Information Selection in the Blogosphere:
The Effect of Expertise, Community Rating, and Age

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Abstract

The World Wide Web offers a lot of information that has been provided by laypersons instead of experts or professional journalists. This raises the question how Internet users perceive credibility of online authors and which information on the source influences the users' selection and processing of texts. Our study investigated the effect of self-reported expertise, community rating, and age of weblog authors. In an online laboratory experiment, information seeking behavior of 60 participants on a science weblog was analyzed. As exemplary scenario, the discussion on the effects of violent media contents on children was chosen. Results showed that authors with a high level of expertise (operationalized by the author's self-reported profession) were rated as more credible and their texts were selected for further reading more frequently. This suggests that self-reported expertise emerges as a strong cue for information selection, whereas there was only partial evidence for the importance of community ratings.

Keywords: Credibility, Selective Exposure, Persuasion, Source Cues, Information Processing.

Introduction

The Internet is today's largest source of information and communication. As Metzger (2007) points out, "more information from more sources is available and more easily accessible now than ever before" (p. 2078). Although this can definitely be seen as a major advancement, it might also lead to the problem that users get lost in the digital world and do not know how to find the content they need, e.g. when searching for information on science related issues. This phenomenon of "information overload" in the Internet (Eppler & Mengis, 2004) has brought new attention to the issue of credibility and quality of information – especially since the World Wide Web is rapidly developing in the direction of user-generated-content (Web 2.0, O'Reilly, 2005). For example, in blogs and forums "any user can say anything about any topic" (Van der Heide, 2008, p. 30). Thus, one can increasingly find information that has been provided by laypersons instead of experts or professional journalists and therefore may be less reliable.

This raises the question how Internet users perceive credibility of online authors and which information on the source influences the users' selection and processing of information in the World Wide Web. While previous research on selective exposure focused on content features such as the relevance of the topic (e.g. Knobloch, Zillman, Gibson, & Karrh, 2002; Zillmann, Chen, Knobloch, & Callison, 2004), information on the authors has not been taken into account yet. Similarly, models of online information seeking (e.g. Pirolli & Card, 1999; Schamber & Bateman, 1996; Tombros, Ruthven, & Jose, 2005) consider factors like title, currency and layout. With respect to theoretical modelling, it can be asked whether these models have to be amended by aspects of social cognition with regard to the authors.

Against this background, we wanted to investigate the effect of source cues – self-reported expertise, community rating, and age of authors – on the perception of credibility and the selection of online science information. Who do Internet users trust? And whose information do they select? Our examination focuses on weblogs (or blogs), which can be defined as "frequently updated websites where content is posted on a regular basis and displayed in reverse chronological order" (Schmidt, 2007). These websites are popular means of science communication in the Web (e.g. www.scienceblogs.com). Therefore, they are increasingly used by laypersons for obtaining information on science-related issues. As exemplary scenario for our study, we chose the discussion on the effects of violent media contents on children and adolescents.

Credibility and Information Selection in the Web

While several studies examined the general credibility of the Internet as a medium (Stavrositu & Sundar, 2008; Metzger, Flanagin, Eyal, Lemus, & McCann, 2003) or the credibility of different web sites as a whole (e.g. Walther, Wang, & Loh, 2004), this study focuses on the credibility of authors within a certain web site, which means that the analyzed message sources here are persons. According to the theory of social information processing (Walther, 1992), impressions of persons in computer-mediated communication are formed on the basis of verbal, linguistic, and textual manipulations – even though a lot of information that would be visible in face-to-face communication is missing. These impressions, primarily based on text-based cues, accrue over time and lead to a

relatively elaborate evaluation of other persons. In this context, Walther (1996) stated that, due to the absence of other cues, basic personal information might even be more important than in face-to-face situations (hyperpersonal communication).

