Comments-induced biases in evaluating proprietor content on participatory websites. The

robustness of user comment quality's effect across judgment conditions

Patrick Weber & Fabian Prochazka

Author Note

Patrick Weber, Department of Communication Science, University of Hohenheim;

Fabian Prochazka, Department of Communication Science, University of Hohenheim.

Correspondence concerning this article should be addressed to Patrick Weber, see

https://www.researchgate.net/profile/Patrick_Weber18.

Abstract

Current research indicates that the quality of user-generated comments can bias the perceptions of a web page's proprietary message's quality (e.g. of a news article). However, this effect could be limited to situations where users judge quality in retrospect, i.e. after website exposure, based on information they can remember. Therefore, two experiments explored whether the effect also occurs under systematically different judgment conditions. The first experiment demonstrates that the effect is also observable under online judgment conditions, i.e. when the proprietor content is perceptible during judgment and the judgment task is known during exposure. The second experiment shows that under these conditions the effect even occurs when users are highly aware of the qualitative dissimilarity of the contents from the different authorial sources, and when they consciously try to shield their judgments from the comments' influence. More theory development and research is needed to explain the effect under these conditions.

Keywords: user comments, user-generated content, judgment bias, participatory websites

Comments-induced biases in evaluating proprietor content on participatory websites. The robustness of user-comment quality's effect across judgment conditions

The simultaneous presentation and juxtaposition of messages from different authorial sources is one of the defining features of computer-mediated communication since the advent of the social web: on participatory websites, the central message from a web page's proprietor is frequently complemented by user-generated content that visitors to the web page contribute (Walther & Jang, 2012).[1] Questions regarding the benefits and risks that are associated with the inclusion of such user-generated content have arisen in many communication contexts, most prominently among them the production, distribution, and use of news where user comments displayed in the context of news articles are one the most pervasive and consequential forms of combining user-generated with professionally generated proprietor content (i.e. news items). Scholars have especially highlighted user comments' potential for public deliberation and opinion formation (e.g. Ksiazek, 2018; Weber, 2014); however, research has repeatedly shown that the discussions in the comments section are at least partly uncivil and lack reasoned argumentation (e.g. Coe, Kenski, & Rains, 2014; Ruiz et al., 2011), and so poor quality comments have become a central issue because not only do they fail to meet the standards of discursive engagement that normative theories prescribe but research also increasingly shows that they can have substantial and frequently undesired effects (Anderson, Brossard, Scheufele, Xenos, & Ladwig, 2014; Anderson, Yeo, Brossard, Scheufele, & Xenos, 2018; Chen & Ng, 2017; Gonçalves, 2018; Han, Brazeal, & Pennington, 2018; Hsueh, Yogeeswaran, & Malinen, 2015; Jennings & Russell, 2019; Kim & Hwang, 2018; Kim & Sun, 2006; Muddiman & Stroud, 2017; Post & Kepplinger, 2019; Prochazka, Weber, & Schweiger, 2018; Rösner, Winter, &

Krämer, 2016; Searles, Spencer, & Duru, 2018; Wang & Silva, 2018; Weber, Prochazka, &

Schweiger, 2019; Ziegele, Koehler, & Weber, 2018).

One of the uncovered effects is that a low quality among user-generated messages can

"rub off" on the perceived quality of the proprietary message. Particularly, Kim and Sun (2006)

found that low-quality comments negatively influenced the perceived quality of a news article

they accompanied. Searles et al. (2018) demonstrated that abusive user comments on a news item

can undermine the news source's credibility. Anderson et al. (2018) found that uncivil comments

accompanying a news story increased perceptions of bias towards the news story. Furthermore,

Weber et al. (2019) and Prochazka et al. (2018) showed that, next to incivility, a lack of

reasoning in user comments can also have negative effects on the perceived quality of a

journalistic article.

Though these studies have increasingly substantiated that the quality of user-generated

messages can bias perceptions of simultaneously presented proprietary messages' quality, this

effect was not yet well understood. Therefore, recently, Weber et al. (2019) proposed a

comprehensive theory that helps to explain why low-quality comments can bias quality

judgments on proprietor content in the way they do. Based on the distinction between online and

memory-based judgments (Hastie & Park, 1986; Hastie & Pennington, 1989), they argue that

quality judgments on the proprietor content are frequently not formed simultaneously to the

encoding, understanding, and storage of the relevant information (i.e. *online*), but are likely to be

based on information to which one was exposed during website usage that can be retrieved from

memory at the time the judgment is rendered. They further argue that the features of user-

generated comments that make for their low quality (e.g. vulgar language, lack of substantiation

of voiced opinions, and name-calling in user comments) are highly salient during website usage

so that they are encoded and stored with relatively low effort and, as a consequence, are relatively more accessible when information is retrieved from memory to form a judgment. Based on this, Weber et al. (2019) propose several mechanisms through which comment characteristics might affect such *memory-based* judgments on the quality of proprietor content. One is misattribution; this occurs when information from the comments that come to mind when forming a judgment based on memory are falsely remembered as being qualities of the proprietary message. The experimental results of Weber et al. (2019) suggest that this is the mechanism underlying the judgment-biasing effect of user comments that lack a reasoned argumentation. The biasing effect of uncivil comments, by contrast, is rather the result of using a judgment heuristic (of the form 'If content triggers uncivil comments, something must be wrong with it') when the proprietor content's quality is judged in retrospect (Weber et al., 2019).

