
What Do Others' Reactions to News on Internet Portal Sites Tell Us? Effects of Presentation Format and Readers' Need for Cognition on Reality Perception

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Abstract

The present experiment investigated if and how other readers' reactions to news on Internet portal sites affect individuals' perceptions of public opinion, assessments of media influence, and their personal opinion. In so doing, others' responses were shown as either individual comments or aggregate approval ratings of the article, and the individual's need for cognition (NFC) was considered as a potential moderator of their relative effects. High NFC individuals relied more on the approval ratings than individual postings in estimating media influence on general public, but low NFC individuals' presumption about media influence remained unaltered, regardless of how others' reactions were presented. However, exposure to dissenting comments led both high and low NFC individuals to perceive the public opinion as more discrepant from the news position, with no corresponding effect for approval ratings. Others' comments significantly affected participants' personal opinion, but only for those less prone to engage in analytical thinking.

Keywords

exemplification theory, need for cognition, online journalism, presumed media influence, public opinion

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The question of how to understand the relationship between mass and interpersonal communication has long been at the center of much scholarly discussion in our field. In the two-step flow model of communication, for example, opinion leaders are considered to serve as a mediator, interpreting and disseminating information they have received from the media to those less media-savvy (Katz & Lazarsfeld, 1955; Lazarsfeld, Berelson, & Gaudet, 1944). Although the focus was shifted to the active audience who deliberately seek particular media offerings to fulfill their needs, the uses and gratifications tradition also proposed interpersonal utility as one of the primary motives of media use, highlighting that the need for smoother interpersonal interaction promotes media use (Blumler & Katz, 1974; Rubin, 1983). Acknowledging the complementary nature of these two communication channels, Chaffee (1982) claimed that "the most likely effect of communication ... is further communication" (p. 72); that is, people not only distribute and reference information obtained from the mass media in their interpersonal encounters but also exposure to media messages might also stimulate them to seek further information from others within their social network. Moving beyond these somewhat simplistic notions of which influences which, more recent developments tend to focus on the interaction between the two. For example, the differential gains model posits that interpersonal discussion, whether it occurs in Internet chat rooms or face-to-face, moderates the extent to which public affairs media use fosters political participation, serving as a catalyst for media effects (Hardy & Scheufele, 2005).

Despite subtle variations in their theoretical foci, aforementioned models similarly assume two distinctive, and normally sequential, forms of human communication. However, such an assumption may not hold true when we consider readers' comments available on Internet news sites (e.g., the *New York Times*), an increasingly common element of online journalism. Ranging from sound counterarguments to the journalist's claim, to personal stories associated with the featured event, to seemingly random remarks irrelevant to the article, Internet news readers' spontaneous comments differ from media messages in that no formal gatekeeping is involved in their mass circulation and consumption; that is, lay citizens' purely personal opinions, which would have never been considered as newsworthy by journalistic standards, can now be freely expressed and get noticed in this nascent venue.

Especially in South Korea, readers' comments have become one of the signature characteristics of online news services. According to a recent nationwide audience survey (Oh, 2008), 59.2% of the respondents reported that they read news on the Internet, and top five Internet portal sites accounted for 89.2% of the online news traffic. Although specific features vary slightly, all of these portal sites allow readers to leave and read comments. Not only are readers' comments widely available on Internet portals but they are also frequently read; 84.3% of Internet news users reported reading others' postings at least once a week (Na & Rhee, 2008). Moreover, comment-writing is not the only way Internet news readers can express their opinions about the news event. On two major news portals, Nate and Paran, readers can also indicate whether they agree or disagree with the article or would recommend it to others or not, and their votes are aggregated into overall approval ratings displayed adjacent to the article.

Such juxtaposition of a news story and readers' unfiltered reactions to it represents an unprecedented intersection between the two traditionally separate processes, mass and interpersonal communication. Particularly germane to such changes is the influence of presumed media influence (IPI) model, which posits that "people perceive some effects of a message on others and then react to that perception" (Gunther & Storey, 2003, p. 199). That is, people tend to presume that mass media exert significant influence on others, and based on this potentially unwarranted presumption, they change their own attitudes and behaviors. However, the availability of other readers' immediate reactions to news on Internet portal sites seems to call this assumption of "presumed" media influence into question. What would happen if, for example, the majority of readers' postings counter the journalist's claims, question the credibility of the source, and/or present alternative viewpoints? Will people then modify their presumption about media influence in light of these cues, rather than naively assuming its mighty power?

In fact, Lee (2010) has investigated how other readers' postings associated with a news article, either congruent or incongruent with the news slant, affect news recipients' perceptions of public opinion and their assessments of media influence. Results showed that participants inferred the opinion climate to be more discrepant from the news position and estimated less media influence on generalized others, when exposed to the incongruent rather than the congruent comments. To further elucidate how the exposure to other readers' reactions to news alters individuals' perceptions of social reality and their personal opinions, the current research extends this line of research in several respects. First, by including the news-only condition with no readers' reactions attached, we purported to test directly the main proposition of the IPI model. That is, using a situation that more closely approximates the context of traditional news consumption, we measured what people "presume" in the absence of information about collective opinion, and we evaluated the effects of others' reactions against this baseline. Second, we focused on the possibility that others' reactions can have varying degrees of diagnostic value as an indicator of the general opinion climate, depending on how they are presented. Specifically, analogous to the comparison between exemplars and statistical summary as evidence to buttress persuasive messages (e.g., Baesler & Burgoon, 1994; Taylor & Thompson, 1982; Zillmann, 2002), readers' postings provide more vivid but less precise accounts of public reactions to the news content, whereas the aggregate approval ratings offer a pallid, yet more valid, summary of the distribution of public opinion. Thus we aimed to evaluate if individual comments and approval ratings differentially affect news readers' inferences about public opinion and media influence on it. Lastly, the present study addressed the question of how individuals' cognitive predisposition might moderate the relative effects of these cues on perceived media influence and their personal opinion. If the persuasive advantage of exemplars over statistical summary stems from their vividness and accessibility (Zillmann, 2002), and if accessibility of information exerts greater impact on subsequent judgments under low elaboration (Shrum, 2002), those who enjoy analytical and effortful thinking might be less influenced by concrete individual comments than by summary ratings. In contrast, those less prone to engage in cognitively demanding activities might be more strongly affected by vivid exemplars. By examining how readers' need for cognition (NFC) interacts with

the presentation format of reality cues, the present experiment assessed this theoretical possibility.

