

# How Posting Online Reviews Can Influence the Poster's Evaluations

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## Abstract

The current research demonstrates that posting online reviews can influence the evaluations of the individual posting the review. Across four studies, we examine the impact of individuals' naive theories about the meaning of their own posting on subsequent attitudes. In these experiments, individuals were assigned to write either positive or negative reviews about various products and services and then post them. The meaning associated with posting a review was varied to indicate either high validity (e.g., saving, extending, sharing) or low validity (e.g., deleting, hiding, archiving) with respect to their previously written reviews. When posting was associated with a high validity meaning, it increased reliance on those thoughts polarizing attitudes and behavioral intentions compared with when the posting was associated with a low validity meaning. These findings were mediated by the impact of meaning on thought confidence.

## Keywords

attitudes, persuasion, metacognitive confidence, validity, word of mouth

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Posting product reviews on online websites has become a mainstream channel for communication. According to recent research, 93% of consumers reported that online reviews influence their purchase decisions (Kaemingk, 2019) and 91% of individuals within the 18 to 34 age range trust online reviews as much as personal recommendations (Murphy, 2018). As another example, an increase in Yelp.com average ratings by 1 star on a 5-star scale was shown to increase the restaurants' revenue by 5% to 9% (Luca, 2016). The literature on online product reviews and word of mouth (WOM) is a rapidly growing body of research and has examined many factors associated with review content, choice of review channels, and the effect of reviewing behavior on product attitudes and sales (e.g., Berger, 2014; Chen & Kirmani, 2015; Packard & Wooten, 2013). However, how posting a review influences the person who does the posting has not been thoroughly examined. In the current research, we examine how the meaning associated with review posting behavior can influence the poster's subsequent evaluation of the focal product that is reviewed.

The most fundamental idea of this paper is that posting an online review could have different meanings to the poster and this meaning can determine whether the posting influences one's attitude. For example, posting a positive or negative review about a product on a website that has millions of visitors could mean sharing one's thoughts about the product to help numerous other consumers' decisions. In this case,

posting a review has a desirable or high validity meaning and one's thoughts are likely to influence one's attitude. However, posting a review can have a relatively less desirable or low validity meaning if the consumer thinks that one's review will be made less visible after being merged with thousands of other reviews and will have only a negligible impact on others. With this low desirability meaning, one's thoughts are less likely to influence one's attitude. In short, we propose that posting an online review can be interpreted differently and that these meanings can impact whether one's posted thoughts influence one's own attitude.

## Meanings Associated With Online Product Reviews

Findings from previous research suggest that individuals post reviews with various meanings. For example, Packard and Wooten (2013) found that individuals who experienced a

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gap between their ideal and actual product knowledge tended to engage in greater WOM behavior as a means of self-enhancement (i.e., signaling their knowledge to other individuals). In this case, the meaning of engaging in WOM behavior would be associated with high validity (e.g., expressing one's knowledge to others and validating their ideal self-views). Also, Chen and Kirmani (2015) suggested that posting reviews can be associated with other high validity meanings, such as the desire for control and belonging.

Just as previous research has found that posting online reviews can be associated with high validity meanings, so too can posting sometimes be associated with relatively low validity meanings. For example, research has shown that engaging in social networking service activities or posting online reviews can sometimes lead to lower self-regulation (e.g., such as higher credit card debt; Wilcox & Stephen, 2013) or could mean exposure to criticism by other individuals (Packard et al., 2016). Taken together, posting online reviews can be associated with either high or low validity meanings depending on individuals and the situations.

The current research builds on prior work by examining the consequences of inducing different meanings associated with posting online reviews. More specifically, we hypothesize that meanings associated with posting a review may play a role in polarizing subsequent evaluations given by the review poster. Previous research on online reviews and WOM has focused on the role of review valence on affecting review posters or other audiences (Schlosser, 2011; Zhang et al., 2014). The current research contributes to the literature by providing a paradigm that separates the valence of one's thoughts in a posting from the perceived validity of those thoughts. Across four studies, we show that posting a review could polarize reviewers' subsequent product evaluations to a greater extent when they believe that their posting behavior is linked to high validity meanings (e.g., the review will reach a large audience and influence others' decisions) rather than low validity meanings (e.g., the review is being merged with other reviews, reaching a small audience, or not having an influence on other consumers).

### Self-Validation and Self-Persuasion

Whereas most research on persuasion focuses on messages that individuals receive from other individuals or media sources (ads, media, etc.), messages that people generate themselves can also be effective in producing changes in attitudes (Maio & Thomas, 2007; Wright, 1973). For example, it was shown that generating arguments on certain topics (e.g., the dangers of smoking; Janis & King, 1954) had a stronger effect on subsequent attitude change compared with passively listening to the same message. The effect of self-generated messages on self-persuasion was found to be robust across different contexts (Briñol et al., 2012; Huesmann et al., 1983; Shavitt et al., 1992; Watts, 1967). The present research builds on extant self-persuasion research, which has

shown that thought valence is a critical determinant of attitudes. For example, generating positive (vs. negative) thoughts about an attitude object is more likely to lead to a positive (vs. negative) attitude change (Petty et al., 1981).

In addition to thought valence, however, the present research relies upon self-validation, another process that has proven critical in shaping peoples' evaluations but has not been examined in the consumer online product review context (Petty et al., 2002). The self-validation paradigm is based on a metacognition perspective, which refers to the secondary thoughts people have about their own primary thoughts. Research suggests that although generating positive or negative thoughts (i.e., thought valence) is an important factor in producing attitude change, the extent to which those thoughts impact attitudes also depends on the nature of individuals' secondary thoughts about their primary thoughts. For example, two individuals might post comparably persuasive positive reviews about a product, but one might associate posting a review with highly valid meanings (e.g., helping others' decisions by sharing one's experience), whereas the other might associate posting a review with relatively less valid meanings (e.g., it may be buried under a pile of numerous other reviews). Based on the metacognition perspective, it is predicted that the subsequent evaluation of the reviewed product would be more favorable when the positive review poster associates the posting behavior with high (vs. low) validity meanings, and that this effect would be mediated by increased thought confidence. In contrast, associating a negative review with high (vs. low) validity meaning would lead to a less favorable evaluation. Thus, we anticipate that the confidence that emerges from high (vs. low) validity meanings to polarize attitudes making positive and negative evaluations more extreme.

If proved correct, this prediction also has the potential to reconcile seemingly contradictory results reported by prior research. For example, Briñol et al. (2013) showed that thought valence was more influential on subsequent evaluations when those thoughts were physically kept safe rather than discarded. In contrast, Sparrow et al. (2011) found that saving rather than deleting thoughts led those thoughts to be less influential in a memory paradigm. In our general discussion, we argue and explain that the different meanings ascribed to the behaviors in each study likely produced these differences. By demonstrating that ascribing different meanings to the same behavior (e.g., posting an online review) could indeed produce a different impact on subsequent thought usage, the current research contributes to the literature by providing a framework that could reconcile seemingly inconsistent findings from previous research.

