

computer/website source condition were not affected by star rating manipulation ($M_{one-star\ rating} = 4.14$, $SE = .10$; $M_{four-star\ rating} = 4.11$, $SE = .10$) (see Fig. 3). Expert source seemed to exhibit the greatest influence on the webpage attitudes. The data also found significant main effects for star ratings on both the product attitudes ($F(1, 441) = 31.89$, $p < .001$) and purchase intention ($F(1, 442) = 15.56$, $p < .001$). Specifically, with regard to the product attitudes, participants in the four-star condition showed more favorable attitudes toward the product ($M = 3.77$, $SE = .06$) than participants in the one-star condition ($M = 3.29$, $SE = .06$). In addition, participants in the four-star condition exhibited greater purchase intention ($M = 2.76$, $SE = .09$) than participants in the one-star condition ($M = 2.25$, $SE = .08$).

Hypotheses 1 and 2 explored whether or not specific source cues would influence the intention to share product review information when the information source was either an expert (H1) or user (H2) as opposed to a computer/website. The data failed to support these hypotheses.

Hypothesis 3 predicted the presence of social plugins would have a positive impact on product attitudes, attitudes toward the product review's webpage, and purchase intention. An analysis on attitudes toward the product showed a significant main effect for sharing options ($F(1, 441) = 6.72$, $p < .01$) such that participants in the sharing-option condition exhibited more favorable attitudes toward the product ($M = 3.64$, $SE = .06$) than participants who did not have the option to share the information ($M = 3.42$, $SE = .06$). Thus, Hypotheses 3 was partially supported.

Mediation analysis

Mediation analysis was conducted using Hayes' (2013) PROCESS, which allowed the investigators to assess indirect effects of potential mediators. Hypothesis 4 suggested credibility would mediate the relationship between each heuristic cue—perceived authority, perceived bandwagon, and perceived objectivity—and attitudes of the product, attitudes of the website, and purchase intentions. The data partially supported Hypotheses 4 such that credibility mediated the relationships (a) between perceived bandwagon effects and attitudes about the product, attitudes about the webpage, and purchase intention, as well as (b) between perceived objectivity and the three dependent variables. Fig. 4 shows a detailed analysis of these mediation processes. The hypothesis was not supported for perceived authority.

Table 2
Mean and standard error scores for dependent variables.

| | Dependent variables | | | | | | | |
|------------------------|---------------------|------------|------------|-------------|------------|------------|------------|-------------|
| | Heuristic cues | | | Credibility | AP | AW | PI | SI |
| | Authority | Bandwagon | Machine | | | | | |
| <i>Rating source</i> | | | | | | | | |
| Reviewer's rating | 4.05 (.08) | 3.87 (.06) | 3.87 (.08) | 4.47 (.07) | 3.53 (.07) | 4.33 (.07) | 2.48 (.10) | 2.77 (1.44) |
| User's rating | 3.83 (.08) | 3.90 (.06) | 3.80 (.08) | 4.40 (.07) | 3.48 (.08) | 4.13 (.07) | 2.54 (.11) | 2.48 (1.38) |
| Website rating | 3.80 (.08) | 3.87 (.06) | 3.79 (.08) | 4.35 (.07) | 3.58 (.07) | 4.13 (.07) | 2.49 (.10) | 2.65 (1.32) |
| <i>Star rating</i> | | | | | | | | |
| One star | 3.83 (.06) | 3.75 (.05) | 3.76 (.07) | 4.38 (.06) | 3.29 (.06) | 4.06 (.06) | 2.27 (.08) | 2.65 (1.46) |
| Four stars | 3.96 (.07) | 4.02 (.05) | 3.88 (.07) | 4.43 (.06) | 3.77 (.06) | 4.33 (.06) | 2.74 (.09) | 2.63 (1.32) |
| <i>Sharing options</i> | | | | | | | | |
| Sharing | 4.05 (.06) | 3.98 (.05) | 3.91 (.07) | 4.50 (.06) | 3.64 (.06) | 4.25 (.06) | 2.59 (.09) | 2.63 (1.32) |
| No sharing | 3.74 (.06) | 3.78 (.05) | 3.74 (.07) | 4.31 (.06) | 3.42 (.06) | 4.14 (.06) | 2.41 (.08) | 2.65 (1.46) |

Notes. Numbers in parentheses are standard error. AP = attitudes toward the product, AW = attitudes toward the product review webpage, PI = purchase intention, and SI = sharing intention. All variables were measured on 7-point Likert scales.