When Not to Presume Media Influence: Others' Reactions as a Cue to Public Opinion

Traditionally, newspaper reading is an individual activity, performed in isolation from others. Consequently, people remain largely unaware of what others have to say about the issue or how others think of the media coverage, until they get to discuss it with others later. In the case of television news, only a few coviewers, if any, are present at the time of exposure. Even so, because they tend to share similar beliefs and world views, they rarely offer a legitimate basis from which the general opinion climate can be reasonably inferred. However, Internet news readers' comments on or their aggregate ratings of a news article invite communication researchers to revisit this interpersonal-media dynamics in that (a) exposure to both news and the audience's reactions takes place *simultaneously* and (b) the boundary of (virtual) coviewers is significantly expanded to entail much more diverse individuals.

Albeit in different forms, some studies have examined how seeing others' reactions to a mass-mediated message changes individuals' evaluations of the message and its object. For example, Knobloch-Westerwick, Sharma, Hansen, and Alter (2005) reported that online portals' news recommendations have a significant impact on users' news choice. Varying the form of news recommendations, explicit (average rating by other readers) and implicit (times viewed by others), they found that higher explicit recommendations led to longer exposure to associated articles, whereas implicit recommendations yielded a curvilinear effect on the duration of exposure. If knowing how others rated the news article influences individuals' preexposure expectations of the news, seeing other readers countering the news position might also affect their postexposure reactions to it. Similarly, a more recent study (Fein, Goethals, & Kugler, 2007, Experiment 3) showed that fabricated audience reaction to the presidential debate, presented as real-time tracking of other people's reactions superimposed on the screen, significantly changed not only participants' own judgments of the candidates but also their estimates of each candidate's popularity among voters, suggesting that people infer the general opinion climate from a limited sample of audience reactions.

Extending the previous research on how exposure to others' reactions affects people's selection and interpretation of mediated messages, the present study focused on individuals' perceptions of social reality, especially in terms of what others think and what media do to others. According to the IPI model, the mass media exert indirect effects on their audience through individuals' media perception. That is, exposure to a media message leads people to presume its influence on *others* (i.e., persuasive press inference; Gunther, 1998), and whether accurate or not, such beliefs can induce actual attitudinal and/or behavioral changes in the *self* (e.g., Cohen, Tsafi, & Sheaffer, 2008; Gunther, Bolt, Borzekowski, Liebhart, & Dillard, 2006; Gunther & Storey, 2003). For example, when exposed to pro- or antismoking messages, adolescents came to believe that these messages would have

influenced their peers' smoking-related attitudes and behaviors, and these potentially erroneous beliefs in turn significantly changed their own smoking susceptibility in line with perceived peer norms (Gunther et al., 2006). Moreover, such indirect effects are not tied to particular media contents or genres. In Cohen et al.'s (2008) study, politicians who believed in the power of media expended greater efforts to appear in media coverage and consequently, attained greater media prominence; that is, it was the politicians' global presumption that the mass media, as an institution, have the power to shape the public opinion that eventually changed how they performed their duties.

The IPI model operates from the assumption that people are normally unaware of how others would respond to the media coverage. Because no data is available from which people can accurately infer the public sentiment about the news event, at least at the time of exposure, people come to rely on the powerful media schema (Gunther, 1998). Although Mutz and Soss (1997) adopted a different label, "impersonal impact," their findings also comport very well with this notion. Specifically, they found that intensive news coverage on a particular issue had significant influence on news recipients' perceptions of the political environment, namely, the salience the community attaches to the issue and perceived opinion climate. Lacking direct cues to the opinion climate, as has typically been the case with the traditional news media, it is quite understandable that people tend to "infer public opinion from (a) their subjective assessments of media content and (b) their assumptions that such content has a substantial influence on others" (Gunther & Christen, 1999, p. 277). The changing media environment, however, seems to challenge this taken-for-granted notion of pluralistic ignorance. With online new services increasingly integrating various types of interactive features to enable news readers to exchange their opinions, it becomes possible that people infer, more or less accurately, the opinion climate from these cues. After reading others' comments discrepant from the news slant or noticing high disapproval ratings of the article, for instance, people might realize that others are not as vulnerable to media influence as they thought and assess the public opinion differently.

Hypothesis 1: Compared to those who read only the news article, those exposed to others' reactions incongruent with the news slant will infer the public opinion to be more discrepant from the news position.

Hypothesis 2: Those exposed to others' reactions incongruent with the news slant will assume less news influence on general public than those reading only the news article.

Moreover, the effects of others' reactions might well go beyond perceptions of the public sentiment. Specifically, Yang (2008) independently manipulated the issue position of a news article and that of others' comments, and found that participants' personal opinion was more heavily influenced by the latter. Such effects, however, have not been consistently observed in other studies. For example, Lee and Sung (2007) reported that although positive comments on a news article (recalled as such by the participant) led to greater agreement with the article, neutral comments lowered news readers' agreement, and negative comments had no significant influence on readers' opinions. In another study

(Kim & Sun, 2006), when participants were asked how much they agreed with the issue position espoused by others' comments, they were more likely to agree with high- than low-quality comments, but the means were below the scale midpoint in both conditions, suggesting relatively weak effects. Despite some qualifications, however, the overall findings seem to indicate that readers' comments can inform an individual's personal-level judgments.

Hypothesis 3: Those exposed to others' reactions incongruent with the news slant will express opinions more discrepant from the new position than those reading only the news article.