### Overview of Experimental Studies

In four studies, participants wrote either positive or negative product reviews for a product that they recently purchased

(Study 1), a famous consumer brand (Studies 2 and 3), or their current courses taken at their university (Study 4). Then, the participants posted reviews, but posting the reviews was associated with either high or low validity meanings. Study 1 closely mimicked an online product review context and examined whether varying the validity of posting product reviews differentially influenced subsequent evaluations of the reviewed products. Studies 2 and 3 examined whether this effect of meaning on thought reliance would extend to behavioral intentions related to a real-world business. In Study 3, we tested whether our effect was driven by the proposed metacognitive mechanism related to thought confidence. Study 4 was designed to generalize our effects by introducing a different topic and thought generation method, and also to provide convergent evidence for the thought confidence mechanism.

## Study 1

In Study 1, we tested our meaning paradigm such that individuals' thoughts reflected in their reviews will influence post-review product evaluations to a greater extent when leaving a review is perceived as having high validity as compared with low validity. In particular, when posting a review is perceived as having a high validity meaning, we predicted that leaving a positive review will lead to a more favorable evaluation than leaving a negative review, a result that is consistent with the valence of generated thoughts. With a low validity meaning, however, we predicted that leaving a positive or negative review will not have as large an impact on evaluations. Therefore, we predicted an interaction between the thought valence and the meaning associated with the review posting.

## Method

**Participants and design.** Two hundred individuals from MTurk ( $M_{age} = 38.20$ ,  $SD_{age} = 12.65$ ; 56% women) participated in Study 1. Participants were randomly assigned to one of the conditions within a 2 (Thought Valence: positive, negative)  $\times$  2 (Meaning of Review: high validity, low validity) between-subjects design. The sample size was determined based on previous research that used a similar manipulation (Briñol et al., 2013). This sample size provides sufficient power (greater than 80%) to detect the effect if it exists (Bausell & Li, 2002). Gender and age neither predicted nor interacted with the other independent variables to produce a significant variance in the dependent variable. This was true across all studies, and these variables will not be discussed further.

**Procedure.** Participants were told as a cover story that the study examined consumers' thoughts related to an online shopping experience. First, we manipulated the valence of thoughts. Participants were instructed to recall a product that

they have recently purchased that had both pros and cons. This instruction was to ensure that participants could readily generate positive or negative thoughts depending on which thought valence condition to which they were randomly assigned. Then, participants were instructed to specifically describe either positive or negative aspects of the chosen product during a 3-min period. This manipulation was shown to successfully induce positive or negative thoughts toward various attitude objects in prior research (Briñol et al., 2013; Killeya & Johnson, 1998).

Upon completion of this writing task, participants were told that their thoughts would be uploaded and made public anonymously at one of the major online product review websites. Previous research showed that online word of mouth behaviors are often motivated by reaching out to other consumers and influence their purchase decisions (Chen & Kirmani, 2015). Thus, we varied the potential impact of review posting on other consumers. In the high validity condition, participants were told that their review would be "posted on one of the product review websites that has millions of daily visitors." In the low validity condition, participants were told that their review would be "posted on one of the product review websites and merged with thousands of other reviews."

Then, participants moved a slider from left to right on their computer screen to post their reviews. Therefore, all participants posted their reviews in the same manner but what was meant by posting their reviews varied depended on participants' conditions. Then, all participants were told that their reviews were successfully posted. Also, the manipulation of validity was conducted after the manipulation of Thought Valence so it was not possible for the validity manipulation to influence the content of participants' writing.

Next, participants were asked to tell more about their product experience. The participants evaluated the product based on three items ("good," "desirable," and "useful"; 1 = *not at all*, 9 = *very much*). The three items were averaged to create an index of product evaluation ( $\alpha = .80$ ) and served as our dependent variable. Finally, participants were thanked and debriefed.

To examine whether the manipulation of Thought Valence was successful, two independent judges coded thought positivity on a 5-point scale (1 = *not positive at all*, 5 = *very positive*). Judges also coded the thoughts with regard to their persuasiveness (1 = *not persuasive at all*, 5 = *very persuasive*). The coding by the two judges revealed high levels of agreement for both thought positivity ( $\alpha = .92$ ) and persuasiveness ( $\alpha = .71$ ). Therefore, the two judges' scores on each measure were averaged to create the thought positivity and thought persuasiveness indices (see Appendix A in the Supplemental Material for information on recruiting and training the judges). The length of writing (i.e., the number of words) was measured as a proxy of effort exerted in the generation of thoughts.

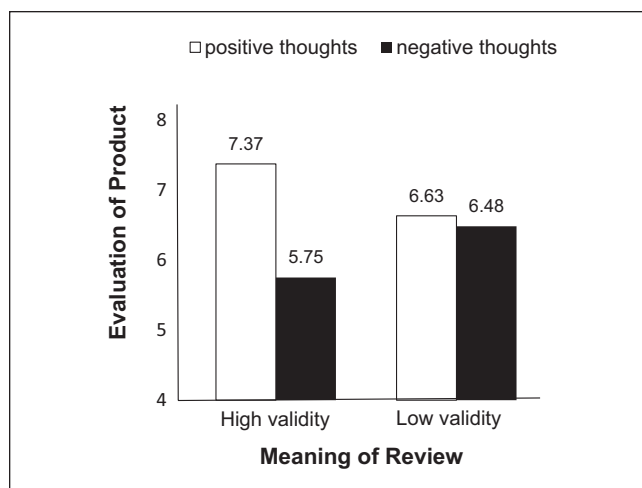
## Results

**Thoughts.** We submitted the thought positivity and thought persuasiveness measures to a 2 (Thought Valence: positive, negative)  $\times$  2 (Meaning of Review: high validity, low validity) analysis of variance (ANOVA). Regarding thought positivity, we only found the expected main effect of Thought Valence such that the positivity of thoughts was more positive among participants who were assigned to the positive condition ( $M = 3.92$ ,  $SD = 0.74$ ), than those who were assigned to the negative condition ( $M = 1.91$ ,  $SD = 0.61$ ),  $F(1, 198) = 438.71$ ,  $p < .001$ ,  $\eta_p^2 = .69$ . Thus, the manipulation of Thought Valence was successful. Consistent with this result, valence analysis using the Linguistic Inquiry and Word Count (LIWC) program's thoughts positivity index (i.e., LIWC thoughts positivity score—LIWC thoughts negativity score) showed that participants in the positive condition wrote more positive thoughts ( $M = 6.15$ ,  $SD = 5.07$ ) than in the negative condition ( $M = .66$ ,  $SD = 4.01$ ),  $F(1, 196) = 70.87$ ,  $p < .001$ ,  $\eta_p^2 = .27$ . Meaning was induced after the Thought Valence manipulation, and thus there was no main effect of meaning on thought positivity ( $p = .75$ ). Also, thought positivity was not influenced by the interaction between the Meaning of Review and Thought Valence factors ( $p = .94$ ).<sup>1</sup>

As predicted, the thought persuasiveness index was not influenced by either of the two manipulated variables or their interaction. Thus, thoughts differed in their valence but not in their perceived quality. The number of words used in the positive thought condition ( $M = 153.87$ ,  $SD = 55.57$ ) and the negative thought condition ( $M = 148.59$ ,  $SD = 62.75$ ) were not significantly different,  $F(1, 198) = .40$ ,  $p = .53$ ,  $\eta_p^2 = .002$ . Thus, the level of effort exerted was comparable across the two conditions. Also, the effect of Meaning of Review ( $p = .16$ ), and the interaction between valence and meaning ( $p = .82$ ) on the number of words were not significant.

