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## CREDIBILITY AND SEARCH ENGINES. THE EFFECTS OF SOURCE REPUTATION, NEUTRALITY AND SOCIAL RECOMMENDATIONS ON THE SELECTION OF SEARCH ENGINE RESULTS

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### Introduction

Mass media use has always required a certain degree of selection by the recipient. But in the online environment, these active selection processes are even more important, as the Internet confronts the user with an immense amount of options from which she or he may obtain the desired information. Web search engines are the method of choice for the majority of Internet users to tame this proverbial information tide and have thus emerged as new gatekeepers (Machill, Beiler, & Zenker, 2008). Even well-known news sites receive about 10-30% of their traffic through search engines.<sup>1</sup>

Previous surveys on search engine use and log-file analyses show that search engine link selection largely follows a habitualized primacy effect: the majority of users choose one of the top ranked results, in many cases the first one (Agichtein, Brill, Dumais, & Ragno, 2006; Kink & Hess, 2008). However, financial and organizational requirements for creating online content are much lower, while at the same time control and filtering mechanisms are not as established online as in the traditional media. Thus, scholars argue that credibility evaluation of online content becomes a “core component” for the recipients (Metzger, Flanagin, Eyal, Lemus, & McCann, 2003, p. 294). Otherwise, they risk getting exposed to wrong or even harmful information.

Credibility is conceptualized as a subjective, perceived quality that is based on the two dimensions expertise and trustworthiness (Self, 2009). Credibility attribution may be influenced by several cues present in search engine results pages (SERPs). First, the *reputation* of the source seems to play an important role, as well-known news media sites are generally perceived as more competent and thus credible as other sites, e.g.

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<sup>1</sup> In January 2015, according to web analytics company SimilarWeb (<http://www.similarweb.com/>), search engine links accounted for 23.60% of all traffic on WashingtonPost.com, 21.64% on NYTimes.com, and 14.67% on CNN.com.

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private blogs (Flanagin & Metzger, 2007; Fogg et al., 2001). Second, the absence of bias or the *neutrality* of a message leads to a higher perceived trustworthiness. Finally, recent research has concentrated on the effects of *social recommendations* (e.g., “likes”) on perceived credibility (Metzger, Flanagin, & Medders, 2010). We therefore analyze whether these credibility cues are also able to influence recipients’ selection decisions.

## Method

A sample of 247 students of a large German university completed an online questionnaire in a university computer laboratory and was randomly assigned to one of eight settings. Included in the questionnaire were two research tasks about two controversial issues (implementation of rent control mechanism and legal issues of online streaming). Each research task presented the participants with a preset, fully functional SERP of the search engine DuckDuckGo. Each SERP featured eight search results relevant to the research issue as well as one labeled advertising entry on top of the results list and two irrelevant results (e.g., a link to a shopping site). The *ranking* of the eight search results differed in the eight settings, with each result once on rank 1, once on rank 2, etc.

Within these search results, three credibility cues were varied on two factor levels each:

- 1) *Source reputation*: well-known news site (high reputation) or private blog (low reputation), as indicated by URL and site favicon
- 2) *Message neutrality*: two-sided (high neutrality) or one-sided (low neutrality) reporting on the respective issue, indicated by headline and snippet text
- 3) *Social recommendations*: high three-digit (high social recommendations) or low two-digit (low social recommendations) number of user recommendations of the search result, indicated by displayed number of recommendations (“xxx users recommend this link”)

Each factor level appeared four times and each possible combination between the three factors appeared once per SERP (see Figure 1). Each research task lasted five minutes, during which the participants could open as many or as little search results as they liked. Measures included the observed information research behavior—selected results and the order in which they were selected—as well as personal characteristics, such as prior knowledge about the issues, individual search engine selection strategies, and media, internet and search engine use.

## Results

Logistical regression analysis on the selection decisions (see Table 1) confirms the results of previous studies. Considering only the first selection decisions (the search result first clicked on by the participants), the model has a good fit ( $R^2 = .40$ ). The search results’ rank shows the strongest influence on the selection: the higher the result is ranked on the results list, the more likely it is selected. Of the three credibility cues, only reputation still shows an effect, with high reputation results being selected more likely than low reputation ones. The analysis furthermore shows a (weak) interaction

effect between reputation and neutrality, with neutral results only selected more often if they also are of high reputation.