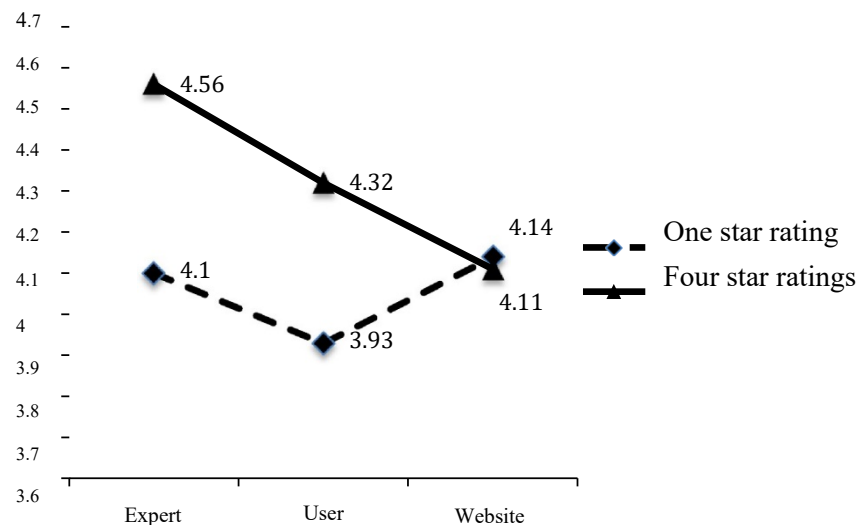


Fig. 3. The impact of review source and star ratings on webpage attitudes. $F(2, 442) = 3.21, p < .05$.

Research Question 2 explored a direct effect on the presence of social plugins and sharing intention. Although ANCOVA analysis did not reveal a direct effect between social plugins and sharing intention, additional analysis did reveal perceived authority and perceived bandwagon mediated the relationship between sharing options and sharing intention (see Fig. 5).

Furthermore, when examining Research Question 3, the data confirmed a two-step mediation effect through the two perceived heuristics (perceived authority and perceived bandwagon) and credibility between the sharing options and webpage attitude (see Fig. 6).

Discussion

This study illustrates the value of utilizing source cues as a trigger of heuristics in addition to presence of social plugins on product review websites. As the findings from the present study indicate, using an expert as the source

of the review information exhibited the greatest effect on participants' attitudes toward product review websites. However, this effect was dependent on the value-laden visual cue, star ratings (see Fig. 3). Furthermore, consistent with findings from previous studies (e.g., Chen, 2008; Chen & Xie 2008; Sundar et al., 2008), star ratings as a value-laden cue clearly exhibited a strong positive effect on users' attitudes toward the product, attitudes toward the website, and their purchase intention. Presence of sharing applications also had positive effects on users' attitudes toward the product. This study also confirmed the mediating effect of credibility between perceived heuristics (i.e., bandwagon and objectivity) and the cognitive and behavioral evaluation processes used when evaluating product reviews (Hypotheses 4). Last, when it comes to the use of sharing plugins, this research revealed the mediation mechanism for perceptions of heuristics and their impact on the judgment process via credibility.

Sharing as a venue of information aggregation and approval

One of the significant, innovative findings identified in the present study surrounds the effect social plugins or sharing applications can have on attitudes. Specifically, social plugins induced strong psychological responses from the participants in terms of their positive attitudes toward the product. The presence of social plugins increased participants' intention to share the product review information when the authority and bandwagon heuristics were present (Fig. 5).