Elements of this reasoning can also be found in other work on the effects of user comments: inspired by exemplification theory (Zillmann & Brosius, 2000), Lee and Jang (2010, p. 831) as well as Waddell (2018, p. 4) suspect that such effects could be attributable to comments' higher perceptual salience so that they are better accessible in one's memory at the time when judgments are rendered. Thorson, Vraga, and Ekdale (2010, p. 295) also argue that comment features like incivility increase the salience of this information during judgment. Because such propositions only make sense when judgments are thought to be memory-based, these attempts at explaining biasing effects of user comments also implicitly share the assumption that they arise within the scope of memory-based judgment processes.

As far as can be judged from the published protocols of the studies on the effects of low-quality comments on the perceived quality of proprietor content (Anderson et al., 2018; Prochazka et al., 2018; Searles et al., 2018; Weber et al., 2019), their experimental set-up

favoured memory-based judgment: the judgment was presumably not relevant to subjects when they were exposed to the judgment-relevant information (i.e. the to-be judged proprietary message) because in the exposure situation they didn't know that a specific judgment on this content's quality would be needed. Furthermore, when the judgment was called for subsequent-to-stimulus exposure, the judgment-relevant information was presumably perceptually unavailable to subjects so that they couldn't help but rely on what they remembered from the exposure situation to arrive at a judgment. This set-up inevitably creates a memory-based judgment task (Hastie & Park, 1986) and though this is consistent with the theory proposed by Weber et al. (2019), the validity of the results obtained in the existing research could be confined to real-world situations that mirror the conditions of this set-up. That is, the biasing effects of low-quality user comments could be limited to situations that favour or even force memory-based judgment.

If this were the case, it could severely limit the relevance of the effects that have been found thus far. Because it would imply that whenever a judgment on the quality of a web page's proprietary message is likely to be formed online (e.g. due to its relevance for the user), this judgment would not be biased by the quality of the user-generated content. This would certainly be good news because judgment-biasing effects would be precluded under such conditions. And that the quality of the proprietor content (and hence a respective judgment) matters to website users is certainly not an exception. In the context of online news use, for example, the quality of the journalistic content is, in times of widespread feelings of alienation and mistrust toward the mainstream news media (*media scepticism*; Tsfati, 2003, p. 67), certainly of relevance to many users during news exposure. Whether or not users arrive at unbiased judgments under such conditions (and at biased ones only when someone, e.g. a researcher, pushes them to in

retrospect) cannot be determined based on the existing studies. This raised our central research question (*RQ*): Does comment quality bias judgments on proprietary content's quality under conditions that enable and favour online inferences about its quality?

According to Hastie and Pennington (1989) these conditions are characterised by the fact that subjects have foreknowledge that the focal judgment will be requested (so that it is relevant to them in the situation when they are exposed to the judgment-relevant information), and that the judgment-relevant information is perceptually available to them at the time the judgment is actually called for. If the biasing effects of low-quality comments are restricted to situations that favour memory-based judgments, under these conditions it would make no difference whether a proprietary message is accompanied by high- or low-quality user-generated comments. The perceived quality of the proprietary message would be equal in both situations. If, however, the effect also extends to circumstances that favour online judgments, under such conditions the quality of the proprietary message would also be rated lower when it is accompanied by low-quality user-generated comments. Experiment 1 was designed to test which of these two possibilities is empirically valid.

Experiment 1

Methods

The first research question was answered based on data from a randomised 2 × 2-factorial online experiment in which participants read a news article accompanied by user comments on a website and completed a questionnaire. The between-subjects factors were *comment quality* (being low or high based on the use of reasoning), and *the judgment conditions* with which the participants were confronted (favouring either memory-based or online inferences).

Procedure and participants. Invitations to participate in the study were posted to the members of a non-commercial online access panel maintained by a communication science institute at a German university. Participation was incentivised by raffling two Amazon gift cards among participants. Screenshots of the stimuli were integrated into the online questionnaire, which started with questions regarding the participants' demographic characteristics. The participants were then randomly assigned to one of the four experimental conditions. Based on this, prior to stimulus exposure, participants received one of two instructions, the first part of the manipulation of the judgment condition. They were then exposed to the stimulus page featuring a news article that was either accompanied by unsubstantiated or substantiated user comments. Once they had finished reading, the participants responded to a series of questions about the quality of the news item, with the article being either perceptually available or perceptually unavailable to them (the second part of the judgment condition manipulation).

