The Meaning of Consumer Actions Drives Thought Usage in Self Persuasion

(Under Review at *Journal of Consumer Psychology*)

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Acknowledgements

The authors acknowledge the helpful input of social psychology and marketing seminar participants at Ohio State University, Indiana University, the embodiment special session attendants at the 2014 ACR Conference, Baltimore, MD, and the embodiment preconference attendants at the 2016 SPSP Annual Meeting, San Diego, CA.

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Abstract

The current research demonstrates that thoughts can be treated as if they were physical objects, and that the actions performed related to these thoughts and the presumed meaning of those actions determine the impact of those thoughts on evaluative judgments. Across four main studies, consumers first wrote either positive or negative thoughts about various consumers' products and services. Then, consumers performed different actions with those written thoughts. The meanings of these actions were varied to indicate either high validity (e.g., saving, extending, sharing) or low validity (e.g., deleting, hiding, archiving) with respect to their thoughts. We hypothesized and found that performing actions associated with a meaning of high (vs. low) validity increased reliance on those thoughts in forming evaluations and behavioral intentions. Furthermore, the validity of those actions' meanings impacted attitudes by affecting the proposed mediating mechanism (thought confidence). Among other implications, these findings provide the first mediational evidence regarding thought-objectification, extending the work on embodiment, meta-cognition, and consumer evaluation.

Keywords: embodiment, attitudes, persuasion, metacognition, validation, confidence

The Lantern Festival is an annual event in many Asian countries where participants release a paper lantern into the sky. This activity may hold different symbolic meanings for different participants. For some, releasing the lantern may represent letting go of or discarding one's thoughts (e.g., as one might want to do with one's worries and concerns) whereas, for others, releasing the lantern may not represent discarding but instead spreading one's thoughts around the world (e.g., as one might want to do with one's hopes and dreams) (Melton, 2011). Thus, the Lantern Festival is a ritual in which different people can engage in the same physical action with different psychological meanings. Might the meanings people attach to their actions impact the degree to which these actions result in changes in their subsequent attitudes and behaviors? And if so, what would be the outcome if a lantern associated with one's hopes is associated with a negative meaning (e.g., letting them go away) while the lantern filled with worries is associated with a more positive meaning (e.g., spreading them to others)?

In consumer contexts, the action of posting a positive or negative review about a product on an online review website (e.g., Amazon.com) or a SNS (e.g., Facebook) could subsequently influence the posting consumers' minds positively or negatively depending on the meaning ascribed to this action. For example, posting a positive or negative review for a product on an online website that has millions of visitors can mean validation of one's thoughts about a product by sharing them with others and help their decisions. However, the same action can have a relatively less valid meaning if the consumer thinks that one's review will be merged with thousands of other reviews and have minimal impact on others. The current research examines these possibilities by relying on a paradigm that separates the valence of one's thoughts from the meaning of one's actions regarding those thoughts in a persuasion context.

Whereas most consumer research on persuasion focuses on messages that consumers receive from other consumers or media sources (ads, media, etc.), messages that consumers generate themselves can also be quite effective in producing changes in attitudes (Dimofte & Yalch, 2010; Hamby, Brinberg, & Daniloski, 2017; Shavitt & Brock, 1990; Spangenberg & Sprott, 2006; Wright, 1973). Self-generated messages are important because they can lead to changes in consumers' own attitudes (Brock & Shavitt, 1983; see Teeny, Briñol, & Petty, 2017, for a review). Some of the earliest demonstrations of the persuasive effects on self-generated messages can be found in research on role-playing. In this research, people were typically asked to generate arguments on certain topics (e.g., the dangers of smoking; Janis & King, 1954) and their subsequent attitudes were compared to those in a control group who had either passively listened to the same communication or who had received no message. Consistently, active message generation was shown to be a successful strategy for producing attitude changes such that those who produced their own arguments were more persuaded compared to those exposed to the arguments generated by others (Dimofte & Yalch, 2010; Hamby et al., 2017; Huesmann, Eron, Klein, Brice, & Fischer, 1983; Watts, 1967).