In fact, the nature of initiating an action to share product review information online is different than customizing avatars (e.g., Kim & Sundar, 2012), blogging (Stavrositu & Sundar, 2012), or posting on online discussion forums (Kim & Sundar, 2011). Unlike these intensive, user-initiated online activities, the simple process of sharing product reviews by clicking social plugins only requires website users to play the role of a deliverer or another aggregator of information. Therefore, clicking a social bookmark application and delivering the information might be limited to psychological senses directly related to content-generating actions, but it still encourages users of product review websites to be a source of information. However, as the mediating effects of perceived authority and bandwagon showed (Fig. 5), the possibility of sharing the product review led participants to infer the information was credible thereby giving the website authority and the product review popularity. Thus, the presence of sharing options may have played the role of a "seal" or "endorsement" for instant, safe sharing of the review information (Sundar, Xu, & Oeldorf-Hirsch, 2009). This theoretical explanation is made more salient considering the mediating influence of bandwagon and authority perceptions on credibility and product attitudes (Fig. 6).

Given the online environment possesses excessive amounts of information, which is capable of overwhelming the user, it is not unreasonable to assume online users quickly scan information online. As a result, people use certain cues that readily tell them about the quality of a product, information, a service, etc. In fact, previous literature explored the effects of source cues on credibility and cognitive psychology in online information sharing (e.g., Kim & Sundar, 2011). Despite the increasing popularity of social plugins on most news and information websites, including product review sites, previous research has not investigated the role of plugins in terms of their impact on information credibility judgments. People have a tendency to confirm information is accurate, relevant, knowledgeable, and valid when the information is shared (Wittenbaum, Hubbell, & Zuckerman, 1999). Because shared information signifies the information is credible, it triggers positive attitudes toward the information. Therefore, the present study provided evidence that the mere presence of social plugins, even as an image before an actual sharing action, triggers the authority and bandwagon heuristic cues. In turn, these cues produce positive attitudes toward the website as well as further intention to share the product review information. Thus, social plugins are another type of information cue that leads people to make quick judgments when there is an overwhelming amount of information to process, a limited time to process the information, or just a lack of desire to judge the argument (Petty & Cacioppo, 1986).