Van der Heide (2008) distinguishes between system generated cues (e.g. the number of posts in a forum or the number of friends on the social networking site Facebook), aggregated feedback systems (such as reputation or rating systems) and self-disclosure behaviors (e.g. self-report of profession and age) as relevant types of heuristically valuable information about computer-mediated message senders. While system generated cues and aggregated feedback systems are based on information that has been provided by other users or the computer system itself, self-disclosures are easier to manipulate by the authors themselves. This means that someone might claim to be an expert although he is not. On the other hand, self-disclosures are "an efficient, direct, and visible method of communicating one's qualification" (Van der Heide, 2008, p. 24) and might therefore be particularly important.

As "authority is no longer a prerequisite for content provision on the Internet" (Metzger, 2007, p. 2078), it seems reasonable that people use these information on the author and his/her estimated credibility as a criterion for information selection. However, it has not been analyzed yet if these cues are a relevant factor for laypersons who are seeking information on science-related everyday issues in the Internet.

Expertise

Persuasion research in the tradition of the Yale studies (e.g. Hovland, Lumsdaine, & Sheffield, 1949) shows that messages presented by persons with a high level of expertise are more likely to influence other people (Wilson & Sherell, 1993). Therefore, dual-models of information processing (Chaiken, 1987; Petty & Cacioppo, 1986) include expertise of the source as one major factor – which is especially relevant if the level of elaboration is low.

Expertise Communicated via Self-Report On a weblog on science-related issues, self-reports, which may consist of a short self-description and the profession of the author, are able to provide important cues on the expertise of the author. This information is able to serve as a heuristic ("experts are usually correct"). As humans are cognitive misers (Fiske & Taylor, 1991) who do not include more cues than necessary for their decisions, it seems plausible to assume that this aspect is already relevant for the selection of information. For an investigation of newsbots such as Google News, Sundar, Knobloch-Westerwick, and Hastall (2007) demonstrated that source credibility cues (name of the medium in which a certain article was found, e.g. New York Times vs. tabloid newspaper) – which can be seen as an equivalent of expertise information on the level of persons – influenced perceived message credibility and likelihood of clicking. Following these results and

considerations on persuasion research, we hypothesize that the information on the expertise of the author influences rating of the source and selective exposure to the corresponding message:

H1a: Sources with a high level of self-reported expertise will be perceived as more credible.
H1b: The texts of authors with a high level of self-reported expertise will be selected more often than the ones of the low-expertise-sources.

Expertise Attributed by Others (Community Ratings)
Next to self-reports, expertise can also be expressed through the statements of other users. Therefore, collaborative filtering, e.g. rating systems (1 to 5 stars) or popularity indications (most e-mailed, number of views), is also likely to influence information choice. As these ratings are difficult to manipulate, they provide valuable information on the qualities of the user. Walther et al. (2009) showed that comments of friends on social networking sites are even more important for impression formation than self-generated statements. Furthermore, according to Chaiken (1987), people use the heuristic that, if many agree with an opinion, the opinion is probably correct. In this line, community ratings should produce a bandwagon effect (Sundar & Nass, 2001) in that articles or elements which already have a positive rating are clicked more frequently. On the other hand, individuals sometimes seek distinctiveness from others (Brewer, 1991), which would be an explanation for the opposite effect. Previous research has supported the idea of the bandwagon effect: In an experiment on selective exposure, Knobloch-Westerwick, Sharma, Hansen, and Alter (2005) found that online articles with better explicit recommendations were read longer. Additionally, Resnick, Zeckhauser, Swanson, and Lockwood (2006) showed that sellers with a high rating at the auction website Ebay were able to sell products for higher prices than users without a positive reputation. In this context, we hypothesize that:

H2a: Authors with a high community rating are perceived as more credible than authors with a low community rating.
H2b: Texts of sources with a high community rating are more likely to be chosen.