Thus, this prior research has shown that the arguments generated by consumers can impact their own attitudes, even without any kind of persuasive appeal from an external source. In a more recent study relevant to consumer evaluation, Shavitt, Lowrey, and Han (1992) asked participants to generate and design ads that would "explicitly appeal to themselves." The results indicated that self-generated ads were capable of affecting subsequent attitudes more than ads generated by external sources. These discoveries helped foster a cognitive response paradigm of persuasion that contended that nearly all influence was self-persuasion because, even when people are exposed to external messages, thoughtful persuasion ultimately depends on the extent

to which individuals articulate and rehearse their own favorable idiosyncratic thoughts about the information presented (Petty, Ostrom, & Brock, 1981). Thus, according to this framework, consumers are persuaded (or resist change) by virtue of their own thoughts rather than by learning the message information per se (as had been argued by earlier learning theories; see Hovland, Janis, & Kelly, 1953).

The present research builds on extant self-persuasion research and assumes that the direction of thoughts is a critical determinant of consumer's attitudes. In addition to the direction of thoughts, however, the present research relies upon another dimension that has proven critical in shaping consumers' evaluations. Specifically, in line with recent research on self-validation (Briñol, Petty, & Tormala, 2004), we argue that the perceived validity of consumers' thoughts also influences the extent of self-persuasion. Furthermore, we rely on past work showing that thought validity can be impacted by consumers' actions related to their thoughts, consistent with the idea of embodied validation (Briñol & Petty, 2003). Our focus in the current research is examining the differential meanings that can be ascribed to those actions.

Self-Validation and Self-Persuasion

As already noted, self-persuasion research often focuses on the primary thoughts consumers generate about products, brands and services (Teeny et al., 2017), and recent research suggests that consumers are not only influenced by the valence of their primary thoughts, but also by the secondary thoughts they generate about their primary thoughts. *Meta-cognitions* refer to the secondary thoughts consumers have about their own primary thoughts (Pham & Muthukrishnan, 2002; Rucker, Petty, & Briñol, 2008; Rucker, Tormala, Petty, & Briñol, 2014; Schwarz, 2004; Valenzuela & Raghubir, 2009). Research suggests that although generating favorable or unfavorable thoughts is an important factor in producing attitude change, the extent

to which those thoughts impact attitudes also depends on what consumers think about their thoughts. From this meta-cognitive view, two consumers might have the *same* thought, but one person might consider that thought more valid than the other might. The greater the confidence in the thought's validity, or the more the consumer likes the thought, the greater its impact on subsequent judgment. This meta-cognitive view is referred to as the *self-validation hypothesis* (Briñol et al., 2004).

Initial support for this hypothesis came from a study (Petty, Briñol, & Tormala, 2002) in which participants were first asked to generate positive or negative thoughts about a proposal. Following the thought listing task, participants reported the confidence they had in the thoughts they listed as well as their attitudes toward the proposal. Results indicated that the relationship between thoughts and attitudes was significantly greater to the extent that thought confidence was relatively high rather than low. In the high confidence conditions, positive thoughts led to more favorable attitudes than negative thoughts, but in the low confidence condition, thoughts had a smaller impact on attitudes. This study showed that thought confidence could play an important role in affecting the extent of thought use such that thought valence is more influential for attitudes under high than low confidence conditions.

Second, in addition to assessing thought confidence, direct manipulations of thought confidence have also proven effective in determining persuasion. In one study, college students were asked to think about past situations in which they experienced confidence or doubt following exposure to a message containing either strong or weak arguments in favor of a new university exam policy (Petty et al., 2002). Those who articulated past instances of confidence became more certain that their recently generated thoughts about the message were valid compared to those who reflected upon past instances of doubt. That is, the feeling of confidence

stemming from the memory exercise was misattributed to the thoughts recently generated about the persuasive message and affected their use. As predicted, increased thought confidence led to greater persuasion when recipients' thoughts were largely favorable (i.e., to the strong arguments), but more confidence led to less persuasion when recipients' thoughts were largely unfavorable (i.e., to the weak arguments). Thus, self-validation predictions have been supported, both when thought confidence was measured and manipulated.

Third, research on self-validation has demonstrated there are several source, message, and recipient factors that can influence consumer persuasion by affecting thought reliance. For example, source credibility can influence persuasion by affecting the confidence people have in the thoughts generated in response to an ad (Briñol et al., 2004). In one study, Tormala, Briñol, and Petty (2006) showed that a strong advertising message about the effectiveness of a pain relieving drug was validated when, following the message, it was said to come from a high (vs. low) credibility source, such as a federal agency, leading to greater persuasion. However, a relatively weaker advertising message about the same product followed by a high credibility source backfired and led to less persuasion compared to the low credibility source.