**Product evaluation.** We submitted the index of product evaluation to a 2 (Thought Valence: positive, negative)  $\times$  2 (Meaning of Review: high validity, low validity) ANOVA. The result revealed a significant main effect of Thought Valence,  $F(1, 196) = 15.93$ ,  $p < .001$ ,  $\eta_p^2 = .08$ , with more positive evaluations observed in the positive than the negative Thought Valence condition. There was no main effect of Meaning of Review on evaluation,  $F(1, 196) < .01$ ,  $p = .98$ ,  $\eta_p^2 < .01$ . Most importantly, the predicted significant interaction between Thought Valence and the Meaning manipulation was significant,  $F(1, 196) = 10.80$ ,  $p = .001$ ,  $\eta_p^2 = .05$ . To further examine this interaction, we conducted pairwise comparisons.

In the high validity condition, positive thoughts led to a more favorable evaluation of the product ( $M = 7.37$ ,  $SD = 1.18$ ) than negative thoughts ( $M = 5.75$ ,  $SD = 1.67$ ),  $F(1, 196) = 27.02$ ,  $p < .001$ ,  $\eta_p^2 = .24$ . In the low validity



**Figure 1.** Product evaluation as a function of Meaning of Review and Thought Valence in Study 1.

condition, product evaluation was not significantly different between the positive ( $M = 6.63$ ,  $SD = 1.74$ ) and negative Thought Valence conditions ( $M = 6.48$ ,  $SD = 1.59$ ),  $F(1, 196) = .24$ ,  $p = .62$ ,  $\eta_p^2 = .002$  (see Figure 1, for all other pairwise comparisons and discussion, see Appendix B in the Supplemental Material).

## Discussion

As expected, participants who associated posting their review with a high validity meaning evaluated the reviewed product more favorably when they generated positive (vs. negative) thoughts. However, the effect of Thought Valence on subsequent product evaluation was attenuated when the same posting was associated with a low validity meaning. In addition, it is noteworthy that participants were instructed to choose a recently purchased product that has both pros and cons. This was to ensure that participants could readily generate either positive or negative thoughts about the chosen product, rather than being forced to generate thoughts against their pre-existing attitude toward the product, which can potentially create cognitive dissonance. Thus, cognitive dissonance is unlikely in Study 1. Dissonance was also unlikely because participants were simply asked to follow instructions and the free choice aspect of the task was not emphasized (e.g., Zanna & Cooper, 1974).

In Study 2, participants generated thoughts about McDonald's. We chose McDonald's based on pilot testing showing that a majority of individuals could easily generate both positive or negative thoughts about McDonald's. Although some individuals may have more extreme attitudes toward McDonald's, a majority of individuals recognize both positive (e.g., economic and hedonic benefits) and negative aspects (e.g., health consequences). Thus, the Thought Valence manipulation in Study 2 serves as a means to make



one side of thoughts more salient. Along with this refinement, in Study 2 we extended the inquiry to evaluations of other attitudinal objects and examined whether these effects would extend to impact behavioral intentions.

## Study 2

Study 2 was designed to examine the role of meaning further and shed light on whether the effects observed were obtained due to increases in thought use in the high validity condition or decreases in thought use in the low validity condition relative to a default, or a combination of both. To do this, we introduced a control condition that had a neutral meaning. First, participants wrote positive or negative reviews about McDonald's as the focal object. In this study, the validity of meaning was manipulated by either saving or deleting one's review. These meanings were designed as manipulations to impact thought reliance. Saving is associated with high validity because people save when they want to protect something valuable for future usage. Deleting is associated with low validity because people delete when there is neither value nor future usage potential (Briñol et al., 2013). As in the previous study, we expected meaning to influence evaluations by affecting thought reliance.

## Method

**Participants and design.** Three hundred individuals were recruited via MTurk ( $M_{age} = 36.16$ ,  $SD_{age} = 11.51$ ; 40% women) to participate in Study 2 to have a cell size comparable to Study 1 (i.e., 50 participants per condition). Participants were randomly assigned to one of the conditions in a 2 (Thought Valence: positive, negative)  $\times$  3 (Meaning of Review: high validity, low validity, control) between-subjects design.

**Procedure.** Participants were told that the study examined consumers' food preferences and choices. The manipulations of Thought Valence and Meaning of Review were conducted based on methods similar to the previous study. For the manipulation of Thought Valence, participants were randomly assigned to list either positive or negative reviews about McDonald's during a 3-min period. Therefore, the procedure of this manipulation was identical to Study 1 with a new evaluation object.

After listing their reviews, participants were randomly assigned to either the high validity, low validity, or control condition. Participants in the high validity condition were told that their reviews needed to be "saved" on the computer before the next phase of the study could begin. Participants in the low validity condition were told that their reviews needed to be "deleted" from the computer before the next phase of the study could begin. This manipulation conceptually replicates the visibility manipulation used in Study 1, with saving being associated with high validity and deleting

associated with low validity (Briñol et al., 2013). Then, a slider appeared on a computer screen and participants were instructed to move the slider all the way to the opposite side of the screen to post and either save or delete their reviews depending on their randomly assigned condition. In the control condition, participants were simply asked to move the slider all the way to the opposite side to post and continue to the next page of the study. Therefore, although all participants moved the slider to post their reviews, the additional meaning of this action (save, delete, none) varied depending on participants' experimental conditions.

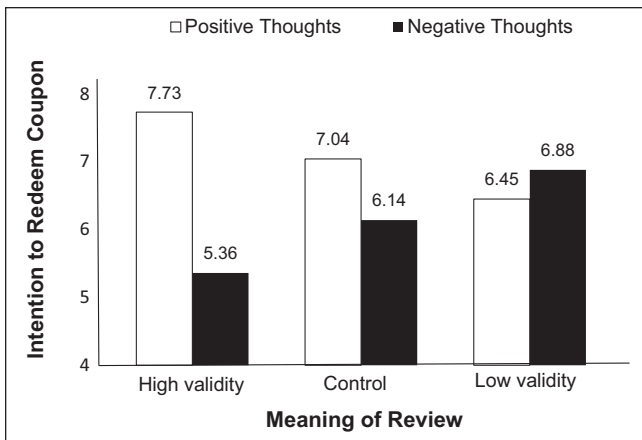
After moving the slider, participants were told that, as a parting gift, they would receive a \$5 coupon redeemable at any McDonald's restaurant. Then, they were asked to indicate how much they would like to use the coupon in the near future (1 = *not at all likely*, 9 = *very likely*), which served as our dependent variable. Finally, participants were thanked and debriefed.