Social Comparison (Age)

Furthermore, social comparison (Festinger, 1954) may be relevant for selection. According to Festinger's theory, people are motivated to evaluate their opinions and abilities in comparison to similar persons, e.g. people with the same socio-demographic background (age, gender, education, etc.). The (positive or negative) results of this comparison process have been shown to influence self-evaluations and behavior (Mussweiler, 2001). In order to gain information that is relevant for social comparison, people should choose content that is connected to similar persons. In an experiment with an online news magazine, Knobloch-

Westerwick and Hastall (2006) already demonstrated that recipients more often choose news with protagonists of the same sex and that young readers prefer texts about same-age-characters. As similar effects can be expected for text authors, we hypothesize that:

H3a: Users perceive sources of similar age as more credible.
H3b: Users choose texts that were written by sources of similar age.

Method

Sample

In order to investigate these hypotheses, we created an online laboratory experiment in which 60 German participants were asked to search for information on a science weblog. As exemplary scenario, the website dealt with the controversy on the effects of violent media contents on children and adolescents. To ensure that this topic was personally relevant, participants were parents with children between the age of 2 and 18. Subjects were recruited via different channels, e.g. newspaper ads, postings in forums for parents and flyers which were distributed in schools. Participants (30 female, 30 male) were between the age of 22 and 47 ($M = 36.93$; $SD = 6.54$). 26.7 % of them had a university degree, 31.7 % finished high school with a qualification for university entrance and 41.7 % finished high school without this degree.

Stimulus Material

As stimulus material a blog platform (see figure 1) was created. On the overview page, 16 summaries of articles (with a headline, short description and information on the author) were shown. By clicking on the summary, the user was able to read the whole article – furthermore, it was possible to get more information on the author.

Independent Measures

As independent measures, the information on the author (self-reported expertise, rating, age) was systematically varied as within-subject factors. Expertise was operationalized via profession (professions with a close connection to the topic, e.g. psychologist (high) vs. professions without a connection to the topic, e.g. banker (low)). Sex, rating and age were also varied (rating: five or four stars vs. one or two stars / age: 24-27 years vs. 42-45 years). As a result, there were 16 combinations of author information that were shown below the headlines of the summaries. For every combination, a fictitious "character" was created (e.g. "Dr. Thomas Moos, 42, media scholar, community rating: 2 out of 5 stars" or "Jens Kohwall, 27, insurance broker, community rating: 5 out of 5 stars"). Headlines and texts were written in a neutral tone (e.g. "New studies on the effects of first-person shooters" or "Survey on children's media usage"), and connections

between authors and texts were systematically rotated to avoid effects of the different topics and formulations.

Dependent Measures

As dependent measures, information selection and rating of the information and the source's credibility were assessed. It was coded which of the texts were chosen (in which order) and how long the texts were read. Furthermore, it was assessed whether the participants decided to get more information on the author. Credibility was measured with a scale based on research by Berlo, Lemert, and Mertz (1969) and Gierl, Stich, and Strohmayr (1997), including items like "trustworthy", "experienced" and "altruistic".

Figure 1: Screenshot of the weblog
(Title: "Violence in the Media")

Procedure

Data were collected in a laboratory at the University of Duisburg-Essen. First, the participants filled out an online questionnaire in which their previous knowledge on the topic, their media usage, need for cognition (Cacioppo & Petty, 1982) and self-efficacy with regard to Internet and Web skills (Eachus & Cassidy, 2006) were assessed. After that, they were told to search for information on the topic by reading the weblog. In order to create a selection situation, time was limited to four minutes. The sessions were saved with a screen-recording software. After that, the participants filled out a post-questionnaire in which they rated the credibility of the authors.

Results

Usage of the weblog

The participants of the study selected an average of 5.68 articles ($SD = 1.99$) during four minutes of reading time. Average reading time per article was 28.60 seconds ($SD = 12.52$). 25 % of the participants wanted to see further information on the author.