The sample consisted of 98 respondents who were 40 years of age on average ($SD = 16.7$), the majority of whom were female (58.2%). Regarding formal education, 48% held a tertiary level degree (at least a bachelor's or equivalent), 29.6% held an upper secondary level degree, and for 22.4% the highest level of education was a lower secondary level degree.

Stimulus material and manipulation of comment quality. A screenshot of a fictitious news web page mirroring the design of real news sites was embedded in the questionnaire as the stimulus. The web page contained a short journalistic article discussing the issue of the legalisation of marijuana consumption. The article was balanced in terms of discussing the pros and cons of the issue. Furthermore, there was a comments section below the article that contained four reader comments in each condition. The first comment was in favour, the second and third comments against, and the fourth comment was in favour of the legalisation of

marijuana consumption. Everything except the use of reasoning in the comments was kept constant across the experimental conditions.

Given that we chose to explore the problem of judgment bias due to user-generated content in the context of participatory news websites, for four reasons we have decided to manipulate comment quality by varying the use of reasoning in the comments. First, user comments on news are frequently viewed as a form of public discourse, and from the normative point of view of democratic theory, the use of reasoning is a desirable feature of such discourse (e.g. Ruiz et al., 2011). It is from this perspective that reasoning in user comments is conceived of as an indication of quality. Second, for the sake of external validity we did not use a variation of civility to manipulate comment quality. News organisations increasingly implement pre- and post-publication comment moderation strategies aimed at decreasing or even preventing incivility in their comments sections (e.g. Frischlich, Boberg, & Quandt, 2019; Ksiazek, 2018). Users may therefore be less likely to be confronted with this form of low-quality comments in the future (at least in the context of professional journalism). By contrast, a lack of reasoning in comments is a form of low-quality commenting that is less likely to disappear. Even though comment moderators are concerned with argument quality, a lack of substantiation is unlikely to lead to comment deletion but rather only to lower appreciation by comment curators (e.g. Diakopoulos, 2015). Judgment biases that emanate from this form of low-quality commenting are therefore likely to remain relevant in the future. Third, despite these concerns regarding external validity and the relative higher prevalence of unsubstantiated (as compared to insulting or derogatory) comments (Ruiz et al., 2011), most of the existing research on the effects of low-quality user comments uses variations of (in-)civility to manipulate comment quality. Therefore, knowledge on the effects of low-quality comments based on a lack of reasoning is still limited

(Prochazka et al., 2018; Weber et al., 2019). Fourth, in current theory, the judgment-biasing effect of unsubstantiated comments is largely attributed to flawed retrieval of information from memory during the judgment process (Weber et al., 2019). It therefore seems especially unlikely that this effect also occurs under online judgment conditions where users need not rely on their memory to form a judgment. Against this background, varying the use of reasoning for manipulating comment quality was chosen to provide a test of the effect's robustness under conditions where it (theoretically) is especially unlikely.

The quality of reasoning in the comments varied according to the different use of substantiation for the position that was advocated in the comments. Substantiated user comments stated a conclusion (e.g. "Marijuana should remain illegal") and also gave reasons for this conclusion (e.g. "Because it can act as a gateway drug"). Unsubstantiated user comments expressed opinions without giving reasons for the stated conclusion (e.g. "Marijuana should be legalised, that is clear"). This manipulation mirrors Govier's (2010) theoretical conceptualisation of argument. Additionally, a pretest of the stimulus material was conducted to assess whether these manipulations affect the overall perception of the comments section as intended ($N = 100$ participants, 59.0% female, $M_{age} = 34.2$ years [$SD = 14.4$], 46.5% with a tertiary level degree). The stimulus material and the experimental design of this pretest were identical to those of the main study except there was no experimental factor for the judgment conditions. Participants were instructed to evaluate the comments. Perceived lack of reasoning was measured with five items (e.g. "The comments only voiced opinions but no reasons were given for these opinions") on 5-point Likert-type scales ($1 = do\ not\ agree\ at\ all$ to $5 = agree\ completely$), and the scores were averaged (Cronbach's $\alpha = .88$, $M = 2.81$, $SD = 1.10$) to create an index of perceived lack of reasoning in the comments. To check whether the manipulation also influences another