Following the same procedure used in Study 1, two independent judges coded the positivity of participants' thoughts toward the topic (1 = *not at all positive*, 5 = *very positive*) for the purpose of checking the Thought Valence manipulation. The judges also coded the thoughts' persuasiveness (1 = *not persuasive at all*, 5 = *very persuasive*) as a proxy of the quality of the thoughts. The coding by the two judges revealed high levels of agreement for both thought positivity ( $\alpha = .92$ ) and persuasiveness ( $\alpha = .73$ ) and the judges' ratings were averaged to create an index of each. The number of words used in the writings were also measured as a proxy of the level of effort exerted for thought generation.

## Results

**Thoughts.** We submitted the thought positivity and thought persuasiveness measures to a 2 (Thought Valence: positive, negative)  $\times$  3 (Meaning of Review: high validity, low validity, control) ANOVA. Regarding thought positivity, we only found the expected main effect of Thought Valence,  $F(1, 294) = 978.85$ ,  $p < .001$ , such that the positivity of thoughts was higher among participants who were assigned to the positive condition ( $M = 4.01$ ,  $SD = .49$ ), than those were assigned to the negative condition ( $M = 1.79$ ,  $SD = .75$ ),  $F(1, 294) = 438.71$ ,  $p < .001$ ,  $\eta_p^2 = .77$ . Consistent with this result, thought positivity analysis using LIWC program showed that participants in the positive thought condition wrote more positive thoughts ( $M = 17.05$ ,  $SD = 17.18$ ) than in the negative thought condition ( $M = -2.20$ ,  $SD = 14.25$ ),  $F(1, 294) = 111.81$ ,  $p < .001$ ,  $\eta_p^2 = .28$ . However, the effect of meaning ( $p = .21$ ) and the interaction between Meaning and Thought Valence ( $p = .90$ ) were not significant.

Regarding thought persuasiveness, we did not find any main effects of Thought Valence ( $p = .83$ ), Meaning of Review ( $p = .52$ ), or their interaction ( $p = .35$ ), indicating that thoughts differed in valence but not in perceived quality. Similarly, the main effects of Thought Valence ( $p = .63$ ),



**Figure 2.** Intention to redeem the coupon as a function of Meaning of Review and Thought Valence in Study 2.

Meaning of Review ( $p = .26$ ), and their interaction ( $p = .26$ ) on the number of words used were all not significant, indicating that the effort exerted for thought generation was comparable across all conditions.

**Product evaluation.** Our dependent measure (i.e., intention to redeem the coupon) was submitted to a 2 (Thought Valence: positive, negative)  $\times$  3 (Meaning of Review: valid, invalid, control) ANOVA. The results of the ANOVA revealed that the main effect of Thought Valence was significant,  $F(2, 294) = 11.36, p < .01, \eta_p^2 = .04$ , and the main effect of the Meaning was not,  $F(2, 294) = .06, p = .94, \eta_p^2 < .01$ . The main effect of Thought Valence was qualified by a significant interaction between Thought Valence and Meaning,  $F(2, 294) = 8.37, p < .01, \eta_p^2 = .05$  (see Figure 2).

To understand the locus of this interaction, we conducted an omnibus 2 (Thought Valence: positive, negative)  $\times$  3 (Meaning of Review: valid, invalid, control) pairwise comparisons. Within the high validity condition, the intention to use the coupon was higher in the positive thought condition ( $M = 7.73, SD = 1.39$ ) than in the negative condition ( $M = 5.36, SD = 2.83$ ),  $F(1, 294) = 23.57, p < .001$ . Within the low validity condition, the intention to use the coupon in the positive condition ( $M = 6.45, SD = 2.78$ ) and the negative condition ( $M = 6.88, SD = 2.23$ ) was not different,  $F(1, 294) = .80, p = .37$ . Within the control validity condition, the intention to use the coupon was marginally higher in the positive ( $M = 7.04, SD = 2.12$ ) than in the negative ( $M = 6.14, SD = 2.74$ ),  $F(1, 294) = 3.32, p = .07$ . All other pairwise comparisons are provided in Appendix B in the Supplemental Material.

## Discussion

The results of Study 2 conceptually replicate the finding of Study 1 using different materials and inductions. Furthermore, the effect of Thought Valence on behavioral intentions was

stronger in the high validity condition than the low validity condition. The control condition fell in between these two. In Study 3, we tested whether the validity effects observed in Study 1 and 2 are accounted for by the proposed mediator: thought confidence.

## Study 3

An important objective of Study 3 was to examine the mechanism that underlies the effect observed in our previous studies. For this purpose, we examined whether thought confidence changes as a function of the validity associated with review posting. We predicted that posting a review with a high vs. low validity meaning would increase thought confidence thereby increasing thought use in forming attitudes.

## Method

**Participants and design.** We once again aimed for a sample of 200 participants (50 per cell), though only 177 business undergraduate students were able to be recruited by the end of the semester when we engaged in data collection ( $M_{age} = 20.71, SD_{age} = .95$ ; 38% women). The students participated in exchange for partial course credit. The study was presented as a school-wide survey about student attitudes and behaviors. Participants were randomly assigned to one of the conditions within a 2 (Thought Valence: positive, negative)  $\times$  2 (Meaning of Review: high validity, low validity) between-subjects design.

**Procedure.** Participants were told that the study examined consumers' food preferences and choices. The manipulations of Thought Valence and Meaning of Review were similar to the previous studies. For the manipulation of Thought Valence, participants were randomly assigned to list either positive or negative thoughts about McDonald's during a 3-min period.

After listing their reviews, participants were randomly assigned to either the high or low validity meaning condition. Similar to the manipulation used in Study 1, participants in the high validity meaning condition read a message that said the reviews would be "read by thousands of McDonald's managers." In the low validity condition, participants read that the review would be "merged with thousands of other reviews about McDonald's." In a pretest with one hundred MTurk participants, we measured whether our validity manipulation successfully induced different level of validity associated with posting a review using three items ("helping others' decision," "leading to a positive change," and "a meaningful thing to do," 1 = not at all, 7 = very much; items were combined to create the validity index,  $\alpha = .83$ ). As predicted, participants in the high validity condition ( $M = 5.91, SD = .85$ ) scored higher on the validity index compared with those in the low validity condition ( $M = 5.17, SD = 1.32$ ),  $F(1, 98) = 11.58, p = .001$ . Thus, it

was shown that making a review visible and available to a greater number of managers increases the validity of the review posting.

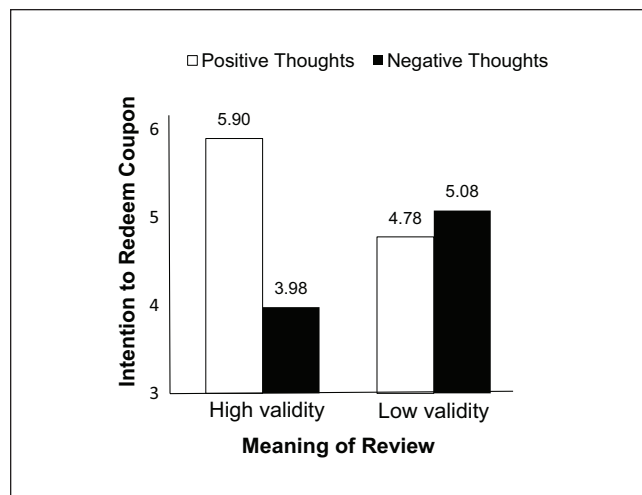
After the meaning manipulation, a slider appeared on a computer screen, and participants were instructed to move the slider all the way to the opposite side to post their reviews (i.e., making it available to thousands of McDonald's managers, or making it merged with thousands of other reviews). Therefore, all participants posted their reviews in the same manner, but the meaning associated with posting varied depending on participants' experimental condition.