Effects of Readers' Comments Versus Approval Ratings: Need for Cognition as a Moderator

Among various feedback options afforded by Internet news sites, the most common forms are readers' comments and aggregate approval ratings. Given that individual postings typically consist of personal thoughts and stories related to the focal issue, whereas the approval ratings simply show the total number of people indicating agreement or disagreement with the news article, these two forms roughly correspond to the often contrasted pair in the persuasion literature: exemplars and statistical summary. Just as stories are (a) based on a fewer number of individual cases and (b) "more concrete, more imagery provoking, and more colorful" than statistics (Baesler & Burgoon, 1994, pp. 584-585), individual comments normally entail a much smaller sample and offer more vivid episodic details than abstract numeric ratings do.

As a commonly used form of evidence to buttress the communicator's claims, exemplars, anecdotes, or testimonials are considered to be a relatively weak argument, because they lack generalizability to the entire population due to the small sample size. By contrast, summary statistics based on aggregated reports are seen as stronger evidence, which provide a more systematic or representative overview (Brosius & Bathelt, 1994; Petty, Cacioppo, & Goldman, 1981). Especially in the case of readers' comments, it is well known that comment-writing is heavily concentrated among the most outspoken. For example, one survey has reported that only about 2.5% of online news readers post their comments and among them, the top 5% accounts for over 30% of the postings (Kim & Hong, 2009, January 15). Despite the theoretical possibility that anyone and everyone can leave comments on the article of his or her interest, if in actuality comment-writing is confined to a small number of activists, readers' comments would have only limited evidentiary value in telling people what others think, as compared to overall approval ratings drawn from a significantly larger sample.

Previous research on the relative effectiveness of these two forms of evidence, however, does not necessarily support this seemingly intuitive and logical conjecture. Zillmann, Perkins, and Sundar (1992), for example, presented participants with a news story that contained the base-rate information about the percentage of dieters who regained weight,

in combination with different exemplar distributions. Even though the base-rate information was identical across conditions, those presented with only cases reporting weight-regain significantly overestimated the number of weight regainers than those exposed to exemplars consisting of an equal number of weight regainers and successful dieters, or those given the cases in proportion to the base rate. More directly pertinent to the current research is Brosius and Bathelt's (1994) study on how the use of illustrative individual cases (exemplars) and base-rate information as a part of journalistic practice affects news readers' perception about public opinion and their personal opinions. They found that even when "the base-rate information leaves no doubt about the majority opinion (p. 73)," exemplars exerted significant influence on the perceived distribution of public opinion, and to a lesser degree, the participants' personal opinions; that is, people seemed to directly translate the exemplar information into their judgments about the problem "by either regarding the exemplar as typical of all people affected by the problem or by overestimating the importance of a problem" (p. 49). In addition, the way exemplars were presented caused a significant difference, such that direct speech (i.e., live interviews of individuals) amplified the effects of exemplars on perceived majority/minority opinion, as compared to indirect speech (i.e., reporter summaries; Experiment 1). Given that individual postings capture direct quotes from the news readers, it seems plausible that they would have stronger influence on individuals' judgments about public opinion and their personal opinion than the approval ratings with all the juicy details left out.¹

The relative advantage of individual comments over summary ratings, however, might not be invariably observed. If the effect of exemplars stems mostly from the social perceivers' reliance on cognitive shortcuts, such as availability and representativeness heuristics (Zillmann & Brosius, 2000), it will be amplified when heuristic processing dominates, whereas systematic processing is likely to suppress it (Chaiken, 1980). In such a case, those who are chronically predisposed to engage in effortful cognitive activities (i.e., high need for cognition; Cacioppo & Petty, 1982) would be less susceptible to the influence of exemplars, as compared to their less analytical counterparts. In addition, if high NFC individuals tended to be more influenced by argument quality than lows (Cacioppo, Petty, Kao, & Rodriguez, 1986) and if statistical data are considered to be a stronger form of evidence than exemplars by virtue of their representativeness (Petty et al., 1981), it logically follows that high NFC individuals would place greater weight on approval ratings than on individual comments as a reality cue. Consistent with this reasoning, Braverman (2008) found that testimonial messages were more persuasive than informational ones with low NFC individuals, whereas both forms were equally persuasive with highs. In addition, although they did not focus on individual differences in cognitive style, Slater and Rouner (1996) also reported that those reading value-discrepant messages processed the messages peripherally and rated the messages with anecdotal evidence to be more persuasive and more believable than those without, with no such effects for statistical evidence. Collectively, these findings suggest that individual postings would exert greater influence on message recipients' reality perceptions than summary ratings would, especially among those who are less inclined to extensive cognitive processing.

Hypothesis 4a-c: Compared to approval ratings, individual postings will have greater influence on (a) perceived public opinion, (b) estimates of media influence, and (c) one's own opinion. However, such differences will be more pronounced among low than high NFC individuals.

Method

Participants

A total of 252 undergraduates (113 men, 139 women; age $M = 23.15$, $SD = 3.46$) recruited from several universities in South Korea participated in the Web-based experiment. To enhance ecological validity, they were instructed to take part in the study at their convenience, from where they felt most comfortable. When they accessed the designated Web site, they were randomly assigned to one of the three conditions: news-only, news-plus-individual comments or news-plus-approval ratings.

Procedure

After reading a brief description of the study and signing the informed consent form by clicking "Agree to participate," participants were taken to the next page where a news article was presented.² The stimulus was constructed using the layout of an existing online portal site (Paran News) because it displays readers' comments in their entirety, rather than showing only the first few words of each posting and requiring a click for the full view.

For added generalizability, participants were presented with two news articles on animal testing and content regulation over TV drama. The latter was an issue of much public debate in Korea due to the recent increase in graphic depictions of sex and violence as well as distorted human relationships. News articles were created by modifying previously published articles on the focal issues. The issue order (animal testing vs. TV drama regulation) was counterbalanced within each treatment condition.

The news headlines were designed to convey the news slant. For animal testing, it read, "Animal Testing, Threats to the Sanctity of Life, Animal Rights Groups Say." The article featured animal rights activists' claims that animal testing blatantly denies the dignity and sanctity of life and its results cannot be generalized to humans. Then it reported some factual information detailing the current status of animal testing and its legality in various countries. Likewise, for TV drama regulation, the news article was titled "The Rise of Sensationalism in TV Dramas: A Good Way to Release Stress." It mentioned that sensationalism is one of the most effective and easiest tactics for drama producers to achieve higher audience ratings. Then the article quoted an expert saying that TV dramas could offer a temporary respite from stressful reality and even bring catharsis to their viewers. To control for the potentially contaminating effects of the participants' preexisting attitudes toward the news source, source identifiers, such as news organization and the reporter's email address, were removed.