dimension of comment quality, five additional items were to capture perceived incivility in the comments (e.g. "The comments were impolite") on the same scales, and the scores were averaged ($\alpha = .86$, $M = 2.17$, $SD = .81$). Perceived lack of reasoning was affected by the manipulation, $t(87.9) = -8.07$, $p < .001$ two-tailed, with participants that were exposed to the substantiated comments perceiving less lack of reasoning ($M = 2.12$, $SD = .71$) than participants exposed to the unsubstantiated comments ($M = 3.51$, $SD = .98$). Perceived incivility was unaffected by the use of reasoning in the comments, $t(95) = -.71$, $p = .48$ two-tailed. Another pretest using the same experimental design was to clarify whether the manipulations affected the perceived realism of the stimuli. Participants ($N = 45$, 57.8% female, $M_{age} = 37.2$ years, $SD = 16.1$, 51.1% with a tertiary level degree) were asked to rate the realism of the comments on the same 5-point scales using six items (e.g. "Comments like these are typical examples of user comments," $\alpha = .92$). The scores were averaged to create an index of perceived realism. A grand mean of 3.84 ($SD = .94$) shows that, on average, the stimuli were perceived as realistic. Furthermore, the use of reasoning in the comments did not affect the comment's perceived realism, $t(38.8) = .15$, $p = .88$ two-tailed. Based on the pretests' results, we are confident that any differences that emerge between the quality conditions in the experiment are attributable to the (non-)use of reasoning in the comments and not to any other perceived differences in the stimulus material.

Manipulation of judgment conditions. The judgment conditions were varied following the procedures developed by Hastie and Park (1986; see also Hastie & Pennington, 1989), and the treatment consisted of a pre- and a post-stimulus-exposure component. In the memory-based condition, prior to stimulus exposure participants were instructed to read a given article as they would ordinarily read news online and were then exposed to the stimulus. They were given no

information on the purpose of this exposure. When they had finished reading the article, they left the stimulus page and were asked to evaluate the quality of the article—with the article itself being perceptually unavailable to them at that time (and participants couldn't return to the stimulus page).

By contrast, in the online condition, prior to stimulus exposure participants were told that their evaluation of the journalistic text's quality would be of interest; the nature of this judgment was explained by instructing participants to pay attention to respective quality criteria (e.g. representation of relevant facts and arguments in the text) while reading the article. Then, with this judgment task in mind, they were exposed to the stimulus. Subsequent to stimulus exposure, the pre-announced judgment on the article was called for, with the stimulus being perceptually available to the respondents on the same page of the questionnaire (placed right of the item battery that was used to measure their quality judgments).

It is important to note that this treatment was intended to manipulate the mere conditions under which the judgment was made (because we asked about the effect's robustness across *conditions* with respect to *situations*). However, based on the results obtained by Hastie and Park (1986), in using these procedures it is also safe to say that under these conditions inferences are highly likely to be either based on remembered information about the exposure situation or to be made while the judgment-relevant information is perceptually available.

Measurement of perceived article quality. Participants' assessments of the proprietary message's quality were measured using four statements rated on 6-point Likert-type scales (1 = *don't agree at all* to 6 = *agree completely*). They referred to the article's perceived informational quality ("The article gives a good orientation to the topic", "The article provides important information on the topic", "The article illustrates different points of view on the

problem", "The article presents relevant facts and arguments") because the results of Prochazka et al. (2018) suggest that biasing effects of low-quality comments are most likely to occur in matching dimensions, i.e. when the proprietary message's quality is rated on the same dimension in which the comments' quality varies (and we assumed that the use of reasoning affects the comments' informational quality). Additionally, respondents graded the article on a scale ranging from 1 (*insufficient*) to 6 (*very good*). Responses to all items ($\alpha = .86$) were averaged to form an index of perceived article quality ($M = 4.12$, $SD = 1.00$).

Results

We conducted an analysis of variance (ANOVA) to answer our research question. The results showed that there was a main effect of comment quality on the perceived article quality, $F(1, 94) = 4.26$, $p = .04$, part. $\eta^2 = .04$. The article's informational quality was perceived to be lower when it was accompanied by unsubstantiated ($M = 3.93$, $SE = .14$) as compared to substantiated comments ($M = 4.34$, $SE = .14$). Importantly, the biasing effect of comment quality was not contingent on the judgment condition, as indicated by a non-significant interaction between comment quality and judgment condition, $F(1, 94) = .44$, $p = .51$. Furthermore, there was no main effect of the judgment condition, $F(1, 94) = 1.95$, $p = .17$. Thus, the user-generated comments' quality affected the perceived quality of the journalistic article equally under both judgment conditions.

Discussion

We found that the judgment-biasing effect of user comment quality is robust across judgment conditions, i.e. that it also extends to situations in which users have the focal judgment in mind when being exposed to the to-be-judged proprietary message and in which this message is perceptually available to them when they express their judgment on it. Given the current state

of theory development, it is quite puzzling that the effect also occurred in the online judgment condition: all existing explanations see the judgment-biasing effect as emanating from biased encoding and flawed retrieval of information—that is, as essentially anchored in memory processes. It seems, however, rather unlikely that such processes play a major role when users are aware of the judgment task (so that it is likely that they process the judgment-relevant proprietary message during exposure as more goal-directed) and need not rely on potentially incorrectly and incompletely remembered information to form a judgment because the relevant information is fully available to them. So how can the judgment-biasing effect of comment quality under online judgment conditions be explained?