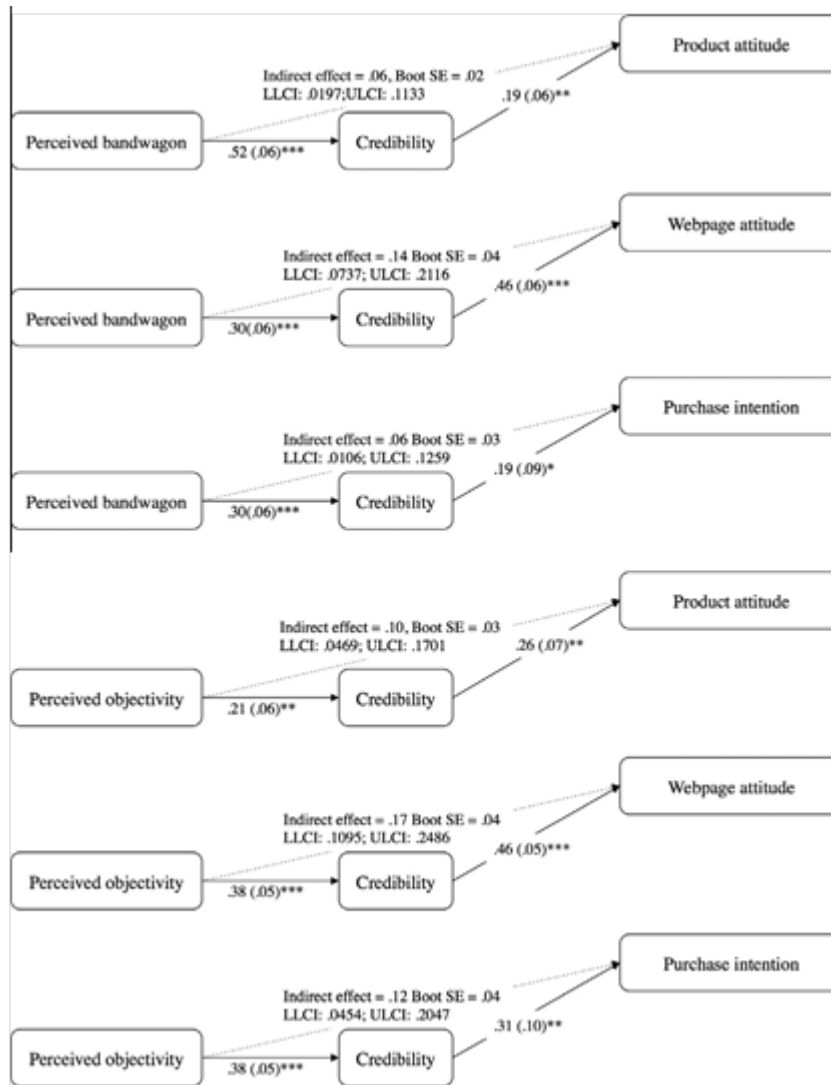


Fig. 4. Mediation analysis for Hypothesis 4. Note. * $p < .05$, ** $p < .01$, *** $p < .001$.



Fig. 5. Mediation effects of perceived authority and perceived bandwagon heuristics on the relationship between sharing options and sharing intention.

Who should rate products?

The present study suggests that for product reviews people largely base their decisions about product quality on the number of stars received on a review website. The findings showed that when the product review had more stars, participants rated the product and the website more favorably. Respondents were also more likely to indicate they would purchase the product. Because participants believed that the number of stars was a visual cue indicating aggregation of product reviews regardless of review source, they could perceive bandwagon power from the star ratings. A previous study by Sundar et al. (2008) showed star ratings' impact on bandwagon effects, but the study did not specify how the source impacted this effect and left the question, do bandwagon effects come from the expert, other users, or website itself? In this sense, the results from the present study confirmed bandwagon effects using star ratings should be attributed to an expert source to anticipate the best result in a product review website.

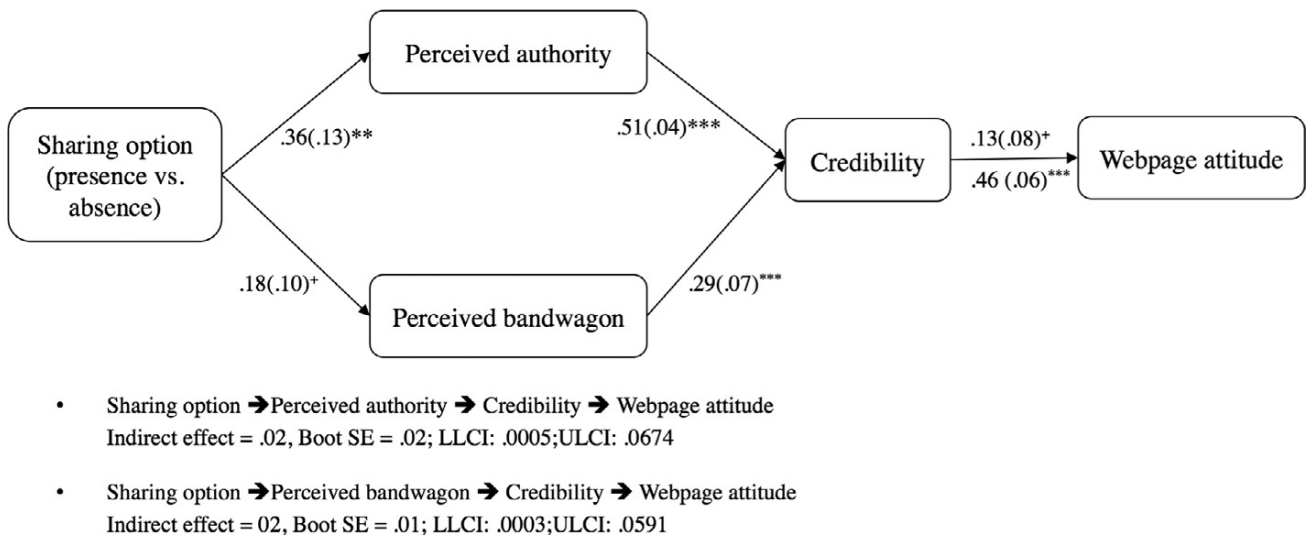


Fig. 6. A two-step mediation effect of perceived heuristics and credibility on the relationship between sharing options and webpage attitude. *Note.* $^{\dagger}p < .10$, $*p < .05$, $**p < .01$, $***p < .001$.