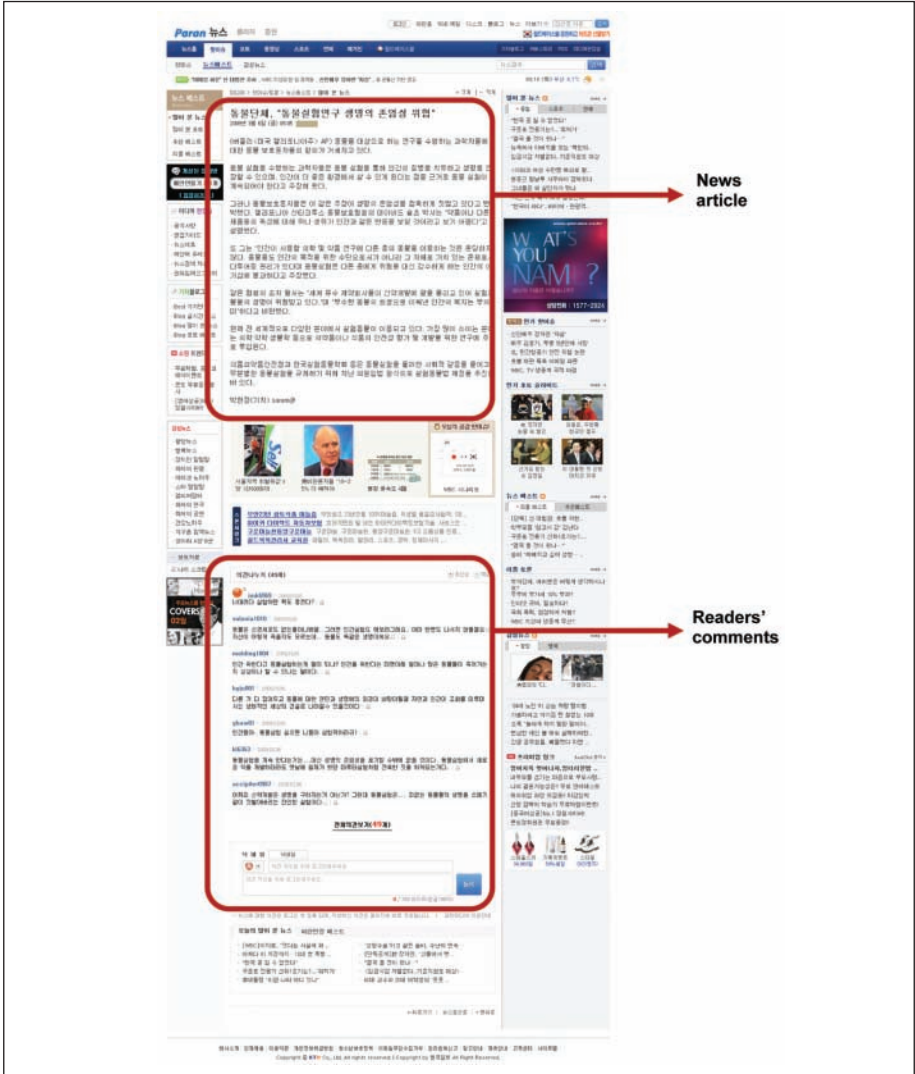


Figure 1. Screenshot of the news article and readers' comments

Readers' reactions were always discrepant from the news slant. For the individual comments condition, a total of seven readers' postings were displayed right below the news article, six of which represented the view opposite of the news position (see Figure 1). For example, in contrast to the news article supportive of the ban over animal testing, the majority of the postings opposed it (e.g., "Do you want human testing instead of animal



Figure 2. Screenshot of the news article and approval ratings

testing? Would you like to volunteer then? No one will dare to ... those animal rights people just say no w/o an alternative!"). Similarly, in response to the article against TV drama regulation, six out of seven postings endorsed just the opposite (e.g., "You journalist, do you really think those dramas help people to release their stress?? What's today's dramas got to do with public interest? TV should show what is right, especially when no one seems to care about morals!!"). On the other hand, for the approval ratings condition, the number of votes for and against the news article was displayed above and below the news article (see Figure 2). The proportion of approval versus

disapproval votes was matched to that of congruent versus incongruent comments in the individual comments condition (8:48 for animal testing and 21:126 for TV drama regulation). Those in the news-only condition read the articles with no readers' reactions attached.

Once the participants finished reading the news article and readers' reactions (if any), they filled out a questionnaire indicating their own opinion about the issue, their perceptions of public opinion, and their estimates of the influence of the article on general public. Then they were led to the second article and repeated the same procedure.

Index Construction

Participants were asked to indicate the extent to which they agreed with the statement regarding each issue on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*): "Animal testing should be banned" ($M = 3.47$, $SD = 1.60$) and "Demoralizing TV dramas should be subject to regulation" ($M = 3.63$, $SD = 1.79$). Using the same scale, they also estimated how much general public would agree with the statements on animal testing ($M = 3.28$, $SD = 1.36$) and TV regulation ($M = 3.88$, $SD = 1.41$), respectively. The scores for TV drama regulation were reverse-coded so that higher scores would indicate greater congruency with the news slant or greater discrepancy from readers' reactions.

For perceived influence of news, participants were asked (a) how much they thought the news article would influence the public opinion and (b) how much the public opinion about the issue would change after reading the article (1 = *not at all*, 7 = *very much*). Scores were averaged ($r = .80$, $M = 3.14$, $SD = 1.37$ for animal testing, $r = .70$, $M = 2.98$, $SD = 1.22$ for TV regulation).