One possible explanation is that users do not discriminate between professionally generated proprietor and user-generated content when judging the quality of a web page's content but rather evaluate the web page's content holistically. That is, when judging naively, they do not focus (and restrict) their judgment on the proprietor content because the difference between the two content types is not salient to them.

Such holistic judgments might have been furthered by a methodical detail of experiment 1: to measure participants' quality judgments, we unintentionally used a possibly ambiguous term to designate the to-be-judged object, namely the German word "Beitrag". The conventional and intended meaning is "journalistic article", and all the study's instructions (especially in the online judgment condition) suggested that this is the term's intended reading. The term, however, also has a broader meaning in the sense of "contribution". If participants understood the term this way it is possible that they thought all the content that was displayed on the web page was the object of their judgment and so did not discriminate between the different contributors (i.e. between users contributing comments and journalists contributing the news

article). Thus, it is possible that they judged the entire web page content because the difference between the content types was not salient during judgment. We conducted a second experiment to explore this possibility.

Experiment 2

If the assumption is valid that the judgment-biasing effect of comment quality is the result of a lack of discrimination between the different authorial sources during judgment, comment quality shouldn't bias the judgment under online conditions when users are highly aware of the qualitative differences between the authorial sources from which the messages on the web page emanate and when they consequently explicitly restrict their judgment to the central message from the web page's proprietor. To test the assumption, experiment 2 therefore compared the effects of comment quality in naive vs informed judgment under online judgment conditions.

Methods

Design, procedure, and sample. Experiment 2 employed a randomised 2 (high vs low comment quality) × 2 (naïve vs informed judgment)-factorial design. Invitations to participate in the study were sent to student assistants' personal online networks and further distributed by the individuals in these networks. Participants completed a questionnaire online, starting with questions regarding demographic characteristics. Subsequently, they were assigned to one of the four experimental conditions, read a news article accompanied by user comments that was embedded in the questionnaire, and finally answered questions about the article's quality. The procedure was largely identical to that in experiment 1; however, there was only the online judgment condition (i.e. the stimulus was perceptually available to the respondents when the judgment on the news item was requested).

The sample consisted of 130 respondents, M_{age} = 30.1 years (SD = 14.8); 62.3% were female. Twenty-one and a half percent held a tertiary level degree (at least a bachelor's or equivalent) as the highest degree of formal education, 50.8% an upper secondary level degree, and for 26.9% the highest level of education was a lower secondary level degree.

Manipulation of comment quality. Comment quality was manipulated by varying the use of reasoning in the comments, and for this purpose, experiment 2 used the same pretested stimulus material as experiment 1.

Manipulation of judgment: naïve vs informed. The procedures to create online judgment conditions resembled those of experiment 1. Specifically, in all of the experiment's conditions, the stimulus was perceptually available to the respondents when their judgment on the article's quality was called for. In the naïve judgment condition, no further information and instructions were given to the respondents.

By contrast, in the informed judgment condition, additional information and instructions were provided. Prior to stimulus exposure, participants were alerted that the following web page would contain a "professional journalistic article as well as comments from readers, i.e. lay people who are not professional journalists" to make salient to them that content from qualitatively different authorial sources would be displayed on the website. Subsequent to stimulus exposure, as the judgment was requested, respondents were alerted that the statements used for measurement "refer only to the professional journalistic article and not to the readers' comments", and they were instructed to "consider only the professional article and not what had been written in the comments of the laymen" in their answers.

The study included two measurements to enable checking whether these procedures altered the judgment conditions as intended. Firstly, at the end of the questionnaire participants

completed a recall test to assess whether they read the information given to them. They were asked which information was contained in the instructions they had received prior to stimulus exposure. The respondents could choose between three answers, with one being "In addition to a professional journalistic article, the web page also contains comments from readers, i.e. lay people who are not professional journalists." Eighty-five percent of the participants in the informed condition correctly remembered having received this information compared to 1% in the naive condition who incorrectly remembered this information, $\chi^2(1) = 91.48$, $p < .001$. Based on this, we assume that the awareness of the different authorial sources of the web page's content was more salient among the participants in the informed judgment conditions.

