
<td>.402**</td>
</tr>
<tr>
<td>efficacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.123</td>
<td>.128</td>
<td>.132</td>
</tr>
<tr>
<td><strong>Interaction</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top-ranked result</td>
<td>.241</td>
<td>.141</td>
<td>-.259</td>
</tr>
<tr>
<td>Internet self-</td>
<td>.157</td>
<td>.122</td>
<td>.190</td>
</tr>
<tr>
<td>efficacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet self-</td>
<td>.086</td>
<td>.208</td>
<td>-.400*</td>
</tr>
<tr>
<td>efficacy/ Rank</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>.126</td>
<td>.151</td>
<td>.161</td>
</tr>
<tr>
<td><strong>Controls¹</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Politics</td>
<td>.115</td>
<td>.022</td>
<td>.054</td>
</tr>
<tr>
<td>R²</td>
<td>.026</td>
<td>-.009</td>
<td>-.007</td>
</tr>
</tbody>
</table>

Note: Based on OLS regression. Standardized Betas shown. a. Fifteenth rank is reference category.

* p < .05, **p < .001

Similar results were found when analyses considered website judgments after both the abstract and content had been viewed. The interaction between Internet self-efficacy and rank was neither a significant predictor of sponsor nor message credibility. However, Internet self-efficacy had a main effect on both sponsor and message credibility; \((b=.169, t(94)=2.081, p=.040)\) and \((b=.216, t(94)=2.662, p=.009)\).

¹ Internet stress was also tested as a control as Eastin and LaRose (2000) found that Internet stress is negatively related to Internet self-efficacy (\(\alpha=.78\)). However, the control was not significant and thus dropped from further analyses.
respectively. Similarly, main effect was found for Internet self-efficacy and relevance ($b=.402, t(97)=4.168, p<.001$). The interaction of Internet self-efficacy and rank did not predict either credibility variable. However, the interaction of Internet self-efficacy and rank was again significant when predicting relevance ($b=-.40, t(96)= 2.099, p=.038$). Similar to the abstract condition, the perceived relevance of the top-ranked site decreased as Internet self-efficacy increased. However, the slope of the relationship between Internet self-efficacy and relevance was not significantly different from zero when the site was ranked $15^{th}$. Thus, the interaction accounted for the majority of the variance in the main effect (see table 4). Additionally, self-efficacy has a main effect on both sponsor and message credibility, but not relevance; this appears to support the idea that credibility and relevance are independent constructs.
Table 4 Internet self-efficacy as predictor of credibility and relevance after both the abstract and content were viewed.

<table>
<thead>
<tr>
<th></th>
<th>Sponsor Credibility</th>
<th>Message Credibility</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main effect</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top-ranked result</td>
<td>-.094</td>
<td>-.002</td>
<td>-.256</td>
</tr>
<tr>
<td>Internet self-efficacy</td>
<td>.169*</td>
<td>.216**</td>
<td>.402**</td>
</tr>
<tr>
<td><strong>R^2</strong></td>
<td>.060</td>
<td>.072</td>
<td>.158</td>
</tr>
<tr>
<td><strong>Interaction</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top-ranked result</td>
<td>-.101</td>
<td>-.008</td>
<td>-.259</td>
</tr>
<tr>
<td>Internet self-efficacy</td>
<td>.218</td>
<td>.255*</td>
<td>.190</td>
</tr>
<tr>
<td>Internet self-efficacy/ Rank Interaction</td>
<td>-.088</td>
<td>-.071</td>
<td>-.400*</td>
</tr>
<tr>
<td><strong>R^2</strong></td>
<td>.063</td>
<td>.074</td>
<td>.195</td>
</tr>
<tr>
<td><strong>Controls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Politics</td>
<td>.078</td>
<td>-.001</td>
<td>.085</td>
</tr>
<tr>
<td><strong>R^2</strong></td>
<td>.011</td>
<td>.000</td>
<td>.030</td>
</tr>
</tbody>
</table>

Note: Based on OLS regression. Standardized Betas shown. a. Fifteenth rank is reference category.
* p < .05, **p < .001

Chapter 11: Discussion

The three goals of the current study were (a) to examine how the ranking of results by search engines influences perceptions of websites both when individuals are viewing the search results page and after they have viewed the content of the ranked website, (b) to examine the differences between perceived relevance and credibility and (c) to test if self-efficacy moderated the relationship between rank and website
judgments. Internet users place a great deal of trust in how search engines, such as Google, rank websites and research has shown that individuals will frequently select a top-ranked website even when it is objectively less relevant to the query than lower-rank results (Pan et al., 2007; Granka et al., 2004). It seems that this research assumes that individuals choose the top-ranked search results because they believe that these results are the most relevant and/or credible. While this seems plausible, no prior study has directly assessed if search engine rankings influence credibility and relevance perceptions.