In subsequent research, Tormala et al. (2006) demonstrated that source credibility affected thought confidence only when the source information followed, rather than preceded the persuasive message, and when thinking was high, rather than low or moderate. When credibility preceded message processing under high thinking conditions, it biased the thoughts generated in a manner consistent with past research, such that consumers had more positive thoughts about the message when the source was high rather than low in credibility (Chaiken & Maheswaran, 1994). This study suggested the role that subtle situational factors such as timing play in influencing meta-cognitive processes in persuasion.

Beyond source credibility, extensive research on self-validation has revealed that a wide variety of factors impact the perceived validity of consumers' thoughts (Briñol & Petty, 2003; Briñol, Petty, & Wagner, 2009). For instance, research has shown that recipients' physical actions, such as head nodding or shaking (Briñol & Petty, 2003), or sitting in an upright or slumped position (Briñol et al., 2009), are capable of impacting the perceived validity of one's thoughts. In line with this possibility, the current research investigates the role of physical actions on self-validation in a nascent persuasion context, one in which consumers objectify their thoughts by physically writing their thoughts out on paper or typing them on a computer. Given the emergence of online review and recommendation systems wherein consumers formalize their experiences in text, thought-objectification is an increasingly important marketing context.

Objectifying Thoughts

One of the most recent research paradigms on self-validation has shown that thoughts can be understood and treated as if they were physical objects. A critical finding within this paradigm is that the actions consumers perform with physical manifestations of their thoughts have psychological consequences. In an initial illustration of this paradigm, Briñol, Gascó, Petty, & Horcajo (2013) asked participants to write down either positive or negative thoughts about the Mediterranean diet on a piece of paper. Then, participants were randomly assigned to one of three conditions: thought disposal, thought protection, or a control condition. Those in the disposal condition were asked to take the page on which they had written their thoughts (i.e., objectified thoughts) and place it in a trash can. In the protection condition, participants were asked to take the page on which they had written their thoughts, fold it up, and keep it in a safe place such as their pocket, wallet, or purse. In the control condition, participants were asked to

merely fold the corners of the page where the thoughts were written and leave it on the table. Next, all participants were asked to rate their attitudes regarding the Mediterranean diet.

The results revealed that physical disposal of one's thoughts led to mental disposal of the thoughts such that these thoughts were less impactful in affecting attitudes. Thus, when thoughts were discarded, participants were found to use their thoughts less in forming their judgments as compared to the control condition. Furthermore, protecting one's thoughts was found to lead to more usage in forming judgments. Presumably, the actions performed on objectified thoughts affected attitudes by influencing the validity with which thoughts were held. However, the self-validation mechanism based on changes in thought confidence was not tested explicitly.

In the present research, we build on this core finding and introduce the idea that variations in the meanings of the actions performed with objectified thoughts are also important in determining the perceived validity of consumers' thoughts. We examine whether the same actions can produce changes in evaluations as a function of the meanings attached to those actions. Put simply, the primary goal of the present research is to examine whether a new variable—the perceived meaning of actions—can influence attitude change. Additionally, in some of our studies, we examine whether physical actions lead to attitude change through a validation process in which changes in thought confidence occur as a function of physical actions. Thus, the present research introduces a new idea in metacognitive validation: the meanings ascribed to particular actions, rather than the actions per se, are the key drivers of self-validation.

Perceived Meaning and Self-Validation

In the present research, we investigate the role of meaning in understanding how physical actions can influence attitudes and persuasion through self-validation processes. Most of the

behaviors and subjective experiences studied in prior self-validation and embodiment research have clear implicit meanings attached to them. For example, nodding one's head is often associated with agreement, arm flexion tends to be associated with acceptance (e.g., hugging), pulling a product closer to the self is associated with reward, vertical elevation is associated with power or self-worth, warm temperature is mostly associated emotional warmth, and the fluency that emerges from repeating a behavior is often experienced as something good (Hadi & Valenzuela, 2014; Labroo, Mukhopadhyay & Dong, 2014; Ostinelli, Luna, & Ringberg, 2014; Streicher & Estes, 2016; Zwebner, Lee, & Goldenberg, 2014). A common factor in all these examples is that the meanings associated with those behaviors are linked with high validity. However, the meaning of these and other behaviors can vary among individuals and situations (Teeny et al., 2017). For example, nodding one's head can be associated with disagreement in certain contexts, arm flexion can be seen as protection in other settings (e.g., crossing one's arms as a gesture of skepticism), and smiling can be an indication of trivializing or that one is "trying" to be happy when feeling sad (Labroo et al., 2014; Lewinski, Tan, Fransen, Czarna, & Butler, 2016). In these examples, the meaning linked to the behaviors is now associated with low validity. In the current paper, we posit that if the validity of the meaning associated with a behavior changes, the effect of that behavior on subsequent attitudes should also change.