Secondly, after the quality judgments had been made, one question asked about the participants' attempts to focus their judgment solely on the journalistic article ("I paid special attention to the fact that my assessment refers only to the article and excludes the reader comments"), and they answered on a 6-point Likert-type scale (1 = *doesn't apply at all* to 6 = *applies completely*). An ANOVA showed that the manipulation was successful. Informed participants tried to exclude the comments from their judgments ($M = 5.29$, $SE = .18$) more than naïve participants did ($M = 4.63$, $SE = .18$), $F(1, 126) = 7.03$, $p < .01$. Their attempts were unaffected by comment quality, $F(1, 126) = 1.39$, $p = .24$, and the two manipulations did not interact in affecting participants' attempts to focus their judgment solely on the journalistic article, $F(1, 126) = .07$, $p = .79$. We thus conclude that judgment conditions and comment quality were manipulated independently and as intended.

Measurement of perceived article quality. Measures were identical to those in experiment 1 except that the to-be-judged object was designated unambiguously by using the German word "Artikel" instead of "Beitrag" ($\alpha = .90$, $M = 3.71$, $SD = 1.08$).

Results

      To test whether or not comment quality biased the judgment in naïve as well as informed judgment an ANOVA was conducted with the data generated in experiment 2. Results showed that the effect of comment quality did not differ across judgment conditions, $F_{\text{comment quality} \times \text{judgment}}(1, 126) = .20, p = .66$. There was, however, a main effect of comment quality, $F(1, 126) = 4.60, p = .03$, part. $\eta^2 = .04$. So whether judging in an informed fashion or naively, the participants rated the journalistic article as being lower in quality when it was accompanied by unsubstantiated user comments ($M = 3.52, SE = .13$) than when accompanied by reasoned comments ($M = 3.91, SE = .13$).

      Surprisingly, the main effect of the judgment condition was also significant, $F(1, 126) = 6.47, p = .01$, part. $\eta^2 = .05$. When the instructions highlighted the difference between the web page contents' sources and directed the respondents to focus their judgment solely on the article, the journalistic article was rated to be of higher quality ($M = 3.95, SE = .13$) than when respondents judged naively, i.e. without having received this information and instructions ($M = 3.48, SE = .13$).

Discussion

      Experiment 2 showed that the judgment-biasing effect of comment quality under online judgment conditions is not attributable to users' lack of discrimination between the two different contents contributed by different authorial sources on the web page. Even when users were highly aware of the qualitative differences between the sources of the contents on the web page and tried to restrict their quality judgments to the central message from the web page's proprietor, the user-comments' quality biased these judgments.

The significant main effect of the judgment condition, first of all, constitutes further evidence that the experimental treatment effectively manipulated the judgment condition. In addition, the observed effect can be explained post hoc by assimilation-contrast theory (Mussweiler, 2003), according to which the evaluation of an object (i.e. the journalistic article) frequently depends on its pertinent context (i.e. the user-generated comments): the instructions in the informed judgment condition have likely increased the perceived qualitative dissimilarity between the to-be-judged object and its context, which, according to the theory, leads to a contrast effect in the evaluation of the object, expressing itself in our experiment in a more positive judgment of the proprietary article (relative to the naïve judgment condition). The increased perceived dissimilarity, however, did not prevent the biasing effect of user comment quality.

General discussion

The conjoint display of content from different authorial sources on single web pages is a defining feature of contemporary computer-mediated communication (Walther & Jang, 2012). Current research has shown that the quality of user-generated content in the form of comments can bias perceptions of the quality of the proprietor content on a web page (Anderson et al., 2018; Kim & Sun, 2006; Prochazka et al., 2018; Searles et al., 2018; Weber et al., 2019). Our studies aimed to explore the generality of such effects.

Specifically, the research design of existing studies implies that the occurrence of biasing effects could be limited to judgment situations where the judged proprietor content is not accessible to sensual perception (and where the judgment is irrelevant and its nature unknown when this content is indeed perceptible) so that one must rely on remembered information about the to-be-judged proprietor content to form a judgment. Our first study shows that judgment-

biasing effects of user comments are not limited to these judgment conditions and that they can also occur when the proprietor content is sensually perceptible during judgment and the judgment task is known when being exposed to this content. The second study shows that, under these conditions, the effect even occurs when users are highly aware that the web page's content stems from qualitatively different authorial sources, when the contents' qualitative difference is salient to them, and when they consciously try to shield their judgments from the user-generated content's influence.

Thus, the main contribution of our studies is having shown that comments-induced biases in evaluating proprietary web page content are robust under a variety of judgment conditions. This not only answers questions about the generality and relevance of this effect but it also raises new questions. Chief among them is the question of *why and how* judgment-biasing effects of comment quality occur under online judgment conditions. Our second experiment ruled out the possibility that they are the result of evaluating the web page's content holistically, i.e. the result of a lack of discrimination between user-generated und proprietor content during judgment. Furthermore, it is unlikely that they are the result of misattributing the user-generated content quality on the proprietor content due to flawed retrieval of information from memory (which is a central explanatory mechanism in memory-based judgments; cf. Weber et al., 2019) because users need not rely on remembered information to form a judgment. To enable a more comprehensive understanding of the judgment-biasing effects of user comments, future research should therefore develop theoretical explanations of these effects under online judgment conditions and test their empirical validity.

