

The Perceived Credibility of Online Encyclopedias among Children

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Abstract

This study examined young people's trust of Wikipedia as an information resource. A large scale probability based survey with embedded quasi experiments was conducted with 2,747 children in the U.S. ranging from 11 to 18 years old. Results show that young people find Wikipedia to be fairly credible, but also exhibit an awareness of potential problems with non expert, user generated content in anonymous environments. Children tend to evaluate the credibility of online encyclopedia information with this in mind, at times with what appears to be an unwarranted devaluation of this information.

User-generated Content and Information Credibility

A critical feature of the contemporary Internet environment is the ability of users to be both information consumers and information providers. Indeed, the Internet's very design facilitates widescale collaboration among individual users, which can take a number of forms, ranging from the provision of valuable information across a diversity of topics to the organization of political protests. One venue in which collectively-produced information has burgeoned in recent years is online encyclopedias such as Wikipedia, where anyone can anonymously contribute encyclopedia entries or edit those provided by others. Indeed, Wikipedia has risen in its short history to be among the top 10 most popular web sites in the U.S. today, with more than 3 million user-generated entries (Alexa 2009).

Given that all of the content in Wikipedia is provided by anonymous individuals with unclear motives for contributing information, there has been a great deal of controversy and concern regarding the *credibility* of this information, particularly as compared to more established encyclopedias such as Encyclopedia Britannica, or online alternatives to Wikipedia such as Citizendium, which relies on information that is user-contributed but that is also vetted by experts prior to its publication.

However, in spite of these concerns that user-generated content may be less credible than its expert-produced counterpart, early studies suggest that the differences may not be particularly great. For example, research has shown that user-created entries in Wikipedia have been judged to

be nearly as accurate as well-regarded print encyclopedias like Encyclopedia Britannica (Giles 2005), and entries from Wikipedia have been evaluated as relatively credible, and even more so by area experts than by non-experts (Chesney 2006). Yet, a great deal is still unknown about the perceived credibility of online encyclopedias, particularly among specific and increasingly relevant user groups -- most notably, among *young people*.

Young people are particularly heavy users of Wikipedia for schoolwork and other pursuits, and will likely continue to be in the future (Rainie and Tancer 2007). Yet, children may not be very well equipped to determine the credibility of the information they find there. In anonymous, collectively-authored environments such as Wikipedia, information is missing as to what is perhaps the most important element for judging credibility -- data about the origin or *source* of the information (Sundar 2008). This makes assessing the credibility of digital information generally, and Wikipedia in particular, extremely challenging, especially for young people.

Perceived Information Credibility among Children

Youth are a particularly intriguing group to consider with regard to online information credibility assessment because of the tension between their technical and social immersion with digital media, and their relatively limited development and lived experience compared to adults. On the one hand, those who have literally grown up in an environment saturated with networked digital information and social media technologies may be highly skilled in their use of these media to access, consume, and generate information. This suggests that in light of their special relationship to digital tools, youth are especially well-positioned to navigate the complex media environment successfully.

On the other hand, many youth are limited in terms of their cognitive and emotional development, life experience, and familiarity with the media apparatus. This suggests that although youth may be talented and comfortable users of technology, they may lack critical tools and abilities that enable them to seek and evaluate information effectively. Children's relative lack of life experience, for instance, may put them at greater risk than adults for falsely accept-

ing a source's self-asserted credibility, since such assessments are based on accumulated personal experience, knowledge, source reputation, and examination of competing resources. In addition, youth may not have the same level of experience with or knowledge about media institutions, including Wikipedia, which might make it more difficult for them to understand differences in editorial standards across various media outlets, compared to adults.

Yet, in spite of accumulating scientific knowledge about how people determine the credibility of information they get via digital media, extremely little of this work has focused on children. To address this, we conducted a large-scale survey of 11-18 year olds in the U.S. to examine their use of Wikipedia and knowledge about its method of information provision, as well as their perceptions of its credibility. In addition, our survey included two quasi-experiments that were used to understand the factors contributing to young people's credibility beliefs. These data are the first to document children's perceptions of the credibility of user- versus expert-generated information.

The quasi experiments were designed to complement the survey data by delving deeper into young people's credibility perceptions of Wikipedia as compared to other encyclopedias that employ different models of user-generated and/or expert-produced information. Thus, the first quasi-experiment assessed participants' perceptions of the credibility of three different online encyclopedia sources (Wikipedia, Citizendium, and the online version of the Encyclopedia Britannica) representing different models of user-generated versus expert-provided content.

Global assessments of the credibility of Web-based information are done at several levels by evaluating credibility cues present at, for example, the author, site, and message levels (Metzger et al. 2003). Because authorship information is absent in Wikipedia, we were interested in the extent to which kids rely on site (or "context-level") credibility cues versus information (or "content-level") cues. The second quasi-experiment exposed children to content in the form of actual encyclopedia entries taken from each of the three sources, while varying their placement among the three sites. This enabled us to assess how the *actual* content of online encyclopedia information interacts with the context of the information to affect young people's credibility judgments.