Because most participants had chosen a top-ranked result during the first selection decision, the influence of the rank is comparably lower in the following selection decisions, but still remains the strongest predictor for the selection of results. High reputation results again are more likely to be selected compared to low reputation ones. Again, social recommendations and neutrality show no individual effect. In comparison with the first model, goodness of fit decreased considerably ( $R^2 = .10$ ), indicating a more random selection of the following search results.

Furthermore, we analyzed whether personal characteristics such as prior knowledge about the issues, search engine selection strategies (ranked vs. spontaneous vs. evaluative selection), or media, internet and search engine use influence individuals' preferences to select results with high reputation, high neutrality and high social recommendations, respectively. However, apart from a weak effect of media use on selection of high reputation results—that is, people that use certain reputable news media sites more often are also more likely to select them on SERPs—, no further effects of personal characteristics on selection behavior were found.

## **Discussion**

The comparatively small influence of credibility cues on selection decisions—as opposed to the rank—can be interpreted in different ways. From a theoretical perspective, (1) this small influence can be seen as evidence for the secondary nature of credibility (cues) when it comes to the selection of search engine results. Search engine users might not be aware that the assessment of the quality of information should be a core concern to them and seem to trust the given ranking rather uncritically. (2) But this might also mean that during selection decisions, users indeed assess the credibility of information sources very well, but that this assessment is guided largely by their imaginary of search engines as providing the best results on top: a high ranking could be perceived by users as an indicator of high credibility (cf. Westerwick, 2013). (3) Finally, the research tasks can be described as low-cost scenarios. This means that neither were there any limitations of search results allowed to be viewed, nor were there any consequences of being exposed to inaccurate or biased information. Situations with potential monetary or social losses thus could increase the influence of credibility cues.

This leads to two avenues for future research. First, user's awareness about the necessity of credibility assessments, and how these assessments are influenced by general trust in search engines, should be investigated. Second, personal, contextual and situational factors that lead to a higher motivation to systematically process SERP information and evaluate credibility (cf. Metzger, 2007; Wirth, Böcking, Karnowski, & von Pape, 2007) should be explored.

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Table 1

*Logistic regressions on selections decisions*

Model	First selection decisions <sup>a</sup>					Following selection decisions <sup>b</sup>				
	<i>B</i>	<i>SE</i>	Wald $\chi^2$ (1)	<i>OR</i>	95% CI	<i>B</i>	<i>SE</i>	Wald $\chi^2$ (1)	<i>OR</i>	95% CI
Step 1										
Position <sup>c</sup>	-0.71	0.04	409.81***	0.49	[0.46; 0.53]	-0.16	0.02	102.56***	0.85	[0.83; 0.88]
Constant <sup>d</sup>	0.40	0.10	15.49***	1.49		-0.95	0.08	151.36***	0.39	
Schritt 2										
Position <sup>c</sup>	-0.77	0.04	414.71***	0.46	[0.43; 0.50]	-0.19	0.02	134.32***	0.82	[0.80; 0.85]
Reputation <sup>d</sup>	1.66	0.13	175.98***	5.27	[4.12; 6.73]	1.09	0.08	212.96***	2.98	[2.57; 3.45]
Neutrality <sup>d</sup>	0.75	0.12	41.83***	2.11	[1.68; 2.64]	0.37	0.07	25.53*	1.44	[1.25; 1.66]
Social recomm. <sup>d</sup>	0.34	0.11	9.10**	1.41	[1.13; 1.76]	0.12	0.07	2.73	1.13	[0.98; 1.30]
Constant	-1.02	0.16	42.60***	0.36		-1.63	0.10	260.96***	0.20	
Schritt 3										
Position <sup>c</sup>	-0.78	0.04	413.08***	0.46	[0.42; 0.49]	-0.20	0.02	134.84***	0.82	[0.80; 0.85]
Reputation <sup>d</sup>	0.98	0.22	19.23***	2.66	[1.72; 4.11]	0.95	0.13	53.86***	2.60	[2.01; 3.35]
Neutrality <sup>d</sup>	0.24	0.23	1.10	1.28	[0.81; 2.02]	0.41	0.14	0.09	1.04	[0.80; 1.36]
Social recomm. <sup>d</sup>	0.05	0.24	0.04	1.05	[0.66; 1.67]	-0.16	0.14	1.27	0.85	[0.65; 1.13]
Rep × Neu	0.77	0.25	9.61**	2.15	[1.33; 3.49]	0.18	0.15	1.40	1.19	[0.89; 1.60]
Rep × S.r.	0.47	0.24	3.65	1.60	[0.99; 2.58]	0.07	0.15	0.22	1.07	[0.80; 1.43]
Neu × SoE	-0.05	0.23	0.04	0.96	[0.61; 1.50]	0.44	0.15	9.24*	1.55	[1.17; 2.06]
Constant	-0.54	0.21	6.83**	0.58		-1.41	0.13	113.75***	0.24	

Note: OR = Odds ratio; CI = Confidence interval; Rep = Reputation; Neu = Neutrality; S.r. = Social recommendations.