As already known from the existing research and again evidenced by the small effect sizes in our two experiments, user-comment quality's effects on judgments on proprietary web

page-content are rather small. In light of our results, however, they appear to be very robust. It seems, therefore, likely that they occur frequently during computer-mediated communication, that they accumulate and lead to more substantial and general effects over time, e.g. to distrust in web page proprietors and their contents. The prerequisite for effectively counteracting such effects is a comprehensive understanding of how they arise. This is another reason why continued research on the cause of judgment-biasing effects of user-generated content is urgently needed.

Further future research questions flow from the limitations that emanate from our experimental set-up. Regarding generalisability, an important limitation might result from the fact that we explored judgment-biasing effects of comment quality under online judgment conditions in the context of news and journalism. Further limitations might arise from the fact that we varied the use of reasoning to manipulate the comments' quality and that we used a fictitious and thus unknown brand for the web page on which the proprietor and the user-generated content were exposed. Whether our results can be generalised to communication contexts beyond news and journalism, to situations in which the comments' quality varies in other dimensions (e.g. incivility), and to situations where users have a pre-existing image of the web page's proprietor remain open questions that can only be answered by further research. We recommend that these boundary conditions be addressed in future studies.

References

Anderson, A. A., Brossard, D., Scheufele, D. A., Xenos, M. A., & Ladwig, P. (2014). The "nasty

    effect:" Online incivility and risk perceptions of emerging technologies. *Journal of*

    Computer-Mediated Communication, *19*(3), 373–387. https://doi.org/10.1111/jcc4.12009

Anderson, A. A., Yeo, S. K., Brossard, D., Scheufele, D. A., & Xenos, M. A. (2018). Toxic Talk:

    How online incivility can undermine perceptions of media. *International Journal of*

    Public Opinion Research, *30*(1), 156–168. https://doi.org/10.1093/ijpor/edw022

Chen, G. M., & Ng, Y. M. M. (2017). Nasty online comments anger you more than me, but nice

    ones make me as happy as you. *Computers in Human Behavior*, *71*, 181–188.

    https://doi.org/10.1016/j.chb.2017.02.010

Coe, K., Kenski, K., & Rains, S. A. (2014). Online and uncivil? Patterns and determinants of

    incivility in newspaper website comments. *Journal of Communication*, *64*(4), 658–679.

    https://doi.org/10.1111/jcom.12104

Diakopoulos, N. (2015). Picking the NYT Picks: Editorial criteria and automation in the curation

    of online news comments. *ISOJ Journal*, *5*(1), 147–166.

Frischlich, L., Boberg, S., & Quandt, T. (2019). Comment sections as targets of dark

    participation? Journalists' evaluation and moderation of deviant user comments.

    Journalism Studies, *19*(2), 1–20. https://doi.org/10.1080/1461670X.2018.1556320

Gonçalves, J. (2018). Aggression in news comments: How context and article topic shape user-

    generated content. *Journal of Applied Communication Research*, *46*(5), 604–620.

    https://doi.org/10.1080/00909882.2018.1529419

Govier, T. (2010). *A practical study of argument* (7th ed.). Belmont, CA: Cengage Learning.

Han, S.-H., Brazeal, L. M., & Pennington, N. (2018). Is civility contagious? Examining the

impact of modeling in online political discussions. *Social Media + Society*, *4*(3),

205630511879340. https://doi.org/10.1177/2056305118793404

Hastie, R., & Park, B. (1986). The relationship between memory and judgment depends on

whether the judgment task is memory-based or on-line. *Psychological Review*, *93*(3),

258–268. https://doi.org/10.1037/0033-295X.93.3.258

Hastie, R., & Pennington, N. (1989). Notes on the distinction between memory-based versus on-

line judgments. In J. N. Bassili (Ed.), *On-line cognition in person perception* (pp. 1–17).

Hillsdale, N.J: L. Erlbaum.

Hsueh, M., Yogeeswaran, K., & Malinen, S. (2015). "Leave your comment below": Can biased

online comments influence our own prejudicial attitudes and behaviors? *Human

Communication Research*, *41*(4), 557–576. https://doi.org/10.1111/hcre.12059

Jennings, F. J., & Russell, F. M. (2019). Civility, credibility, and health information: The impact

of uncivil comments and source credibility on attitudes about vaccines. *Public

Understanding of Science.* Advance online publication.

https://doi.org/10.1177/0963662519837901

Kim, E.-M., & Sun, Y.-H. (2006). The effect of replies in Internet news on the audience. *Korean

Journal of Journalism & Communication Studies*, *50*, 33–64.