The central research questions of this study are thus:

- To what degree do young people use Wikipedia, know about how information is generated within it, and find it to be a credible information resource?
- How does Wikipedia compare to other online encyclopedias in terms of perceived credibility?
- To what extent do kids consider content and context in evaluating the credibility of online encyclopedic infor-

mation?

General Experimental Design and Method

Since no survey research had been conducted on youth audiences and information credibility prior to this study, the initial questionnaire was developed with the help of research experts in developmental and cognitive psychology. A focus group was next conducted among children to help refine survey terminology. Finally, 40 children were recruited to undergo an hour-long face-to-face interview, in which they provided feedback on questionnaire content, question wording, and general survey administration. This feedback was used to finalize the questionnaire.

Survey Administration. The survey was conducted online in 2009 by Knowledge Networks, a professional research firm, using a probability-based panel of households representative of the entire U.S. population. Households with children living at home between 11 and 18 years of age were identified and a sample was drawn at random from among these active panel members. 2,747 children completed the survey and qualified for analysis, representing a 46.3% response rate, and small subset of these respondents was assigned randomly to the quasi-experimental conditions described below. The survey responses were weighted to compensate for non-response and other sources of survey error that might bias the results. In this manner, results from this survey are generalizable to the U.S. population of Internet households.

Quasi-experimental method. In order to simulate children's web-browsing experiences, and to evaluate their reactions to specific web content, a quasi-experimental method, delivered as part of the broader survey, was used. Each child respondent viewed a screenshot of a web page from an "online encyclopedia from the Internet," followed by questions about the web page they had just viewed.

General Survey Measures and Results

Standard survey items were used to gauge children's use of, knowledge about, and perceived credibility of Wikipedia. Survey participants indicated their familiarity with the web site and their knowledge of what Wikipedia is and how it works. They indicated how often they use Wikipedia to look up information, as well as the frequency with which they had contributed information to Wikipedia. Finally, participants responded to questions asking them about how much they believe and how much they feel other people should believe information found in Wikipedia (on a 5-point scale where higher values correspond to greater perceived credibility). Differences across the age range of the sample (11-18 year olds) were examined.

Results of the survey show that 99% of kids who completed the survey had heard of Wikipedia, and 84% had used it to look up information. However, only 12% indicated they had ever written or changed information in Wikipedia, and those who had done so reported doing this only “rarely.” This varies by age to some degree: older kids are about 10% more likely to have done both activities than the youngest kids in our sample.

However, when asked to identify what Wikipedia is from a list of seven plausible possibilities, 9% admitted that they do not know, and only 78% made the correct identification. There was a small tendency for older kids (ages 16+) to accurately understand what Wikipedia is.

Most children believe information they get from Wikipedia “a lot” (28%) or “some” (43%). However, children were slightly more skeptical about how much people *should* believe Wikipedia, with 23% saying it should be believed “a little bit,” 49% saying it should be believed “some,” and 20% saying it should be believed “a lot.” Indeed, the extent to which children say people should believe information in Wikipedia is significantly lower than they report believing it themselves. There were no age differences in either how much participants themselves believed or in how much they thought that people in general should believe the information found in Wikipedia.

Experiment 1 Method

In the first experiment, children viewed a screenshot of an online encyclopedia entry, which was presented as coming from one of three different online sources. The notable difference among the encyclopedias was the purported source of the information, reflected in the description that children were given: children were instructed that they would see a picture of a web page from (a) “the online encyclopedia *Wikipedia*, where anyone can add or change information at any time without giving their real names,” or from (b) “the online encyclopedia *Citizendium*, where anyone can contribute entries, as long as they are identified by their real names and where all contributions are reviewed by experts before being accepted,” or from (c) the online version of “*Encyclopedia Britannica*, whose entries have been contributed by respected experts worldwide since 1768.” To ensure that children in this study understood these differences, they were asked to later identify which method of authorship for entries was used by the encyclopedia they viewed. Those children who did not correctly identify the method of selecting entries for the encyclopedia were excluded from all further analyses. Although participants were told that the entry they saw came from one of these three sources, in reality the encyclopedia entries were actually identical in all cases, and were created from information on the topic gleaned from all three

of the encyclopedia sources collectively.

Experiment 1 Results

Results from this quasi-experiment showed that children found the entries that they believed had originated from *Encyclopedia Britannica* ($M = 3.76$) to be significantly more believable than those they believed originated either from *Wikipedia* ($M = 2.92$) or *Citizendium* ($M = 3.17$), $F(2, 189) = 16.29$, $p < .001$. However, children did not distinguish between entries they believed originated from *Wikipedia* or *Citizendium*, in terms of how credible they thought they were ($p = .28$).