H1: Self-Reported Expertise

H1 predicted that authors with a high level of self-reported expertise (with a profession that has a close connection to

the topic) are perceived as more credible (*H1a*) and that their texts are selected more often *(H1b)*. To test these hypotheses, we conducted an analysis of variance (ANOVA) with repeated-measures in which the values for the authors were grouped according to their level of expertise. This revealed a significant effect of self-reported expertise on credibility ratings, $F(1, 59) = 98.040$, $p = .000$, $\eta_p^2 = .624$. As table 1 shows, the credibility scores for high-expertise authors are higher than for the low-expertise sources. Therefore, *H1a* has been supported by the data.

Table 1: Descriptive statistics for the effect of self-reported expertise on credibility score, number of clicks and reading time (in seconds)

	M	SD	N
Credibility Score High Expertise	153.35	19.45	60
Credibility Score Low Expertise	115.30	24.47	60
Number of clicks High Expertise	3.13	1.44	60
Number of clicks Low Expertise	2.55	1.53	60
Reading Time (s) High Expertise	79.43	34.69	60
Reading Time (s) Low Expertise	67.67	41.32	60

For the number of clicks, ANOVA also revealed a significant effect of expertise, $F(1, 59) = 4.145$, $p = .046$, $\eta_p^2 = .066$. The mean values (see table 1) show that texts that were attached to authors with a high level of self-reported expertise were selected more often for further reading. This means that *H1b* can also be supported. However, it has to be noted that the effect size is low.

With regard to reading time, the mean values (see table 1) indicate that texts of high-expertise-authors were read longer. However, ANOVA did not show a significant effect.

H2: Community Rating

H2 predicted that the participants prefer authors with a high community rating. However, with regard to credibility evaluations, no significant result was revealed *(H2a)*. For the number of clicks *(H2b)*, the mean values indicate that texts of authors with a high rating were selected more often ($M = 3.07$; $SD = 1.52$) than texts of authors with a low rating ($M = 2.62$; $SD = 1.45$). However, this trend was not significant. As a result, *H2* is not supported by these data. In further exploratory analyses, we found that, if only the authors with a low level of self-reported expertise are taken into account, community rating has a positive, marginally significant effect on the number of clicks, $F(1, 59) = 3.020$,

$p = .087$, $\eta_p^2 = .049$: Participants selected an average of 1.40 texts of high-rating-authors ($SD = 1.01$) in comparison to an average of 1.15 texts of low-rating-authors ($SD = .88$).

H3: Social Comparison (Age)

H3 stated that the participants would perceive sources of the same age as more credible and choose their texts more often. For this analysis, the sample was separated into two age groups (from 22 to 38 years and from 39 to 47 years) via median split. With regard to credibility ratings *(H3a)*, the analysis of variance revealed a significant effect of the author's age, in the group of older participants ($F(1, 29) = 14.920$, $p = .001$, $\eta_p^2 = .340$) as well as in the group of younger participants ($F(1, 29) = 8.696$, $p = .006$, $\eta_p^2 = .231$). However, in contrast to our hypothesis, mean values (see table 2) show that older authors were generally perceived as more credible in both age groups. The effect of author's age on credibility rating was significant for the whole sample, $F(1, 59) = 23.041$, $p = .000$, $\eta_p^2 = .281$. For the number of clicks *(H3b)*, no significant effects emerged.

Table 2: Descriptive statistics for the effect of age on credibility score

Sample		M	SD	N
Age 22-38	Cred., Young Authors	129.43	15.94	30
	Cred., Old Authors	133.63	17.16	30
Age 39-47	Cred., Young Authors	133.10	16.34	30
	Cred., Old Authors	141.13	18.25	30
Total Sample	Cred., Young Authors	131.27	16.11	60
	Cred., Old Authors	137.38	17.96	60

Discussion

Against the background of the rise of Web 2.0 formats in which a lot of content is produced by laypersons instead of experts, we aimed to answer the question how online users perceive credibility and which factors determine their selection of online science information. For this purpose, the present study investigated the effect of expertise (as self-reports and community ratings) and age of weblog authors.