The following six items were used to create the NFC index (Cacioppo & Petty, 1982; Cacioppo, Petty, & Kao, 1984): "I would prefer complex to simple problems," "I like to have the responsibility of handling a situation that requires a lot of thinking," "I would rather do something that requires little thought than something that is sure to challenge my thinking abilities (reverse-coded)," "I try to anticipate and avoid situations where there is likely chance I will have to think in depth about something (reverse-coded)," "I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought," "I feel relief rather than satisfaction after completing a task that required a lot of mental effort (reverse-coded)." Participants indicated how well each of the statements describes themselves on a 7-point scale (1 = *doesn't describe me at all*, 7 = *describes me very well*) and the scores were then averaged ($\alpha = .77$, $M = 4.08$, $SD = 1.05$). The cutoff for the median split was 4.00 while the means for low and high NFC groups were 3.22 and 4.91, respectively.

Results

Manipulation Check

To examine if the news articles and readers' reactions were perceived to represent discrepant issue positions as intended, participants were asked about their perceptions of the news

article and readers' reactions at the end of the posttest questionnaire. First, participants indicated what issue position they thought the articles promoted with respect to each statement (1 = *strongly disagree*, 7 = *strongly agree*): "Animal testing should be banned" ($M = 4.74$, $SD = 1.32$) and "Demoralizing TV dramas should be subject to regulation." ($M = 3.97$, $SD = 1.43$) Then, using the identical items, those in the individual comments condition indicated what position they thought the majority of the postings endorsed ($M = 2.40$, $SD = 1.32$ for animal testing, $M = 4.69$, $SD = 1.65$ for TV drama regulation). Paired-samples t test established that participants indeed perceived the news article and others' postings to favor significantly different issue positions, $t(76) = 9.54$, $p < .001$ for animal testing, $t(76) = -2.47$, $p = .02$ for TV regulation. Moreover, one-sample t test against the scale midpoint (4.00) confirmed that participants thought the article opposed animal testing, $t(76) = 4.91$, $p < .001$, whereas readers postings were perceived to support it, $t(76) = -10.62$, $p < .001$. However, participants perceived the article on TV dramas to neither approve nor disapprove content regulation, $t(76) < 1$ although they found readers' reactions to favor regulation, $t(76) = 3.66$, $p < .001$.

On the other hand, those in the approval ratings condition were asked which position the majority of votes favored on a dichotomized scale (i.e., for vs. against animal testing and TV drama regulation), with "not sure" as a third response option. Their responses were then recoded to reflect the accuracy of recall (1 = *correct recall*, 0 = *not sure*, -1 = *incorrect recall*; $M = .53$, $SD = .67$ for animal testing, $M = .41$, $SD = .77$ for TV drama). Unlike individual comments clearly conveying the writer's position on the issue, approval ratings simply indicated how many people agreed or disagreed with the article, not necessarily betraying their explicit opinions about the issue itself. Still, participants were significantly more likely to recognize the issue position as intended, $\chi^2(df = 2) = 35.63$, $p < .001$ for animal testing, $\chi^2(df = 2) = 22.89$, $p < .001$ for TV regulation. Moreover, one-sample t tests confirmed that the mean accuracy scores were significantly higher than zero for both animal testing, $t(80) = 7.11$, $p < .001$, and TV regulation, $t(80) = 4.76$, $p < .001$. Taken together, these results suggest that the manipulation of incongruency between the article and readers' reactions was successful.

Hypothesis Tests

To examine if people would infer public opinion from other readers' reactions ($H1$) and if individual comments and approval ratings have differential effects depending on the individual's NFC ($H4a$), a 3 (no reactions vs. individual comments vs. approval ratings) \times 2 (low vs. high NFC) \times 2 (animal testing vs. TV regulation) repeated-measures ANOVA was performed on perceived public opinion, with the issue as a within-subjects factor. Results showed that participants' perceptions of the opinion climate varied significantly as a function of others' reactions, $F(2, 246) = 16.67$, $p < .001$, $\eta_p^2 = .12$ (see Table 1 for descriptive statistics). Specifically, a post hoc Scheffe test revealed that those exposed to others' postings inferred the public opinion to be significantly more discrepant from the news position,

Table 1. Means and Standard Errors of all DVs

Condition	High NFCs	Low NFCs
DV: Perceived public opinion		
News only	3.86 (.15)	3.92 (.14)
+ Summary ratings	3.83 (.15)	4.09 (.16)
+ Individual postings	2.90 (.16)	3.41 (.16)
Total	3.53 (.09)	3.81 (.09)
DV: Perceived news influence		
News only	3.41 (.16)	3.20 (.15)
+ Summary ratings	2.68 (.16)	3.07 (.17)
+ Individual postings	3.03 (.17)	2.95 (.17)
Total	3.04 (.10)	3.07 (.10)
DV: Personal opinion		
News only	4.06 (.17)	4.05 (.16)
+ Summary ratings	4.01 (.17)	4.08 (.18)
+ Individual postings	3.80 (.18)	3.47 (.18)
Total	3.95 (.10)	3.87 (.10)

Note: Standard errors are in the parentheses. For perceived public opinion and personal opinion, higher scores indicate greater congruency with the news slant (i.e., greater discrepancy from readers' reactions); DV = dependent variable.

as compared to those who read only the news article ($p < .001$) or those presented with approval ratings ($p < .001$). However, no significant difference was found between the news-only and news-plus-approval ratings conditions, $p = .99$. Therefore, *H1* was only partially supported for individual comments.