After posting the review by moving the slider, participants were told that, as a parting gift, they would receive a \$5 coupon redeemable at any McDonald's restaurant. Then, they were asked to indicate how much they would like to use the coupon in the near future (1 = *not at all*, 7 = *very much*), which served as our dependent variable. As a measure of thought confidence, participants were asked to recall the thoughts that they listed about McDonald's and answer how confident they felt about their thoughts (1 = *not at all confident in my thoughts*, 9 = *extremely confident in my thoughts*, adapted from Petty et al., 2002). Finally, participants were thanked and debriefed.

Following the same procedure used in previous studies, two independent judges coded the positivity of participants' thoughts toward the topic (1 = *not at all positive*, 5 = *very positive*) for the purpose of manipulation check regarding Thought Valence. The judges also coded the thoughts' persuasiveness (1 = *not persuasive at all*, 5 = *very persuasive*) as a proxy of thought's quality. The codings by the two judges revealed high levels of agreement for both thought positivity ( $\alpha = .89$ ) and persuasiveness ( $\alpha = .72$ ) and were averaged to create an index of each construct. The number of words used in the writings was also measured as a proxy of the level of effort exerted for thought generation.

## Results

**Thoughts.** We submitted the thought positivity and thought persuasiveness measures to a 2 (Thought Valence: positive, negative)  $\times$  2 (Meaning of Review: high validity, low validity) ANOVA. Regarding thought positivity, we found the expected main effect of Thought Valence  $F(1, 173) = 628.84, p < .001$ , such that the positivity of thoughts was higher among participants who were assigned to the positive thought condition ( $M = 3.93, SD = .58$ ), than those who were assigned to the negative condition ( $M = 1.64, SD = .63$ ),  $F(1, 173) = 628.84, p < .001$ . Consistent with this result, thought positivity analysis using the LIWC program showed that participants in the positive condition wrote more positive thoughts ( $M = 9.22, SD = 8.56$ ) than in the negative condition ( $M = -3.76, SD = 11.53$ ),  $F(1, 173) = 74.12, p < .001, \eta_p^2 = .30$ . However, the effect of Meaning ( $p = .13$ ) or the interaction between Meaning and Thought Valence ( $p = .54$ ) were not significant.

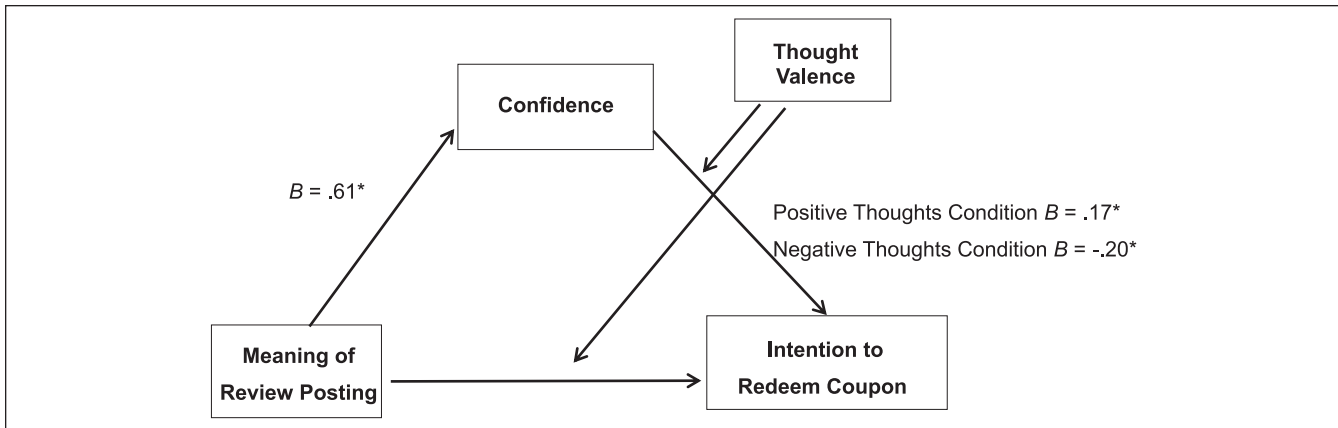


**Figure 3.** Intention to redeem the coupon as a function of Meaning of Review and Thought Valence in Study 3.

Regarding thought persuasiveness, we did not find the main effects of Thought Valence ( $p = .78$ ), Meaning of Review ( $p = .65$ ), or their interaction ( $p = .13$ ), indicating that thoughts differed in valence but not in perceived quality. Similarly, we did not find significant main effects of Thought Valence ( $p = .27$ ), Meaning of Review ( $p = .07$ ), or their interaction ( $p = .53$ ) on the number of words used, indicating that the effort exerted for thought generation was comparable for all conditions.<sup>2</sup>

**Intention to consume McDonald's food.** Our dependent measure (i.e., intention to redeem the coupon) was submitted to a 2 (Thought Valence: positive, negative)  $\times$  2 (Meaning of Review: high validity, low validity) ANOVA. The results of the ANOVA revealed that the main effect of Thought Valence was significant,  $F(1, 173) = 7.83, p < .01, \eta_p^2 = .04$ , which was qualified by a significant interaction between Thought Valence and Meaning of Review,  $F(1, 173) = 14.98, p < .01, \eta_p^2 = .08$  (see Figure 3). Specifically, within the high validity condition, those who generated positive thoughts about McDonald's ( $M = 5.90, SD = 1.61$ ) indicated a stronger intention to redeem the coupon compared with those who generated negative thoughts ( $M = 3.98, SD = 2.10$ ),  $F(1, 173) = 22.39, p < .001$ . Within the low validity condition, the difference between the positive ( $M = 4.78, SD = 1.99$ ) and negative thought conditions ( $M = 5.08, SD = 1.93$ ) was not significant,  $F(1, 173) = .57, p = .45$  (for all other pairwise comparisons and discussion, see Appendix B in the Supplemental Material).

**Thought confidence.** Next, the measure of thought confidence was submitted to a 2 (Thought Valence: positive, negative)  $\times$  2 (Meaning of Review: high validity, low validity) ANOVA. The result revealed a significant main effect of Meaning of Review on thought confidence,  $F(1, 173) = 9.36, p = .003$ ,



**Figure 4.** The mediating role of Thought Confidence in Study 3.

Note. Direct Effects of Meaning on Coupon at Each Thought Valence. Positive Thought Condition:  $B = 1.12^*$ , 95% CI = [.36, 1.89]. Negative Thought Condition:  $B = -1.11^*$ , 95% CI = [-1.96, -.26]. Index of Moderated Mediation:  $B = .37^*$ , 95% CI = [.08, .87].

