Information Clutter and Online Credibility

Paola Villaescusa

National University

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A profoundly important characteristic of post-industrial societies rests on the abundance of “information” that now enfolds us. Combined with the ever increasing change gradient, our lives and our work—to attain or maintain middle-class status—demands competencies to: 1) consume, 2) create, and 3) transform data\information into knowledge. Although we can more easily gather data, this “data smog” (Rainie, 2006; Shenk, 1998) also envelopes and distracts us. Data smog hampers our abilities to make informed decisions about the *knowledge* we need to obtain and make conclusions that serve our best interests. For example, we must now predict complex consequences of our investment and consumption decisions, chose among multiple career paths, and make informed health decisions within complex information environments. To *fail* to make informed judgments in the highly interdependent world we now navigate entails trusting our fates to disinterested others and risking increasingly dire consequences.

The “Web 2.0” promises to give us comprehensive information (but to savvy Netizens, *not* knowledge) about anything, anytime, anywhere. Yet while dealing with structural information overload, we must assess the credibility of a vast array of competing knowledge claims. Within the persuasion literature, we can find several ways to assess online credibility. One alternative is to update the classical, rational decision-making model which incorporates elements of source credibility and posits that we make thoughtful judgments about the reliability of sources. Yet, in essence, rational decision-making (Simon, 1955) finesses the problem of what people *actually* do—and we should note that Simon stressed that actual decisions ***cannot*** be fully “rational” if only because too many complex choices and outcome considerations enmesh us. Rather, we behave with bounded rationality and make decisions that ***satisfice***—are good enough to live with.

Second, the persuasion literature provides theory and empirical evidence that suggests we often use peripheral cues to help us make credibility assessments rather than engage in more complex, cognitive-intensive “central” mental processing that demands a systematic weighing of decision alternatives. (See Chaiken & Eagly and Petty & Cacioppo for the basic theoretical rationale; see Metzger, 2007 for extending these concepts to online persuasion.) Thus, one premise that guides this research is that we consider how people cope with online information in such abundance that it is not possible to carefully assess more than a small selection of sources/knowledge claims that could be invoked during routine online searches.

**Traditional Persuasion Heuristics**

 The “central vs. peripheral” route to persuasion—theorized by Petty & Cacioppo argues that when we lack the time, motivation, or ability to carefully consider alternatives, we use “peripheral cues” such as appearance, weak associations, and trivial but attention-catching aspects that may influence our credibility assessments. Thus, when Metzger, Flanigan, & Medders (2010) asked focus groups the extent to which they were influenced by the appearances of online sites, participants *reported* they were influenced by online site appearance, particularly when sites violated the users’ expectations. Even so, respondents in that study tended to emphasize more substantive reasons for granting or withholding high credibility ratings. In contrast, more of the research participants that Hargittai, Fullerton, Menchen-Trevino, & Thomas (2010)studied and *actually observed* relied on peripheral cues that may or may not have been reliable indicators of credibility—e.g., affiliation of known brands, credibility attached to search engines or result placement. Further, Fox (2006) found that not only did few medical sites display source information quality indicators, very few users reported checking the sources or dates of the health information that they had found online. As a group, these studies consistently found that credibility was often granted to online information based on cues that, at best, offered marginal indications of information quality.

 **The Impacts of Google/Search Engine and Website Cues.**

Each of the three research studies reported that online searchers were influenced in their credibility assessments by the framing of online information by websites or search engines. Fox (2006) found that two-thirds of the searches for medical information began with search engines and about one quarter of these searches started in sites devoted to providing presumably reliable medical information. Hargittai et al. (2010) reported strong and consistent effect of search engine, search engine placement, and website as determinants of search strategy and confidence in results among college students at an urban university. Similarly, Metzger et al. (2101) reported that adult focus group participants were substantially influenced by the reputation of the organization (hosting) the web site. Thus, the reputation heuristic (from Metzger and associates) helps users assess online information based on the reputation of the search engine, organization, or web site that presents that online information.