The results from the current study found that being ranked first or fifteenth by Google only marginally influenced judgments of a website’s sponsor credibility when the website was judged on the SERP and did not influence the message credibility of a website on a SERP. Furthermore, once the content of the website had been viewed, the website’s rank on Google influenced neither sponsor nor message credibility. Perhaps even more strikingly, the current study found that relevance judgments of a website were only impacted by a website’s rank when the website was ranked first and when self-efficacy was considered as a moderator.

Pan et al. (2007) summarized their findings by stating “college student subjects are heavily influenced by the order in which the results are presented.” Similarly, Hargittai et al. (2010) reported that over a quarter of their interviewees mentioned that
they chose a website because the search engine had returned that site as the first result “suggesting considerable trust in these services. In some cases, the respondent regarded the search engine as the relevant entity for which to evaluate trustworthiness, rather than the website that contained the information.” Both these studies show that the rank of a website on a SERP highly influences which website is selected. However, while it seems clear that website selection on a SERP is highly predicted by rank these results suggest that rank hardly influences credibility and only influences relevance judgments when self-efficacy is considered. Several mechanisms could explain these findings, for example Internet users may consider the first page of results to be equally credible and relevant, and only on following pages are perceptions of the websites more negative. However, additional research is needed to understand the relationship between rank and website perceptions.

Additionally, the researcher initially hypothesized that seeing an abstract ranked highly on Google would continue to push assessments up even after the participant had viewed the content of the website. However, the judgments of both credibility variables were not dependent upon assessing the website on the SERP or after the content had been viewed. Furthermore, being ranked on Google (regardless of if the rank was first or fifteenth) had the opposite effect of what was predicted; participants judged the website as being less credible once they viewed the content of the page. Thus, while the trend was
in the predicted direction when the websites were judged on the SERP this effect was no longer present when the participants viewed the content of the website. A possible explanation for this finding is that an anchoring effect occurred. Anchoring occurs when a question is answered based on a frame of reference that is previously established and can lead to either an assimilation or contrast effect (Dillman et al., 2009). For example, based on prior experience with Google, participants may have expected the top-ranked websites to be extremely relevant to the query. When participants viewed the content, however, the content was worse than expected causing participants to rate the website’s relevance lower than if they had not been provided with the frame of reference (ranking on Google). In other words, anchoring could have led to a contrast effect between the SERP and content ratings of the website.

Research conducted on autogenerated cues also supports the idea that an anchoring effect is occurring (Sunday, 2008). Sundar argues that autogenerated cues, such as search-engines, transmit cues about the attributes of the information, “these appear as part of—or surrounding—the central content of the site, and emit “information scent” helpful in making quick decisions about the quality of the information available for consumption” (p.78). Harrgittai et al. (2010) make similar arguments about search engines providing cues about the quality of information within the content of the website. Thus, it seems likely that individuals use the information scent provided on search
engines to form expectations about the end content. It seems likely that participants used
the information scent provided on the SERP to form expectations about the website’s
content, which in turn led to a contrast effect when the website fell below participant’s
expectations.

This study also asked if credibility and relevance operated as two distinct concepts.
While no statistically significant difference existed in terms of the rank of the website
influencing credibility and relevance different, the patterns tended to be in opposite
directions. Perhaps more importantly, self-efficacy had distinctly different influence on
credibility and relevance. For example, the interaction between one’s level of self-
efficacy and the rank of the website significantly predicted relevance, but not credibility
when the website was judged on the SERP. Similarly, while self-efficacy had a main
effect on credibility after the content of the website was viewed, there was no main effect
for relevance. This evidence seems to indicate that relevance and credibility are
influenced differently by both the rank of the website and by one’s level of Internet self-
efficacy. However, further research is needed to examine if credibility and relevance
impact website selection differently.