\* $p < .05$ .

$\eta_p^2 = .05$ . Confidence in one's own thoughts was higher in the high validity condition ( $M = 5.93$ ,  $SD = 1.20$ ) than in the low validity condition ( $M = 5.32$ ,  $SD = 1.51$ ),  $F(1, 173) = 9.36$ ,  $p = .003$ ,  $\eta_p^2 = .05$ . Importantly, this was true regardless of Thought Valence.

**Moderated mediation analysis.** A moderated mediation analysis was conducted based on Model 15 in Hayes process macro (Preacher & Hayes, 2008, see Figure 4). We chose Model 15 based on (a) the observed main effect of Meaning on Confidence, (b) the observed interaction between Meaning and Thought Valence on intentions, and (c) the hypothesized interaction between Confidence and Thought Valence on intentions. Both Thought Valence (negative thoughts = -1, positive thoughts = 1) and the Meaning of Review variables (low validity = -1, high validity = 1) were contrast coded. The result of this bootstrapping procedure with 10,000 bootstrapped re-samples revealed that the predicted interaction between Thought Valence and Confidence on intentions was significant ( $p = .005$ ) and the interaction between Thought Valence and Meaning of Review was also significant ( $p = .002$ ). Furthermore, the 95% confidence interval (CI) of the moderated mediation index did not include zero ( $\beta = .37$ , 95% CI = [.09, .86]). Therefore, the moderated mediation through Confidence is supported (for more information on mediation analysis, see Figure 4).

## Discussion

Study 3 showed that the impact of the direction of thoughts on subsequent behavioral intention was stronger when the Meaning of Review had a high (vs. low) validity meaning. Beyond providing replication and extension of the previous experiments, Study 3 made another important advance. Study 3 showed that the effect based on meaning is mediated by thought confidence. To our knowledge, this is the first

study showing evidence for the underlying mechanism for metacognitive effects due to meaning in an online review context.

One way in which our validity manipulation affected confidence could be through accountability. For example, knowing that one's review would be read by numerous McDonald's managers would induce a stronger feeling of accountability to the review writing task compared with when the writing would be merged with numerous other reviews. If the feeling of accountability was induced by our high validity manipulation, it could have led participants in the high validity condition to elaborate on their writing leading them to feel more confident about their thoughts. Regardless of the specific antecedent to perceived validity, the important point is that our inductions affected thought confidence and this thought confidence increased thought use as proposed.

In Study 4, we examined the impact of meaning on behavioral intentions in a new domain. Also, thoughts were generated using pen and paper instead of being generated on a computer. Whereas typing on a computer is increasingly used as a means to express one's thoughts about products and services, handwriting is also a pervasive means through which consumer thoughts are generated. For example, individuals are often encouraged to write their opinions about the service quality of restaurants or hotels using handwritten comment cards. Similarly, evaluating public services or signing a petition could be other conceptually similar forms of expressing one's review of various objects or issues. Also, it is important to note that replicating our effect using a pen and paper allows generalizing our effect regardless of the method of thought generation.

## Study 4

In Study 4, we employed a novel attitude object and once again examined whether the meaning's influence on product



evaluation occurs via changes in thought confidence. In this study, participants chose one of the courses that they were taking in the same semester that the experiment was conducted. Participants were instructed to generate either positive or negative reviews about the chosen course. After listing their reviews, participants deposited their reviews into a box, a behavior that was associated with either high or low validity meanings.

We expected that the high (vs. low) validity meaning to increase the impact of thought valence on course effort intentions. Also, we measured participants' confidence in the reviews initially listed. We predicted the impact of meaning would be mediated by changes in thought confidence, conceptually replicating our previous results with a different induction of meaning and a different topic.

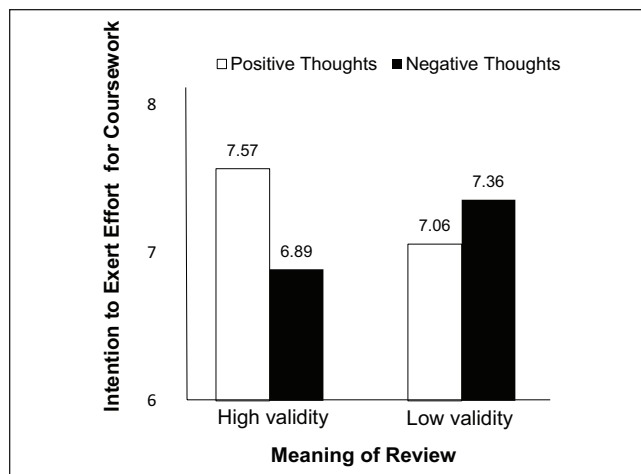
## Method

**Participants and design.** We once again aimed to collect data from approximately 200 participants (50 per condition), but by running the study until the end of the semester, we ended up with a total of 249 undergraduate business students ( $M_{age} = 20.75$ ,  $SD_{age} = 1.25$ ; 45% women). The students participated in exchange for partial course credit. Participants were randomly assigned to one of the conditions within a 2 (Thought Valence: positive, negative)  $\times$  2 (Meaning of Review: high validity, low validity) between-subjects design.

**Procedure.** Participants were told that the university was conducting a survey that aimed to examine students' thoughts about their courses. Next, participants were asked to choose one of the courses that they were taking at the time of the experiment, which served as the focal attitude object. Then, participants were provided with a pen and a sheet of paper and were instructed to generate either positive or negative reviews about their chosen course over a 3-min period as a manipulation of Thought Valence.

After listing their reviews, participants were instructed to deposit their reviews into a box that was located on each participant's desk, and this procedure was described as having either high or low validity meanings. Participants in the high validity condition were told they were depositing reviews into the box as a way of extending thoughts beyond the self. In contrast, participants in the low validity condition were told that the procedure was a way of placing thoughts out of sight. These meanings were adopted from previous consumer research showing that consumers extend the self toward external objects (Belk, 2013) and that consumers often put certain possessions out of sight when they are perceived as less valuable (Lastovicka & Fernandez, 2005).

The dependent variable was behavioral intentions. In particular, willingness to invest time and effort in a task has been shown to be an important variable capturing the extent to which one is committed to the task (Higgins et al., 2010).