On one hand, because users of product review websites have a mental model (Payne, 2003) with which they expect a professional reviewer as a source of the online product review, they will exhibit more positive attitudes toward a product review site when a review is provided by the expert reviewer rather than other users. On the other hand, users showed relatively consistent favorable attitudes toward the site when the review information was attributed to the website itself, regardless of the level of star ratings (see Fig. 3). People tend to believe the objectiveness of computer-generated information (Edwards et al., 2013; Sundar, 2008). Therefore, when the participants in the present study perceived the source of the product review information the website—the more objective machinery source—they should have felt that the site was favorable no matter how many stars the product review received. In fact, the perceived objectiveness of a site appears to be critical in perceptions of credibility (Sundar, 2008). As confirmed in the mediation analysis (Fig. 4), besides perceived bandwagon, perceived objectivity led to positive evaluations of the product and the website as well as a willingness to purchase the product via credibility. Thus, it is likely that the innate objectiveness of the computer-generated information presented to participants influenced perceptions of the product review website.

The data from the present study did not directly confirm the link between the website source and perceived objectivity and its influence on the decision-making process, possibly because the majority of participants

in the website condition failed to identify the source of the product review. However, the participants in the website condition might not particularly attribute the source to the website because they have naturally accepted the website as the source of the product review unless alternate sources such as an expert reviewer or other users were conspicuously indicated. While empirical evidence from the present study leaves room for future research regarding the direct theoretical path between the review source and users' decision-making process for product purchases via perceived objectivity and credibility, it still shows the importance of the expert and the computer/website as sources of information on product review websites. However, as the results show, this all depends on availability of value-laden cues like star ratings.

Limitations and future research

The present study may have limited its ecological validity. Unlike an actual website, participants had no control over their browsing experience and could not click on links, tabs, or other functions that might be present on real web pages. This is particularly important for the sharing-options manipulation, which by its nature is a function affording user control. However, this limitation is offset to a degree because participants were informed that they would view a "screen capture" of a web page, therefore negating control of site contents. Also, it is possible that the placement of the sharing options adjacent to the stimulus product may have caused some participants to believe that the sharing options were a feature of the product itself and not an affordance of the web page. This may be an alternative explanation as to why participants in the sharing-options condition reported more favorable attitudes toward the product than those in the condition with no sharing options. A final limitation is that stimulus viewing time was not controlled. Participants could have skipped right through the stimulus page or they could have spent several minutes reading the review and browsing the web page. Thus, future studies should continue to examine the impact of sharing and social plugins on credibility perceptions and attitude formation in a live setting. This kind of study will allow participants to actually exert control over sharing options, thus aiding explanation into whether or not these affordances cues impact perceptions of authority and bandwagon simply by their presence or if their influence on credibility and attitude formation acts under some other mechanism. Researchers should also explore effects of sharing options in other contexts (e.g., news), other websites (e.g., a professional website vs. a layperson website), and among additional age groups. Finally, it would be relevant to explore whether the simultaneous presence of multiple star-rating sources presented all at once (i.e., expert, users, and the computer/website) impacts attitudes and behaviors differentially.

Conclusion

As the findings from the present study indicate, source cues help readers of online product reviews make quick judgments about product-related purchasing decisions by signifying the content's value and validating how much consumers can trust and rely on product review information. As a result, these cues influence consumer attitudes and behaviors when users of product review websites are contemplating making a purchase. Consumers look to these source cues, particularly expert sources with value-laden cues (i.e., star ratings), to determine the credibility of the information they review. In addition, social plugins on product review sites can be highly influential source cues.

The findings from this study are particularly informative for product review websites as they suggest incorporating a combination of source cues and star ratings can be more influential on consumer attitudes and behaviors than the tendency to simply overwhelm site users with more product information. Furthermore, this study also confirms how vital social plugins are to perceptions of credibility and generating favorable attitudes toward website information.

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