**Social Influence and Online Credibility**

There were many similarities in the reports provided by Metzger et al. (2010), The Pew Report (2006), and Hargittai et al (2010). One of the similarities can be best described by Metzger et al. in stating that “the majority of research almost exclusively considers individuals as making credibility judgments in isolation from one another, thereby ignoring more social means and tools of credibility evaluation” (2010). Meaning, the process of evaluating a source’s credibility rests solely on the person assessing its credibility without regards to external factors such as social influences that drive their evaluation of credibility. Yet, all three studies seemed to address the fact that in order to discern the credibility of websites and the content provided, assessing credibility is a “social process and is driven by time constraints and motivation” according to Metzger et al. (2010). An example of this can be given by the Pew Report’s quantitative findings in that “66% of health seekers began their last online health inquiry at a search engine; and the impact was most deeply felt by internet users who had received a serious diagnosis or experienced a health crisis in the past year” (2006). This supports that there usually exists a time-constraint and a particular motivation for not only searching for information on the Internet, but also trying to discern and utilize credible resources on the Internet. All three reports seem to agree that access to information can no longer be kept by “gatekeepers [to include government, news reports and their company affiliations, editors of magazines, etc.]; [however,] the ability to find trustworthy content online is an essential skill , and this may somehow correlate to the Internet user’s skill levels (Hargittai, 2008; Metzger 2005). Thus, the Pew Report (2006), Metzger et al. (2010), and Hargittai (2010) provide different but similar approaches to how Internet users discern credibility of online content.

 Metzger et al. provided that “social information pooling, social confirmation of personal opinion, enthusiast endorsements, and resource sharing via interpersonal exchange were ways in which social information and social influence played a role on credibility assessment.” This research proved that credibility evaluation of Internet resources is definitely not an isolated process as previous scholars have concluded about simpler modes of information media. According to Metzger et al., Social information pooling included “feedback systems, testimonials, and reputation” (2010). Social confirmation of personal opinion for credibility can defined as “the match between some information and one’s existing belief, opinion, or perspective” (Metzger et al., 2010). Metzger et al. also defines enthusiast endorsements as “presumed but non-credentialed experts who offer guidance via public forums, wikis, blogs, and testimonials” (2010). Resource sharing via interpersonal exchange was defined as “interpersonal recommendations family and friends, and were perceived as highly reliable sources for credibility” (Metzger et al. 2010).” (Anonymous, 2010).

**Individual Differences and Credibility Assessment**

Lastly, Web users’ individual differences have long been known to influence Internet usage and outcomes. Specifically, online experience, age, sex, education, and socio-economic status often shape how people use online resources. Here, Fox (2006) and Hargittai et al. (2010) found that individual differences impacted online credibility assessments. Fox reported that education (and presumably more online experience) was associated with greater source scrutiny for health information. Hargittai and colleagues noted that respondents varied in Internet savvy and experience; less knowledgeable users often adopted questionable search strategies and used flawed mental shortcuts to assess online information—strategies that were often naive and counterproductive.

**Research Questions**

Based on the previous review of three important and methodologically diverse studies from the online credibility literature, we pose the following research questions:

**Research Question 1:** What are the impacts of search engine (and result placement), website reputation, and similar heuristics on the credibility of online information?

**Research Question 2:** What are the impacts of social and reputational influences on the credibility of online information?

**Research Question 3:** What are the impacts of individual differences on the credibility of online information?

**Method**

**Participants**

We obtained survey responses from a convenience sample of 30 adult online learners at National University. Respondents ranged in age from young adults to middle-aged adults; most respondents were upper-division undergraduate students. The sample included the census of our research methods class that was supplemented by additional students from other online classes and two research methods instructors. Participants were typically long-time, intensive Internet users (*M*=13 years; 18.2 hours/week). All respondents were employed; ten (one-third) of the respondents reported being employed part-time. Twenty (two-thirds) of the respondents were female. No other demographic information was gathered. Research methods students completed the survey as a part of their course-work. No compensation was offered to research methods respondents while other student respondents were given minimal extra credit by their instructors.

**Materials and Procedures**

The five-minute, Internet Credibility (online) Survey was made available by a direct link sent via e-mail to prospective participants or through a Word version of the survey that was emailed to students by their instructors. The survey consisted of 16 questions that asked about respondents’ perceptions of online information. Most questions used Likert scales (ranging from 1-5--1 being strongly disagree, 2 slightly disagree, 3 being neutral, 4 slightly agree, ending with 5 being strongly agree) designed to assess the effects of social influences, search engine presentation, expert ratings, and the impacts of cross-checking other sources upon respondents’ credibility assessments of online information. For example, questions asked about the credibility that respondents attached to Google results, Yelp reviews, and Wikipedia entries. We also asked about respondents about their Internet usage, years of Internet experience, and Internet expertise.