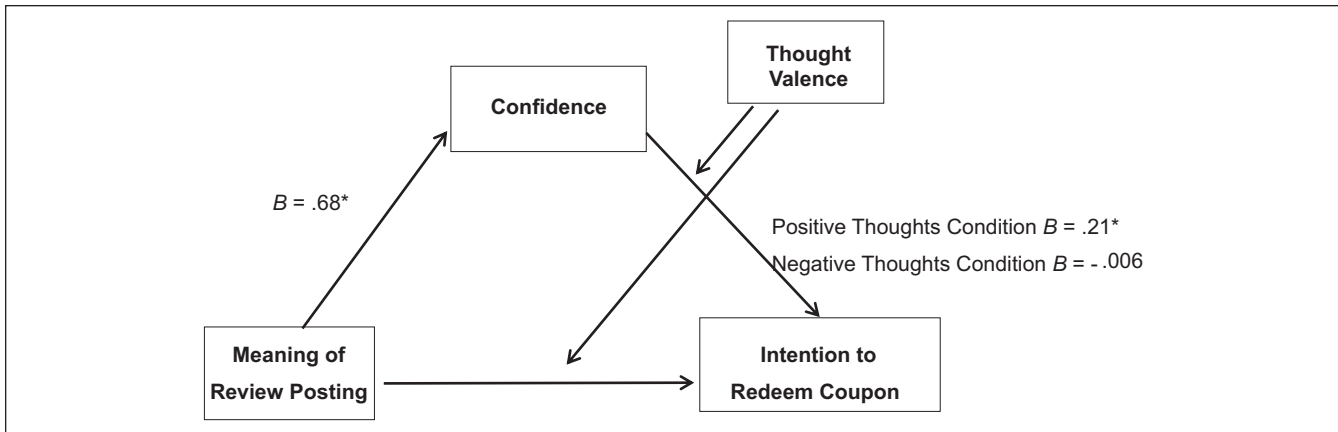
**Figure 5.** Study intention as a function of Meaning of Review and Thought Valence in Study 4.

Thus, participants were instructed to indicate the extent to which they intended to exert effort for the course in response to two items, which served as our dependent measure (i.e., “I am willing to spend more time on the coursework,” “I am willing to exert more effort for the coursework,”; 1 = *not at all*, 9 = *very much*). The two items were averaged to create an index of the intended effort in their course ( $\alpha = .88$ ).

As in Study 3, participants were asked to recall the thoughts that they listed about the course and state how confident they felt about their thoughts (1 = *not at all confident in my thoughts*, 9 = *extremely confident in my thoughts*, adapted from Petty et al., 2002). Finally, participants were thanked and debriefed.

## Results

**Intention to exert effort in the course.** The index of intention to exert effort was submitted to a 2 (Thought Valence: positive, negative)  $\times$  2 (Meaning of Review: high validity, low validity) ANOVA. Neither the main effect of Thought Valence,  $F(1, 245) = 1.16$ ,  $p = .28$ ,  $\eta_p^2 = .01$ , nor the main effect of Meaning of Review,  $F(1, 245) = 0.01$ ,  $p = .91$ ,  $\eta_p^2 < .001$ , on the intention to exert effort was significant. As predicted, the results revealed a significant interaction between these variables,  $F(1, 245) = 7.48$ ,  $p < .01$ ,  $\eta_p^2 = .03$ . In the high validity condition, positive thoughts about their course led to a greater intention to exert effort ( $M = 7.57$ ,  $SD = 1.28$ ) as compared with negative thoughts ( $M = 6.89$ ,  $SD = 1.53$ ),  $F(1, 245) = 7.23$ ,  $p < .01$ ,  $\eta_p^2 = .06$ . In the low validity condition, however, the positive thoughts ( $M = 7.06$ ,  $SD = 1.46$ ) and negative thoughts conditions ( $M = 7.36$ ,  $SD = 1.29$ ) were not significantly different from each other,  $F(1, 245) = 1.38$ ,  $p = .24$ ,  $\eta_p^2 = .01$  (see Figure 5; for all pairwise comparisons and discussion, see Appendix B in Supplemental Material).



**Figure 6.** The mediating role of Thought Confidence in Study 4.

Note. Direct Effects of Meaning on Coupon at Each Thought Valence. Positive Thought Condition:  $B = .24^*$ , 95% CI =  $[-1.26, -.08]$ . Negative Thought Condition:  $B = -.69$ , 95% CI =  $[-.35, .84]$ . Index of Moderated Mediation:  $B = .26^*$ , 95% CI =  $[.06, .59]$ .

\* $p < .05$ .

**Thought confidence.** Next, the measure of thought confidence was submitted to a 2 (Thought Valence: positive, negative)  $\times$  2 (Meaning of Review: high validity, low validity) ANOVA. The main effect of Thought Valence,  $F(1, 245) = 0.23$ ,  $p = .63$ ,  $\eta_p^2 < .01$ , and the interaction between Thought Valence and Meaning of Review were not significant,  $F(1, 245) = .50$ ,  $p = .48$ ,  $\eta_p^2 < .01$ . The result revealed only a significant main effect of the Meaning of Review on Thought Confidence,  $F(1, 245) = 11.69$ ,  $p = .001$ ,  $\eta_p^2 = .05$ . Consistent with Study 2, the Confidence in one's own thoughts was higher in the high validity condition when participants believed that their reviews were being extended ( $M = 7.44$ ,  $SD = 1.25$ ) than when reviews were placed out of sight ( $M = 6.76$ ,  $SD = 1.82$ ),  $F(1, 245) = 11.69$ ,  $p = .001$ ,  $\eta_p^2 = .05$ . Importantly, this was true regardless of Thought Valence.

**Moderated mediation analysis.** A mediation analysis was conducted using the same method as in Study 3: Hayes process macro model 15. Both Thought Valence (negative thoughts = -1, positive thoughts = 1) and the Meaning of Review (low validity = -1, high validity = 1) variables were contrast coded. The result of this bootstrapping procedure with 10,000 bootstrapped re-samples revealed that the predicted interaction between Thought Valence and Confidence was significant ( $p = .005$ ) and the interaction between Thought Valence and Meaning of Review was significant ( $p = .03$ ). Also, the 95% CI of the moderated mediation index did not include zero ( $\beta = .26$ , 95% CI =  $[.06, .62]$ ). Therefore, the moderated mediation through Confidence is supported (for more information on mediation analysis, see Figure 6).

## Discussion

Study 4 provided additional support for our conceptualization. Specifically, participants exhibited greater impact from

the valence of their thoughts when the meaning of their review was associated with a high rather than a low validity meaning. Also, Study 4 demonstrated that our key effect was present when thoughts were handwritten, thereby generalizing from online reviews to more traditional handwritten reviews. In addition, the meanings ascribed to the behavior in Study 4 were different compared with previous studies, but they still produced the same effect due to their common association with high or low degrees of validity across semantic variations. Study 4 also provided further convergent evidence that thought confidence is a plausible underlying mechanism for the obtained results.

## General Discussion

This research emphasizes the role of meaning of one's posting in understanding the impact of online review on one's own judgments, as well as how those reviews can influence the reviewers' evaluations through a self-validation process. Across four studies, reviews were generated in a variety of domains including one's recent product purchase (Study 1), McDonald's (Studies 2 and 3), and one's coursework (Study 4). We used two different writing methods to generate reviews, including typing on a computer (Studies 1, 2, 3) and handwriting (Study 4). In addition, the procedure to vary the meaning (i.e., presumed value) of the review changed across studies: by varying the size of the audience, whether the review would be posted alone or merged with others, whether reviews were saved versus deleted prior to posting, or whether the purpose of recording one's thoughts was to extend their influence versus remove them from sight (Study 4). Importantly, the common theme among these variations is the association with validity that produced changes in consumer thought confidence that impacted their post-review evaluations. For example, having one's review

posted and read by high-status others (e.g., managers) versus merged with other consumer reviews or read by low-status others (e.g., employees) suggests one's review will have a greater influence on other consumers' decisions and is generally perceived as a valid or a more desirable reason to leave a review. In the same vein, saving or extending reviews bolstered thought confidence, whereas deleting or hiding reviews undermined the perceived validity of reviews. Thus, our unifying conceptual variable, validity, could be utilized by researchers examining online reviews and practitioners in shaping the validity of their review venues.