In addition, high NFC individuals perceived the general opinion climate to be less favorable to the news position than low NFCs, $F(1, 246) = 5.15, p = .02, \eta_p^2 = .02$. However, when the comparison between high and low NFC groups was made within each treatment condition, participants' cognitive disposition made a significant difference only when the individual comments were provided. That is, more and less analytical individuals have similar perceptions about the public opinion when they read a news article with no clues about others' reactions, $F < 1$, or when they saw aggregate approval ratings, $F = 1.30, p = .26$. By contrast, when a cue to the public sentiment was provided in the form of others' comments, those more prone to engage in effortful thinking were more likely to utilize such cues to infer the opinion climate than those less inclined to do so, $F(1, 75) = 5.92, p = .02, \eta_p^2 = .07$. On the other hand, when the analyses were conducted for high and low NFC groups separately (*H4a*), exposure to others' comments opposing the news slant led high NFC individuals to believe that the general public were less fond of the news position,

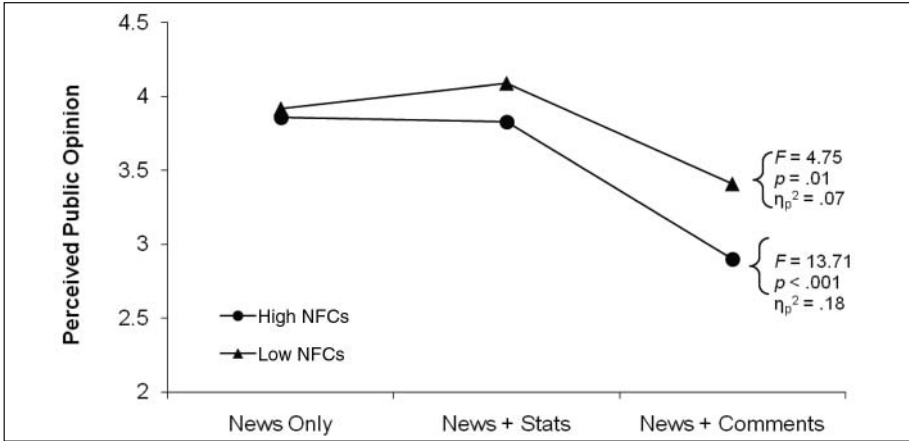


Figure 3. Effects of others' reactions on perceived public opinion for high and low NFCs
 Note. Higher scores indicate greater congruency with the news slant (i.e., greater discrepancy from readers' reactions). NFC = need for cognition.

compared to the news-only ($p < .001$) or approval ratings conditions ($p < .001$; see Figure 3). For low NFC individuals, the effects of others' reactions were less pronounced, such that although individual comments changed their perceptions of public opinion, the difference was marginally significant ($p = .07$) and summary ratings had no significant effect ($p = .73$). These results suggest that contrary to *H4a*, others' comments exerted greater influence on high than low NFC individuals' reality perception. Although participants believed that general public would agree more with the article on TV dramas ($M = 4.11$, $SD = 1.41$) than the one on animal testing ($M = 3.25$, $SD = 1.34$), no significant interaction was found involving this within-subjects factor, all F s < 1.05 , all p s $> .35$.

H2 posited that people would modify their presumption about media influence on others when presented with others' reactions suggesting otherwise. Moreover, *H4b* predicted that such effects will be accentuated when others' reactions were given in the form of individual comments than summary ratings, especially for low NFC individuals. A 3 (no reactions vs. individual comments vs. approval ratings) \times 2 (low vs. high NFC) \times 2 (animal testing vs. TV regulation) repeated measures ANOVA on perceived news influence on general public yielded a significant main effect for others' reactions, $F(2, 246) = 3.84$, $p = .02$, $\eta_p^2 = .03$ (see Table 1 for descriptive statistics). Specifically, a post hoc Scheffe test showed that participants assumed less of news influence on others after seeing more people disapproving than approving the article, as compared to when only the news article was provided ($p < .03$). Those exposed to both news article and individual postings did not estimate the news influence differently from either the news-only ($p = .17$) or news-plus-approval ratings conditions ($p = .76$). When the analysis was repeated for low and high NFC separately (*H4b*), however, the significant effect of approval ratings was observed only for high NFC individuals, with no corresponding effect for low NFCs (see Figure 4). That is, those

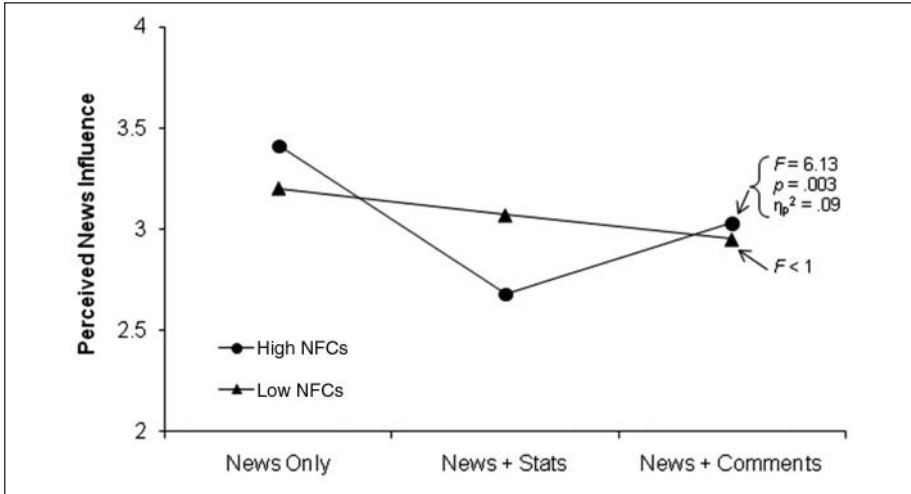


Figure 4. Effects of others’ reactions on perceived news influence for high and low NFCs
 Note: NFC = need for cognition.

chronically predisposed to engage in effortful cognitive activities significantly lowered their estimates of media influence upon encountering high disapproval ratings of the news article than those presented only with the news article ($p = .003$), but those less prone to engage in analytical thinking failed to adjust their presumption about media influence in light of approval ratings ($p = .87$). However, exposure to individual comments did not have the same effect as approval ratings for either high NFC individuals ($p = .20$) or lows ($p = .61$).

To assess if others’ reactions to news affect individuals’ issue position ($H3$), and if their effects vary in conjunction with the presentation format and news readers’ cognitive propensity ($H4c$), a $3 \times 2 \times 2$ repeated-measures ANOVA was performed on the participant’s own opinion about the focal issue. A significant main effect emerged for others’ reactions, $F(2, 246) = 3.70, p = .03, \eta_p^2 = .03$, such that others’ dissenting comments tended to lead people to express opinions more discrepant from the news slant, compared to when only the news article was shown ($p = .05$) or when summary ratings were provided along with the article ($p = .07$), although the pair-wise differences fell just short of the conventional significance level. Participants’ personal opinions remained virtually identical whether approval ratings were offered or not. However, further analyses showed that such effects were driven by low NFC individuals (see Figure 5). Albeit marginally significant, after reading others’ dissenting comments, those less fond of analytical thinking tended to move farther away from the news position, compared to when reading only the news article ($p = .08$) or aggregate approval ratings ($p = .09$). By contrast, high NFC individuals’ personal opinion about the focal issue did not vary whether or not others’ negative reactions to the news article were shown, regardless of their forms. Thus $H4c$ was supported.