**Results**

The results gleaned from statistics of the group as a whole show that most participants’ feel neutral about the impacts of search engines, result placement, and website reputation on determining Internet credibility. In fact, when viewing the group results as a whole, most of the mean average results fall in the neutral category (2.73-3.67). This can be viewed negatively as the group participants not caring enough about the survey questions to put some more thought into their answers; however, there are significant differences to be found when looking at individual t-test results compared to the group statistics.

To better gauge the impact of search engines, result placement, and website reputation on Internet credibility, we can look at individual answers for questions about the trustworthiness of Google sponsored links, Yelp, Wikipedia, and other similar review systems. The results from these statistics show that most individuals do not seem to think that Google sponsored links are more trustworthy, with an individual mean of 1.80 (1 being strongly disagree, 2 being slightly disagree) from those with part time jobs. Those with full time jobs were more or less neutral, with a mean of 3.20 (3 being neutral). When examining individual results between participants who rated their Internet competency average or high, the means were 3.33 and 2.29, respectively; again showing that although there are significant differences in the data, it can be concluded that most participants do not put much of their trust in Google sponsored links. Wikipedia trustworthiness results, although considered a bit more credible by participants, also reached much of the same conclusion, with individual means of 2.80 and 3.60 for males and females, respectively, and individual means of 3.50 and 2.86 for average and high Internet competency levels, respectively.

However, participants did seem to show a lot more trust in Yelp, user reviews from Amazon, and other social pooling information sources when determining Internet credibility. The group statistics table shows a mean of 3.67 (3 being neutral, 4 being slightly agree) for Yelp other similar reviews, and a higher mean of 4.20 for user reviews from Amazon. Individual results from full-time and part-time job holders show means of 3.40 and 4.20, respectively. It can be concluded that the impacts of social and reputational influences on determining Internet credibility are significant in the sense that most participants show more trust in social information pooling sources, like user reviews, than in website reputation and search result placement.

This can further be determined when looking at results pertaining to crosschecking search results with other online and offline sources. The group statistics table shows a mean of 4.13, meaning that most participants do frequently crosscheck their search results with other online sources. Individual results comparing female and male participants show means of 4.30 and 3.80, respectively. Since the question does not specify where these other online sources are found, it can be assumed that they are crosschecked with a vibrant array of sources, ranging from personal blogs or websites, online journals, or other public websites. A question about the impact of general website appearance on determining trustworthiness yielded a group statistics mean of 3.33, and a question about searching site credentials to determine credibility yielded a mean of 3.60. When asked about trusting sites recommended by friends or recommended by experts, the group statistics table show means of 3.87 and 3.47, respectively. This only solidifies the conclusion that social and reputational influences have a higher impact on determining credibility online than do search engines and result placement. Participants are more likely to trust more social sources of information, such as personal user reviews, than other reputational influences. However, the ubiquity and usefulness of gauging Internet credibility through Google or Wikipedia cannot be ignored.

As stated before, most of the group statistics table scores show neutral levels for most questions, with some notable exceptions such as the helpfulness of user reviews for Amazon and the frequency of crosschecking search results with other online sources. However, individual t-test results show significant differences between individuals, particularly differences such as sex, full time or part time employment, and levels of Internet competency. Thus, the impacts of individual differences on determining credibility can be considered substantial. Those that rate themselves with higher Internet competencies are less likely to trust Wikipedia info (mean: 2.86) and Google sponsored links (mean: 2.29) than those who rate themselves with average Internet competencies (means of 3.50 and 3.33, respectively). There is also a significant difference between female and male participants; female participants are less likely to trust information on Wikipedia (mean: 2.80) than male participants (mean: 3.60). Perhaps the most surprising differences can be noticed when comparing results from full time and part time employment. Those who hold a full time job were more likely to consider Google sponsored links more trustworthy (mean: 3.20) than those with part time jobs (mean: 1.80). Although both full time and part time job holders consider Yelp and other similar reviews helpful, those with a part time job seemed to trust it more (mean: 4.20) than those with full time jobs (mean: 3.40). We can thus conclude that although group statistics might show an overall level of neutrality among participants, individual differences make much of an impact on determining credibility.