Finally, the current study considered how Internet self-efficacy influenced credibility
and relevance judgments of websites. It was discovered that Internet self-efficacy predicts
sponsor credibility, message credibility and relevance when the website is judged on the
SERP. The interaction between rank and Internet self-efficacy, though, did not predict either measure of credibility; in regards to credibility, individuals with high Internet self-efficacy respond no differently to changes in rank than do individuals with low Internet self-efficacy. However, the interaction between Internet self-efficacy and rank did significantly predict relevance; the higher an individual’s Internet self-efficacy the lower the relevance ratings of the website when the website was ranked first on the SERP. When the website was ranked 15th, Internet self-efficacy did not influence relevance. Thus, Internet self-efficacy only predicted relevance when the website was ranked first, and what appears to be a main effect of Internet self-efficacy on relevance can be nearly completely explained by the interaction effect of rank and Internet self-efficacy.

When the website was judged after the content had been viewed, Internet self-efficacy had a main effect on sponsor and message credibility and relevance. However, once again the interaction of rank and Internet self-efficacy significantly predicted relevance scores. Thus, the higher one’s Internet self-efficacy, the higher he or she rated the website’s relevance with the judgments being more impacted by self-efficacy when the website was ranked first than when it was ranked fifteenth.

The third and fourth research questions asked if individuals with high Internet self-efficacy would either be more critical or trusting of Google and thus rate the website’s credibility and relevance lower than the individuals with low Internet self-efficacy, both
when the website was judged on the SERP and after the content of the website had been viewed (regardless of rank). However, results showed that Internet self-efficacy directly impacted sponsor and message credibility in the opposite direction predicted. Similarly, the interaction of Internet self-efficacy and rank showed that individuals with higher self-efficacy judged relevance more than those with low self-efficacy, but only when the website was ranked first. Thus, it seems that the individuals who believe they have the skill to examine the content for themselves (those with high self-efficacy) trust Google more than those who do not believe they have the skills to critically review SERPs. However, when the website is ranked 15th even individuals with high self-efficacy become more critical of the search results.

This could be a result of individuals with high Internet self-efficacy feeling very confident that Google is basing the rank position of websites on more information than what is shown on the SERP. In contrast, those with low Internet self-efficacy may feel less confident that Google has additional information and thus may trust Google less. However, when an abstract is ranked lower on SERPs the interaction effect no longer occurs; it seems that all individuals, regardless of self-efficacy, are both more critical of the 15th search results. Because the individuals who believe more strongly that they understand search engine technology are more likely to trust Google rankings when the
website is ranked first, it seems likely that Google’s ranking is a reasonable heuristic to use when judging a Website’s credibility and relevance.

Chapter 12: Conclusion and future research

Several mechanisms may help to make sense of why rank does not have a strong effect on the perceived relevance and credibility of a website. First, these results could indicate that as long as a website is ranked within the top 15 search results it is considered to be credible. Thus, in order for rank to significantly influence credibility perceptions the website must be ranked lower than fifteenth on the SERP. In this case, choosing the top-ranked website may simply be a matter of convenience: individuals simply click on the first reliable link they encounter.

It should also be noted that this study manipulated the SERP so that all 15 abstracts were displayed on one page while the majority of search engines (when the default setting are used) display only 10 abstracts on the first page of results. Consequently, the results could indicate that abstracts listed on the first page of SERPs are not influenced by rank; however, forcing Internet users to click to the second page of results could influence even the 15th ranked abstract. Thus, credibility and relevance could be influenced by which page the website was listed on instead of the website’s individual rank. While
this was not explored within this study, it could explain why rank did not influence the dependent variables.

Second, Internet users may decide which website to select based on criteria beyond the website’s credibility and relevance to a query. For example, Internet users may select the top-ranked website because they believe it is frequently selected by other users, or because Internet users believe that Google ranks websites based on additional criteria that cannot be found in the abstracts provided on SERPs, such as how many governmental websites are linked to the website or how many pages the website has. If Internet users believe that Google judges websites based on more information than what is shown on a SERP it would be expected that Internet users would tend to select the top-ranked option since the ranking reflects information unavailable to the user. While the data collected for this study cannot direct test if this is the correct explanation for the results, this explanation accounts for both the results found in the current study and the results discovered by past research (Pan et al., 2007; Hargittai et al., 2010). Thus, it seems plausible that this is the mechanism behind why individuals primarily chose the top ranked website. Future research should examine such potential mechanisms in order to fully understand the relationship between rank and the perceived relevance and credibility of a website.
In conclusion, because little work has examined experimentally how the search process impacts credibility and relevance assessments of websites, this paper explored how the rank of a website on a search engine results page impacts judgments of the website’s perceived credibility and relevance to a query, if Internet self-efficacy moderates this relationship, and how credibility and relevance operate as distinct concepts. The data indicate that a website’s rank marginally influences credibility and only predicts relevance when self-efficacy is considered. There was also tentative support for credibility and relevance operating independently. Future research is needed further examine why search engines seem to greatly impact website selection, but not credibility and relevance assessments of websites.
Work Cited


Google news article, SE


Hargittai, Eszter; Fullerton, Lindsay; Menchen-Trevino, Ericka; Thomas, K.Y. (2010). Trust online: Young adults’ evaluation of Web content.