These findings indicate that children readily attended to the source or context of the information when asked to evaluate its credibility. These results parallel past research that has demonstrated differences in credibility based on the perceived information source for adults (Flanagin and Metzger 2007).

Experiment 2 Method

We next assessed whether encyclopedia entries that *actually* originated from these various online sources (as opposed to the entries created for Experiment 1) were viewed differently among children with regard to their credibility. We also evaluated whether it made a difference from which among the three online encyclopedias children believed the entry to have originated.

To do this, actual entries on two different topics (global warming and homeopathy) were selected from each of the three online encyclopedia web sites and were edited very slightly to be of roughly the same length (content was not changed). Tests once again showed no differences in credibility across encyclopedia entry topic, so data from these entries were collapsed for subsequent analyses.

Children viewed a screenshot of one encyclopedia entry, presented as if it originated from one of the three encyclopedias. However, the encyclopedia entry may have actually originated from any of the three encyclopedias. In this manner, 18 different page images were created, representing each possible combination of encyclopedia entry *topic* (global warming or homeopathy), original encyclopedia entry *source* (*Wikipedia*, *Citizendium*, or *Encyclopedia Britannica*), and the *placement* of the encyclopedia entry (*Wikipedia*, *Citizendium*, or *Encyclopedia Britannica*). As before, only those children who correctly identified the encyclopedia’s actual method of selecting entries for the encyclopedia were included in the analyses.

Experiment 2 Results

Results showed that, by itself, where the encyclopedia entry actually originated was irrelevant to how believable the

entry was found to be by children, $F(2, 181) = .09, p = .92$. Thus, the *original source* of the encyclopedia entry was not important with regard to its perceived credibility. The *placement* of the entry was, however, critical to children's credibility evaluations, $F(2, 181) = 15.01, p < .001, \eta^2 = .15$. Encyclopedia entries were judged as *less* believable when children viewed them on Wikipedia's site ($M = 2.74$) than when they were thought to be from either Citizendium's ($M = 3.24, p < .05$) or Encyclopedia Britannica's site ($M = 3.55, p < .001$). (There were no statistically significant differences between the latter two sites; $p = .25$).

Moreover, the context of the information (the entry placement) also interacted in meaningful ways with the content of the entry (the entry source), such that entries actually originating from Wikipedia were perceived as significantly *more* believable when they appeared on Citizendium's web page than if they appeared on Wikipedia's page, and were *most* believable if they appeared to have originated from Encyclopedia Britannica, $F(4, 179) = 3.63, p < .01, \eta^2 = .08$. Put another way, the encyclopedia entries from Wikipedia were seen as significantly more believable than those from both Citizendium and Encyclopedia Britannica, but only when children thought they were *actually* from Citizendium or Encyclopedia Britannica.

Similar to Experiment 1, children again show strong evidence of attending carefully to the contextual information surrounding information, over and above their consideration of content quality, when judging credibility.

General Discussion

Data from this study constitute the first systematic examination of youth and online encyclopedias, and offer unprecedented insight into how young people think about credibility today. Overall, the survey results indicate that children believe Wikipedia information to be fairly credible, yet they also admit that they should trust information on Wikipedia less than they actually do. In contrast to the naïveté often assumed of children, this shows an awareness of the possibility of negative consequences stemming from false or biased user-generated information provided online.

The quasi-experiments also yielded interesting discoveries about the process of credibility evaluation. Both experiments showed evidence of the primary influence of contextual-level credibility cues, which may indicate that kids attend more to cues that are peripheral to the information (e.g., whether content is provided by experts or not) than to the content itself, at least when there are no obvious flaws with it. These findings could also reflect that kids are heeding adults' (e.g., parents, educators) advice to be skeptical of anonymous, collectively authored information due to uncertainties about author expertise and potential bias.

Interestingly, content mattered too, but only as filtered through the context of the information: the fact that Wikipedia content was deemed more credible if children thought it originated from Citizendium, and most credible under the banner of Encyclopedia Britannica, could be taken as signaling the high quality of Wikipedia information, despite popular cries that it cannot be highly credible since it is provided by anyone who cares to contribute it.

In sum, data from this study refute the assertion that the user-generated information in Wikipedia is necessarily lower in quality than expert-provided information, which is consistent with earlier studies using very different methods and populations [2, 5]. They also paint a picture of young people's trust in Wikipedia as an information resource that is not quite as bleak as some educators and the popular press have portrayed in the past, in that children even as young as 11 years old appear to consider issues of expertise and possible bias in the source of information obtained online when evaluating its credibility, and these cues seem particularly salient when young people evaluate information that is collectively- and anonymously-authored.

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