**Discussion**

By extensively reviewing the available literature on determining Internet credibility and then administering a survey to Internet-savvy participants, this project has aimed to answer questions about the impacts of social influences, website reputation, and individual differences on how the average Internet user determines credibility. Apart from having excellent sources on previous Internet credibility studies at hand, the biggest advantage this project had was the availability of a highly Internet-savvy population. By administering the survey to a group of participants primarily made up of online students and instructors, we were able to create a group that is assumed to have a higher than usual level of Internet competency than most, and a keener understanding of the importance of determining credibility when searching through online sources. The fact that these participants already spend much more time online (group statistic mean for time spent online: 18.20 hours) than the average Internet user made administering the survey to this population much more meaningful to studies of today’s “wired” society.

 The brief survey, while not producing detail-rich results as would a focus group study, also did a good job of addressing basic concepts of determining Internet credibility. Many of the variables studied are used in everyday life by people all over the world, such as Wikipedia, Google, and Amazon user reviews. The results gleaned from this survey make the study of determining Internet credibility more accessible and easy to decipher than would a more qualitative study, such as a focus group. We are thus able to more easily make correlations between variables that help us come to valuable conclusions about how the population determines credibility from online sources and what impacts these variables have on determining online trustworthiness.

Nevertheless, the small size and inclusiveness of the sample population also effectively means that the standard error percentage is much higher than it would be if the sample size was larger. This can not only lead to skewed statistical results, but also can mean that the sample population is not as representative of the general population as we would have liked it to be. Since we used a convenience sampling technique (using participants from National University classes), we cannot be certain that our sample findings can be used for a larger, more diverse population. The small size of the sample also lead to many of the group statistics results ending up as “neutral”, which can lead to a conclusion that the participants do not care about their answers and are content to just answer “neutral” to every question. It should be noted, though, that the neutral results can also signify a duality of choice. Participants choose to leave the choice open to be able to go in both directions—from strongly disagree to strongly agree—when questions are more specific. It should also be noted that individual t-test results show the significant differences in how participants determine online credibility.

Another disadvantage to the study is the survey itself. Although the survey was a great and easily accessible measurement tool for this project, survey results were greatly hindered by the fact that participants could rate themselves on Internet competency levels simply by choosing their own competency level. There was no unbiased way for participants to be rated on their Internet competency levels, which means that the correlations between participants’ competency levels and means of determining credibility were highly biased by the participants’ rating themselves. Just because participants choose a high level of Internet competency does not mean that this self-rating is accurate, so the correlations made between competency levels and other variables might not be as accurate as we would have liked them to be.

 Regardless, this project was able to make some important correlations between Metzger et al.’s (2010), Hargittai et al.’s (2010), and the Pew Report’s (2006) findings, namely, that the uses of social pooling information sources have a powerful impact on determining credibility. Metzger et al.’s (2010) heuristics for determining credibility were widely at use during this project, with participants putting their trust on friend and expert recommended sites, some reputational influences, and social pooling sources. Hargittai et al.’s (2010) findings on the importance of search engines were also correlated here, with most participants more likely to start their searches on a widely known search engine such as Google; however, the trustworthiness of Google sponsored links was seriously in doubt. We could also make the argument that search engine use is more a matter of necessity than a measure of trustworthiness in the search engine itself. The most surprising finding directly contradicted Fox’s (2006) findings on the lack of Internet health seekers crosschecking their results or checking website credentials to determine credibility. Our study showed that users do, in fact, frequently crosscheck their results with other sources (offline and online), and, although less frequently, also regularly check website credentials to determine its trustworthiness. The clearest and most common theme, however, is the increasing role of social pooling to help users determine credibility online.

 Internet users are now more connected than ever before, and the influence of social factors such as user reviews is only likely to grow as the Web becomes more and more connected. This is truly the wired generation, with faster and easier ways to be constantly connected, so the impacts of social networks in helping Internet users determine credibility are likely to not only grow in importance, but in caliber, as our world become increasingly more connected to each other.

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