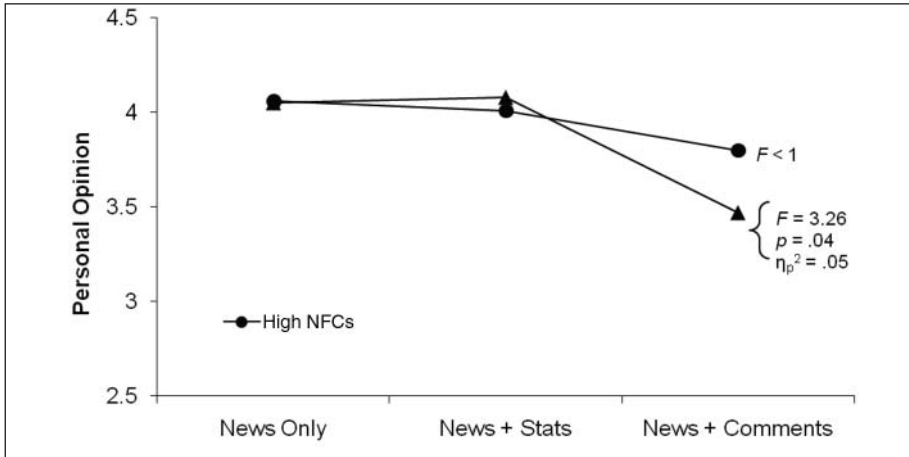


Figure 5. Effects of others' reactions on personal opinion for high and low NFCs
 Note: Higher scores indicate greater congruency with the news slant (i.e., greater discrepancy from readers' reactions). NFC = need for cognition.

Discussion

The present experiment addressed the questions of how others' reactions to news available on Internet news sites affect news readers' inferences about public opinion, their perceptions about media influence, as well as their personal opinion about the issue. Overall, the results indicated that exposure to others' reactions induced significant changes in how people make sense of their social environment, but such effects also varied depending on in which form others' reactions were presented and how much they enjoy effortful cognitive activities.

Theoretical Implications

Consistent with the previous finding (e.g., Brosius & Bathelt, 1994), summary approval ratings did not significantly affect news readers' perceptions or judgments about a social issue—it was only when directly asked to estimate news influence on others that participants managed to incorporate aggregate approval ratings into their assessments, and even in such a case, only those more prone to engage in analytical thinking modified their assumption about media influence in light of others' reactions. In contrast, individual comments exerted significant influence on individuals' perceptions of opinion climate and their personal opinions although the effect on the latter was limited to those less motivated for effortful cognitive activities. Taken together, the current results indicate that the form of evidence, exemplars versus statistics, has differential effects in concert with the message recipients' cognitive propensity as well as the type of judgments.

Considering that people do not normally ask themselves how much influence the news report they have just read would exert on others' opinions, the overall findings seem to indicate stronger influence of exemplars in shaping both perceived and actual reality. On one level, such results might simply suggest that people do not typically process media messages extensively (Zillmann & Brosius, 2000). Especially in the case of Web-based information, Sundar (2007) noted that most Internet users appraise credibility of the site and its content on the basis of surface-level attributes, such as modality and navigability, as opposed to analyzing all the information relevant to credibility judgments. If so, it is no surprise that others' comments exerted informational social influence a la "consensus means correctness" heuristic, as people opt for the less analytical mode of information processing while consuming online news. At the same time, the current research showed that the extent to which such heuristic cues affect individuals' opinions significantly varies depending on the individual's cognitive style. Apparently, it was those less fond of systematic message processing who relied more heavily on the consensus heuristic and formed their opinion based on several anonymous others' reactions.

Another explanation for why individual postings were more influential than summary ratings concerns the level of interest each form of evidence might have evoked from the participants. By virtue of their vividness, exemplars and stories are believed to draw greater attention and interest from the message recipients (Brosius & Bathelt, 1994) and our manipulation check seems to support this notion. Although significantly more people correctly recalled the general sentiment reflected in the approval ratings, quite a few participants (28.9% for animal testing, 25.3% for TV drama) responded that they were unsure about it. In previous research, because people tend to underutilize statistical information, researchers have emphasized statistical information, for example, by underlining it to ensure experimental manipulation (Baesler & Burgoon, 1994). Likewise, we displayed the approval ratings in two different positions and slightly enlarged their size to heighten visual salience (see *Figure 2*), and yet, participants did not seem to pay close attention to them. Perhaps the result in itself indicates that people do not normally think of approval ratings of the news article as valid information they should consider in making sense of the news event. What merits note, though, is that low and high NFC individuals did not significantly differ in terms of how well they recalled the opinion distribution reflected in the approval ratings; that is, those less inclined to engage in effortful thinking were not any less likely to encode the information than their more analytical counterparts, suggesting that the null effect of aggregate ratings for low NFCs cannot be attributed to their failure to recognize the statistical information. Instead, it was because they were less likely to integrate such reality cues when making judgments about media influence.

Alternatively, the relative ineffectiveness of approval ratings might have to do with the interpretational ambiguity associated with them. Unlike individual comments clearly revealing the author's issue position, approval ratings are not directly translated into what others think about the issue but simply show how much others like or dislike the article. Therefore, participants might have discounted the cue value of the approval ratings when inferring the public opinion. However, even when participants were forced to assess how much influence the news report would have on others, which was directly inferable from

the approval ratings, only high NFC individuals took the information into consideration, once again highlighting the general proclivity to underutilize statistical information.