One implication of the current research extends beyond the online review context. For example, many individuals in the digital era have expressed concerns about sharing misleading information with others (e.g., fake news articles, rumors). Such misleading information will be even more problematic in high validity contexts if people posting, sharing, or circulating the fake news subsequently believe the misleading information or further radicalize their attitudes as a result of their posting behavior. For example, an individual who knows he or she is posting fake news to manipulate others is more likely to be affected by the content of his or her own post when the venue (e.g., an online forum) is perceived to have high (vs. low) validity. Ironically, even if they initially know what they are posting or sharing is not true, they are likely to end up believing their own lies more in high (vs. low) validity venues. By posting in high (vs. low) validity venues, people might even end up changing their own identity (Belk, 2013).

Our research could also contribute by suggesting a way of increasing participation in evaluative processes in areas where it is often needed, such as student–teacher evaluations, governmental services evaluations, as well as nonprofit and private sector evaluations (Hurtz & Williams, 2009). One could speculate that ensuring high validity and resulting confidence could increase participation in much-needed evaluative processes. Consistent with this view, the current research demonstrates that people are more likely to use their thoughts in forming evaluations when confidence is high rather than low. In contrast, it should also be noted that doubt can motivate people to speak up and share their evaluations to deal with the uncertainty and regain the desired confidence (e.g., Gal & Rucker, 2010). Therefore, future research can examine these complex dynamics between confidence and doubt in promoting participation in evaluative contexts.

### *Theoretical Contributions*

The current research offers a unique paradigm to contribute to the literature on online reviews and WOM. Adapting a novel theoretical perspective of self-validation and metacognition, we showed that different levels of validity embedded in the meanings associated with posting reviews could affect thought confidence, which in turn can influence attitudes and behavioral intentions. This novel perspective suggests the

need for research to examine how meanings associated with posting reviews can impact thought confidence and drive subsequent changes in evaluation and behavior. Past research in online review and WOM has focused on examining either how consumers are influenced by product reviews of others as a function of message characteristics (Packard & Berger, 2017; Rozenkrants et al., 2017) or broader social contexts (Angelis et al., 2012; Chen & Kirmani, 2015). However, the current findings suggest that previously examined factors may also be viewed through the lens of meaning and metacognitive thought confidence. This perspective may generate new research related to online review posting behaviors and it may be useful for managers in shaping more or less valid reviewing contexts, depending upon their strategic objectives.

As noted earlier, our findings may suggest a potential reconciliation of the seemingly contradictory results documented in Briñol et al. (2013) and Sparrow et al. (2011). Briñol et al. (2013) showed that the direction of thoughts was more influential in forming evaluations when those thoughts were physically kept safe rather than discarded. In contrast, Sparrow et al. (2011) found that saving rather than deleting thoughts led those thoughts to be less influential in a memory paradigm. The framework suggests that these differences could have been produced because the action of saving in Briñol et al. (2013) meant that thoughts are valid and thus worth keeping in mind, whereas the same action in Sparrow et al. (2011) meant that the thoughts are stored safely for a recall in the future and thus it did not need to be memorized. In Sparrow et al. (2011), participants were instructed to read “40 memorable trivia statements of the type that one would look up online” (Study 2, p. 776). Thus, saving (vs. deleting) would have meant not having to (vs. having to) exert effort to recall the statement. The comparison of Briñol et al. (2013) and Sparrow et al. (2011) implies that similar action's validity could be sensitive to the contextual and situational factors. We think that the default meaning of saving is perceiving the saved object to be valuable. We save things that are valuable (e.g., online passwords are saved in a secure place), whereas deleting by default means that the object is less valuable (e.g., outdated password deleted from a computer). However, this default meaning could be altered by the contextual factors, as shown in Sparrow et al. (2011). Future research could examine the factors in an online review context that could alter the validity and meaning that review posters perceive.

### *Limitations and Future Directions*

Across the four studies reported in the current research, meanings of online review posting behavior were externally provided. Our findings have implications for the individuals leaving reviews online as well as those who design and manage the venues through which reviews are posted and shared with others. A limitation of the current research is that we do

not provide specific guidance to the relevant institutions (e.g., social network services) regarding how these venues should be designed. However, our finding that the perceived meaning matters in these contexts suggests that the institutions could design the online venues carefully so that the perceived meanings in the venues by the users could be effectively managed to help their objective.

Another limitation is that the meanings and perceived validity were provided to the review posters in a controlled experimental environment. However, it is possible that consumers generate and ascribe meanings on their own. In an additional study conducted in the context of educational settings, 188 business undergraduate students ( $M_{age} = 20.67$ ,  $SD_{age} = 1.17$ ; 47% women) generated either positive or negative thoughts about their own university and chose whether to save (i.e., high validity meaning) or delete (i.e., low validity meaning) the reviews of their university on their own. The result showed that those who generated positive (vs. negative) thoughts about the university reported a more favorable evaluation of the university when the thoughts were saved ( $p < .01$ ) but not when the thoughts were deleted ( $p = .43$ ). Thus, online review posters, in an unprompted environment, appear to be capable of spontaneously generating and ascribing meanings to review posting, and these meanings could have an impact on thought validation. Future research can examine how externally and internally provided meanings are different in terms of validating one's review.

The Elaboration Likelihood Model (ELM) suggests that persuasion can occur through various high and low thought processes (Petty & Cacioppo, 1986). Given that different processes are likely to operate in different circumstances, our experiments were designed to examine the role of metacognitive validation and minimize the effect of other persuasion processes. For example, the amount of thoughts is an important variable in the ELM. To ensure that the meaning manipulation did not affect the amount of thoughts generated, we induced the meaning of review posting after the thoughts were generated. Because persuasion depends on the timing that certain information is provided during the persuasion process (Tormala et al., 2007), it is possible that the thought generation and subsequent self-persuasion could have been affected if the meaning of online review posting preceded the generation of the review. Future research can examine the impact of how the order of meaning and thought generation could differentially affect the self-persuasion process and product evaluation.

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### Supplemental Material

Supplemental material is available online with this article.

### Notes

1. Because LIWC can analyze the valence (i.e., positivity) of a text but not the persuasiveness of thoughts, we only used LIWC for valence analysis to supplement the evaluation by judges.
2. Although the effect of Meaning of Review on the number of words was marginally significant ( $p = .07$ ), a meaningful conclusion cannot be drawn from this statistic because the review writing preceded the meaning manipulation. Thus, this relationship is likely to be spurious.

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