Kim, Y., & Hwang, H. (2018). When partisans see media coverage as hostile: The effect of

uncivil online comments on hostile media effect. *Media Psychology*, *1*(47), 1–22.

https://doi.org/10.1080/15213269.2018.1554492

Ksiazek, T. B. (2018). Commenting on the news. *Journalism Studies*, *19*(5), 650–673.

https://doi.org/10.1080/1461670X.2016.1209977

Lee, E.-J., & Jang, Y. J. (2010). What do others' reactions to news on internet portal sites tell us? Effects of presentation format and readers' need for cognition on reality perception. *Communication Research*, *37*(6), 825–846. https://doi.org/10.1177/0093650210376189

Muddiman, A., & Stroud, N. J. (2017). News values, cognitive biases, and partisan incivility in comment sections. *Journal of Communication*, *67*(4), 586–609. https://doi.org/10.1111/jcom.12312

Mussweiler, T. (2003). Comparison processes in social judgment: Mechanisms and consequences. *Psychological Review*, *110*(3), 472–489. https://doi.org/10.1037/0033-295X.110.3.472

Post, S., & Kepplinger, H. M. (2019). Coping with audience hostility: How journalists' experiences of audience hostility influence their editorial decisions. *Journalism Studies*, *30*(1), 1–21. https://doi.org/10.1080/1461670X.2019.1599725

Prochazka, F., Weber, P., & Schweiger, W. (2018). Effects of Civility and Reasoning in User Comments on Perceived Journalistic Quality. *Journalism Studies*, *19*(1), 62–78. https://doi.org/10.1080/1461670X.2016.1161497

Rösner, L., Winter, S., & Krämer, N. C. (2016). Dangerous minds? Effects of uncivil online comments on aggressive cognitions, emotions, and behavior. *Computers in Human Behavior*, *58*, 461–470. https://doi.org/10.1016/j.chb.2016.01.022

Ruiz, C., Domingo, D., Mico, J. L., Diaz-Noci, J., Masip, P., & Meso, K. (2011). Public shere 2.0? The democratic qualities of citizen cebates in online newspapers. *The International Journal of Press/Politics*, *16*(4), 463–487. https://doi.org/10.1177/1940161211415849

Searles, K., Spencer, S., & Duru, A. (2018). Don't read the comments: The effects of abusive comments on perceptions of women authors' credibility. *Information, Communication & Society*, *8*(1), 1–16. https://doi.org/10.1080/1369118X.2018.1534985

Thorson, K., Vraga, E., & Ekdale, B. (2010). Credibility in context: How uncivil online commentary affects news credibility. *Mass Communication and Society*, *13*(3), 289–313. https://doi.org/10.1080/15205430903225571

Tsfati, Y. (2003). Media skepticism and climate of opinion perception. *International Journal of Public Opinion Research*, *15*(1), 65–82. https://doi.org/10.1093/ijpor/15.1.65

Waddell, T. F. (2018). The authentic (and angry) audience. *Digital Journalism.* Advance online publication. https://doi.org/10.1080/21670811.2018.1490656

Walther, J. B., & Jang, J.-w. (2012). Communication processes in participatory websites. *Journal of Computer-Mediated Communication*, *18*(1), 2–15. https://doi.org/10.1111/j.1083-6101.2012.01592.x

Wang, M. Y., & Silva, D. E. (2018). A slap or a jab: An experiment on viewing uncivil political discussions on facebook. *Computers in Human Behavior*, *81*, 73–83. https://doi.org/10.1016/j.chb.2017.11.041

Weber, P. (2014). Discussions in the comments section: Factors influencing participation and interactivity in online newspapers' reader comments. *New Media & Society*, *16*(6), 941–957. https://doi.org/10.1177/1461444813495165

Weber, P., Prochazka, F., & Schweiger, W. (2019). Why user comments affect the perceived quality of journalistic content: The role of judgment processes. *Journal of Media Psychology*, *31*, 24-34. https://doi.org/10.1027/1864-1105/a000217

Ziegele, M., Koehler, C., & Weber, M. (2018). Socially destructive? Effects of negative and

hateful user comments on readers' donation behavior toward refugees and homeless

persons. *Journal of Broadcasting & Electronic Media*, *62*(4), 636–653.

https://doi.org/10.1080/08838151.2018.1532430

Zillmann, D., & Brosius, H.-B. (2000). *Exemplification in communication: The influence of case*

reports on the perception of issues. Mahwah, NJ: Erlbaum.

Footnotes

[1] Regarding basic terminology, this article relies on Walther & Yang (2012) who defined *proprietor content* as "the messages composed and displayed by the primary author or proprietor of a webpage" (pg. 3), and *user-generated content* as "the messages that participatory websites invite, capture, and display from nonproprietary visitors" (pg. 4).