Our analysis showed that self-reported expertise has a strong influence on the perception of credibility: As hypothesized in *H1*, the participants preferred texts of

authors who had a profession with a close connection to the topic, e.g. psychologists or media scholars. Furthermore, their texts were chosen more frequently for further reading. These results are in line with studies from (offline) persuasion research (e.g. Wilson & Sherell, 1993) and dual-models of information processing (Petty & Cacioppo, 1986; Chaiken, 1987) in which expertise of the source is one important factor. From our findings, we can conclude that expertise as heuristically valuable information is already relevant in the earlier stage of information selection: Following the heuristic that "experts are usually correct", online users assess the credibility of the author and the estimated quality of the text before choosing an article. While Sundar et al. (2007) showed that this is true for newspaper sources, the present study indicates that expertise cues are also relevant if the message sources are persons. Therefore, it seems that online users prefer declared experts to "normal" people (who may be personally concerned with regard to the topic) even in websites that are dedicated to user-generated-content.

However, statements of other users on the expertise of the authors, expressed by community ratings *(H2)*, did not have a significant effect on credibility rating and information selection. Obviously, the display of rating stars did not produce a bandwagon effect, as it was found for online articles (Knobloch-Westerwick et al., 2005) and for the credibility of Ebay sellers (Resnick et al., 2006). This is all the more astonishing as previous research on social networking sites (Walther et al., 2009) has shown that information given by other people is seen as more important than self-descriptions. The lack of impact might be due to the fact that it was not clear to the participants what exactly the ratings indicated and by whom (e.g. how many people) the evaluation had been given. The cue concerning self-reported expertise (profession of the author) has obviously been more important because the participants trusted in the correctness of these self-reports: It is also possible that they perceived it as an objective fact (possibly verified by the blog owner) rather than a subjective assessment made by the author. Furthermore, the costs and consequences of the decision to choose an article or not are smaller than e.g. when deciding to buy a product on Ebay. As a result, the considerations may be less careful, which would lead to a decreased importance of community ratings. However, if only the authors with a low self-reported expertise were taken into account, community ratings produced a marginally significant effect: Texts of authors with a high rating were selected more often than texts with a low rating. This suggests that community rating does not matter when the level of self-reported expertise is high. But if the level of expertise is low, ratings seem to make a difference in that people with a better rating are selected more often.

Our analysis for *H3* showed that the age of weblog authors has a significant influence on credibility ratings and that older authors are generally perceived as more credible. This is in contrast to our assumptions that users prefer sources of similar age, based on social comparison theory

(Festinger, 1954; Mussweiler, 2001). While Knobloch-Westerwick and Hastall (2006) found a social comparison effect on the selection of news articles according to the age of protagonists, there seems to be no such effect for blog authors. An explanation could be that users of a science weblog are mainly concentrating on the quality of information (which can e.g. be deducted from a profession with a close connection to the topic, a high rating and maybe higher age due to more professional experience) rather than seeking personal information on the author. Possibly, other websites, such as social networks in which detailed personal information and pictures are included, are more likely to foster social comparison processes (see Haferkamp & Krämer, 2010). The effect that older authors are seen as more credible may be explained by the topic of "violent media effects", in which experiences with child-rearing are helpful. For other topics (e.g. pop music or Internet technology), the relationship between age and source credibility may be different.

In summary, self-reported expertise of the author emerges as a strong cue for the perception of online science information, whereas there is only partial evidence for the importance of community ratings and age. In line with Sundar et al. (2007), these results demonstrate that the "information scent" of articles is not restricted to its content or formal features (position or layout): Information on the author, especially expertise, must also be taken into account.

In order to achieve further insights into these processes, future research should investigate the effects of sources in combination with other variables, such as different message types and different levels of motivation of information seeking. In the present study, texts have been written in a neutral style, which might have created a slightly artificial situation that differs from the normal situation in the blogosphere. If variations of content are included, the analysis of user behavior may show the interdependencies between several important factors of information selection.

Acknowledgments

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