Limitations and Future Directions

To elucidate how other readers' reactions to news might affect individuals' understanding of social reality, the current experiment used two different issues, both of which were not highly ego involving.³ As noted previously, if heuristic processing amplifies the influence of individual comments, whereas statistical information takes on greater weight under high elaboration, using low-involvement issues might have exaggerated the effects of individual comments while suppressing those of approval ratings. Therefore, to enhance the generalizability of the findings, future research should systematically vary the nature of the issue and investigate if and how the cue value of individual postings and summary ratings might change in relation to the specific attributes of the focal issue, such as ego involvement.

Another factor that might have amplified the effects of individual postings is the time of measurement. Specifically, we measured participants' judgments immediately following the exposure to the study stimuli. However, considering that attitudes formed or changed through heuristic processing are generally shorter lived than the ones resulting from systematic processing (Chen & Chaiken, 1999), if the effects of individual postings were derived from heuristic processing, they might well dissipate over time. Consistent with this reasoning, Baesler and Burgoon (1994) found that story evidence, both vivid and nonvivid, lost its persuasive benefits over time, whereas statistical evidence retained its persuasive power 48 hours after the initial exposure. Given that unlike their study, statistical evidence was relatively less persuasive than individual comments in the present research, their results might not be directly applicable to the current findings. Still, it seems worthwhile to examine how the effects of readers' comments versus approval ratings might change over time.

Lastly, we employed just one article and one set of readers' postings for each topic, which espoused the position opposite of the article. However, considering that individuals adopt different message processing strategies depending on whether the message is value-discrepant or value-congruent (Slater & Rouner, 1996), participants might have processed the news article and associated comments differently, depending on how congruent or discrepant the issue positions represented by these messages were with respect to their personal opinions. Although there is no compelling reason to suspect that participants' opinions were heavily skewed in a particular direction, making either systematic or peripheral processing dominant, future research should directly address this concern by investigating how (in)congruency between the news article and the participant's preexisting opinion might alter the ways in which individual postings and approval ratings are processed and subsequently influence their judgments about social reality. Relatedly, one might suspect that low-quality comments, such as those lacking supporting evidence and marked with vulgar language, emotional outbursts, and personal attacks, would exert less influence (Kim & Sun, 2006) or even induce the boomerang effect due to their lower

credibility. Albeit intuitive, however, at least one study (Yang, 2008) found that low-quality postings had greater influence on readers' opinion than their high-quality counterparts. Given such inconsistencies, more research is called for as to how argument quality might moderate the effects of readers' comments observed in this study.

Conclusion

The present research investigated if the availability of other readers' reactions to a news article, one of the most distinctive features of Web journalism, challenges the notion that people presume the influence of mass media on others, and thereby, unwittingly become subject to its influence. Overall findings suggest that when presented with evidence, especially soft (individual comments) than hard (approval ratings) one, people no longer inferred the general opinion climate from the news position but from other readers' postings. On one level, such findings suggest that others' reactions may subvert the process by which people perceive the public sentiment assumed in the IPI model, wherein media coverage serves as a surrogate for the general opinion climate. On another level, the findings prompt the question of how such a change might affect the accuracy of social reality perception; that is, albeit free from external gatekeeping, readers' comments might not mirror the actual state of public opinion, in that (a) only a limited number of individuals choose to participate in this collective feedback mechanism and (b) readers tend to expose themselves to the first few comments, rather than browsing through the entire list.

Meanwhile, the effects of others' comments on participants' personal opinion were found only for those less motivated for effortful cognitive activities, suggesting that high NFC individuals utilize others' reactions with more discretion. Although they base their judgments about public opinion on what others say, they do not necessarily align their own opinions with that. In addition, the fact that low NFCs did not modify their estimate of media influence, even when the majority of readers spoke/voted against the news article, seems to bespeak of the robustness of the persuasive press inference (Gunther, 1998) or impersonal impact (Mutz & Soss, 1997). Although exposure to dissenting comments modified their perceptions of public opinion, they nonetheless believed that media exert as much influence on general public as when no comments were provided.

Heralded as an incarnation of true interactivity in a traditionally one-way medium, various forms of feedback mechanisms, such as readers' comments and ratings, have become a signature characteristic of online news channels. Aside from normative evaluations as to how desirable it is to enable lay citizens to voice their opinions in such public venues, it seems imperative to empirically examine their effects on various communication processes and outcomes, which may or may not fit perfectly well within the traditional theoretical paradigms. The current study represents one such attempt and should prompt further research on how virtual conversations among news readers might alter the ways in which people make sense of the news and their social environment.

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Notes

1. In fact, some researchers have argued that the relative advantage of exemplars over statistical summary is attributable to such confounds as vividness of evidence. Specifically, when vividness was independently manipulated and crossed with the evidence type (Baesler & Burgoon, 1994) or held constant across evidence types (Hoeken, 2001), statistical evidence turned out to be more convincing than the anecdotal evidence. Undoubtedly, it is of great theoretical importance to separate out the effects of particular qualities of exemplars versus statistics so as to advance our understanding of why exemplars are more influential in shaping people's judgments. However, because the primary purpose of the current study was to examine how the two most popular forms of user feedback currently available on Internet news sites, individual comments and approval ratings, compare in their effects on news readers' reality perceptions, we conceptualized vividness as one of the defining characteristics of exemplars, rather than a confound.
2. Before being presented with the experimental stimuli, participants read two news articles and answered some questions concerning them. However, because the content of these articles was fixed and unrelated to the articles employed in our analyses, exposure to the initial, unrelated articles and questions in all likelihood did not affect the present results.
3. Ego-involvement was measured by asking participants to evaluate how personally interesting, important, and relevant each topic was (1 = *not at all*, 7 = *very much*) and the scores were averaged ($\alpha = .84$, $M = 3.51$, $SD = 1.35$ for animal testing, $\alpha = .91$, $M = 3.19$, $SD = 1.65$ for TV drama). Although they rated animal testing to be more ego-involving than TV drama regulation, $t(251) = 2.55$, $p = .01$, both issues were considered as significantly less ego-involving than the scale midpoint (4.00), $t(251) = -5.80$, $p < .001$; $t(251) = -7.81$, $p < .001$, respectively.

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