<sup>a</sup> $n = 3,984$ , Nagelkerke's  $R^2 = .40$ . <sup>b</sup> $n = 6,256$ , Nagelkerke's  $R^2 = .10$ . <sup>c</sup>Rank on the SERP, 1(top)-8(bottom). <sup>d</sup>Categorical variable, 0/1 coded (1 = high characteristic).

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

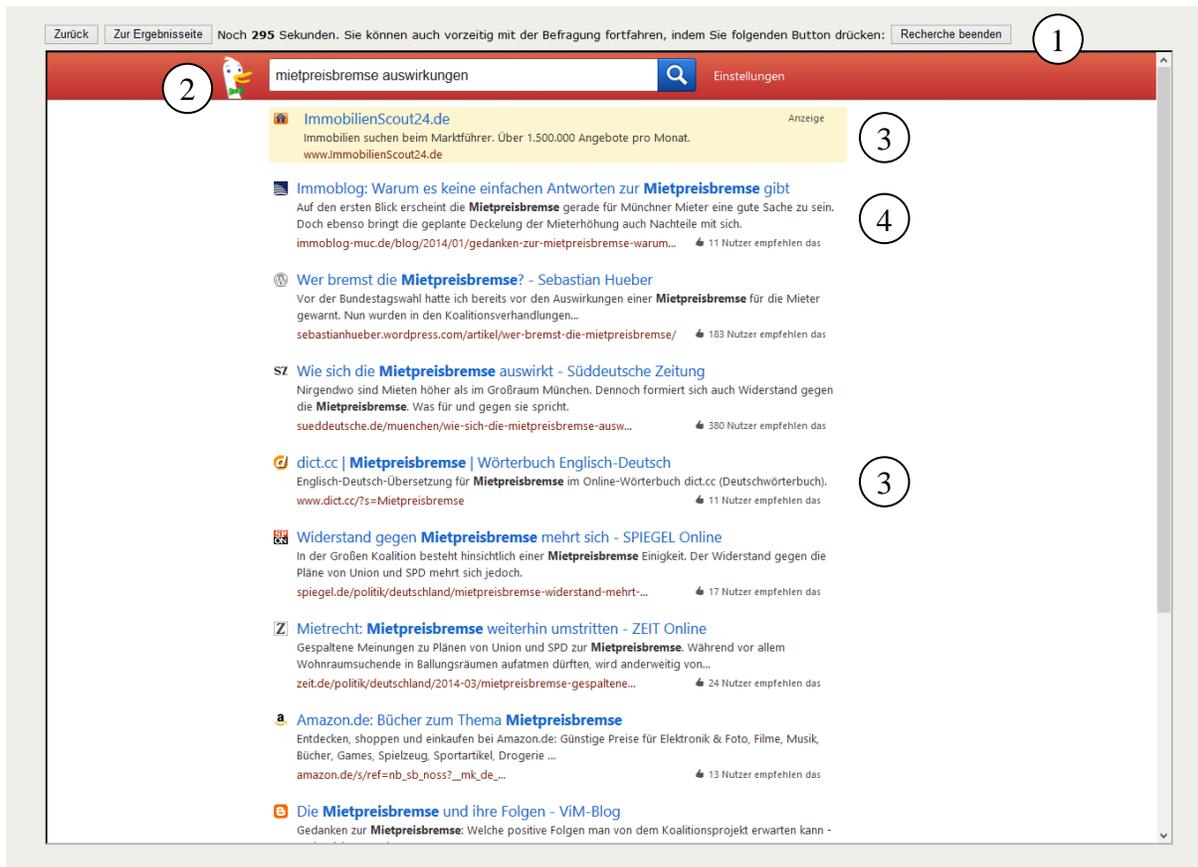


Figure 1. SERP built into the questionnaire with (1) rudimentary browser controls and countdown, (2) pre-set search query, (3) advertisement and irrelevant search results and (4) manipulated search results.

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