(Leathers, 1992)


Appendix A: Question wording

Eastin and LaRose’s (2001) Internet self-efficacy measure:
I feel confident…

…understanding terms/words relating to Internet hardware.
…understanding terms/words relating to Internet software.
…describing functions of Internet hardware.
…trouble shooting Internet problems.
…explaining why a task will not run on the Internet.
…using the Internet to gather data.
…confident learning advanced skills within a specific Internet program.
…turning to an on-line discussion group when help is needed.

Yang’s (2002) relevance measure:

This information is useful to my query
This information is relevant to my query
This information is appropriate for my query
This information is applicable to my query

Flanagin and Metzger (2007) sponsor credibility measure:

I believe the sponsor of the website is credible
I believe the sponsor of the website has high integrity
I believe the sponsor of the website has a positive reputation
I believe the sponsor of the website is successful
I believe the sponsor of the website is trustworthy
I believe the sponsor of the website offers services of superior quality
I believe the sponsor of the website is prestigious
I am willing to work for the sponsor of the website

Flanagin and Metzger (2007) message credibility measure:

I believe the message is believable
I believe the message is accurate
I believe the message is trustworthy

46.
I believe the message is biased
I believe the message is complete
Appendix B: Screenshots
The Badger Herald: News, Meningitis vaccination

A meningitis vaccine has come under closer scrutiny after several outbreaks of the bacterial illness on college campuses around the country.

Students urged to get vaccine after meningitis death at A&M (News, Web)

Feb 19, 2011. Currently, only college students who live on campus are required to get the meningitis vaccine.

Meningitis death at Otto U. is 7th case in a year

Feb 20, 2010. The death of an Ohio University student on Wednesday, Feb. 17, increased the number of meningitis deaths to seven this year.

STORMTRK: View topic - 2 Meningitis deaths at University of...

There have been several other meningitis deaths in the past. All I'm saying is maybe college-campus health centers need to verify the meningitis cases.

Meningitis suspected in Metro State student's death - KOVR


Meningitis - Health and Counseling Center - Campus Life - Carthage

The incidence of meningitis outbreaks on campus has risen in recent years, especially among students at U.S. colleges and universities.

Meningitis Suspected in West Virginia Student's Death - The Paper

Mar 5, 2009. Meningitis was suspected in West Virginia Student's Death. By Allen Or... 10 Most Wired College Campuses, advertisement.

Texas A&M University-Commerce: Bacterial Meningitis

Bacterial meningitis is a serious, potentially deadly disease that can occur on college campuses without anyone from 5% to 15% resulting in death.

Student Health Services - Immunization Clinic

Outbreaks of meningitis have increased on college campuses in recent years, and is responsible for approximately 200 deaths annually.

Meningitis Information

Between 100 and 125 meningitis cases occur annually on college campuses, causing as many as 15 student deaths. A vaccine is available to protect against meningitis.

Meningitis | University of North Texas Student Health and Wellness

Menigitis is a serious, potentially deadly disease that can progress rapidly, leading to the death of college students.

Meningococcal Disease and College Students

Meningococcal meningitis is a serious, potentially deadly disease that can cause death. Unless N. meningitidis causes both sporadic disease and outbreaks, vaccination campaigns have been conducted on their campus since 1997.

The Daily Orange - Meningitis outbreaks on college campuses leave, 2009

Mar 25, 2009. Meningitis outbreaks on college campuses are caused by bacterial meningitis. The more severe form can cause death.

Meningococcal Meningitis - Rice University

Although rare, this disease strikes about 3000 Americans each year, including 100 to 125 on college campuses, leading to the death of 5-15 students among college students.

Transfer College: Important Information You Need to Know about...

Bacterial meningitis is a serious, potentially deadly disease that can progress rapidly, causing death. Although rare, it affects approximately 100 to 125 college campuses, leading to the death of about 5 to 15 students each year.