In one study revealing how meaning variations are critical for evaluation, Briñol, Petty, and Tormala (2006) asked college students to write their thoughts against a potential comprehensive examination policy being considered as a new requirement for their graduation. In the easy-to-read high fluency condition, participants typed in their thoughts in black font over white background whereas in the difficult-to-read low fluency condition, thoughts were typed in yellow font over pink background. In addition, they also manipulated the perceived meaning of

ease versus difficulty. Half of the participants were told that ease in generating thoughts generally indicates that thoughts were low in complexity and that intelligent people, who have more complex thoughts, typically experienced more difficulty in generating thoughts than unintelligent people. The remaining participants received the opposite information, suggesting that ease was an indicator of intelligence. Consistent with expectations, results indicated that the traditional fluency effect (Schwarz et al., 1991) emerged only among the participants who associated ease with the meaning of high validity (i.e., intelligence). Among those who associated ease with low validity (i.e., unintelligence), the opposite result occurred.

Among other things, this research illustrates that the same variable (ease) can have different effects (increasing or decreasing persuasion) as a function of other variables (such as the nature of one's naïve theories associated with ease). A similar logic can be applied to understanding the effect of meanings ascribed to actions involving objectified thoughts. For example, consider previous work by Briñol and colleagues (2013) showing that physically discarding one's thoughts (moving objectified thoughts to a trash bin) led them to be mentally discarded as well, whereas physically moving them to a safe place (one's pocket) led them to be relied upon more. In the present research, we argue that the meaning of these actions can vary among individuals and situations. We posit that if the meaning associated with physical actions changes, the effect of those behaviors on attitudes should also change.

For example, placing one's written thoughts in a box can be described and viewed as discarding one's thoughts into a trash can or as placing them in a vault for safe keeping. In fact, businesses frequently solicit consumer feedback this way by asking consumers to complete satisfaction surveys and temporarily store this feedback in comment boxes. We posit that physically moving objectified thoughts into a box can lead to either greater or lesser validation of

these thoughts, depending upon whether the action is perceived to mean safety or disposal, even though the physical action is the same in both conditions. Prior research has shown that embodiment effects can depend on the meaning of an object utilized during embodiment. For example, Adam and Galinsky (2012) has shown that wearing a white coat labelled as a doctor's (vs. painter's) increases mental acuity. A notable distinction between previous work in embodiment and the current research is that we examine how changing the meaning of an *action* itself influences the embodiment effect. In doing so, we show also that changing the meaning of an action influences the feeling of confidence, which may serve as a general underlying mechanism for a variety of embodiment effects. That is, the present research is the first to test how varying the meaning of the same action will drive changes in how consumers use their thoughts in subsequent judgments.

Existing Research on Online Product Reviews

Beyond attitudes, embodiment, and meaning, the current research also contributes to the literature of consumer online product reviews and word of mouth behavior. The existing research in this area can be summarized into a few research streams. One stream of research examined the factors that influence the process through which online reviews are created and the factors that influence this process (Chen & Kirmani, 2015; Packard & Wooten, 2013). For example, research has shown that a variety of consumer goals, such as a goal to persuade other consumers or a goal to affiliate with other consumers influence where consumers choose to post their reviews to target specific group of consumers, and influence the valence of their reviews as well (Chen & Kirmani, 2015). Also, research has shown that individual needs, such as motivation to signal one's expertise could prompt online review behaviors (Packard & Wooten, 2013) and that the valence of the reviews could depend on individual factors, such as need for uniqueness (Cheema

& Kaikati, 2010) or self-enhancement motivation (Angelis, Bonezzi, Peluso, Rucker, & Costabile, 2012).

In contrast to this stream of research that focused on the review creators, another stream of research focused on examining the process through which created reviews influence the review recipients and examined the factors that make reviews become more impactful (Packard & Berger, 2017; Rozenkrants, Wheeler & Shiv, 2017). For example, Rozenkrants et al. (2017) have shown that consumers think that products with polarized reviews (i.e., bimodal rating distribution) are more self-expressive because using a product strongly liked or disliked could serve as a vehicle to signal one's distinctive taste and preferences. Research into the use of language in online product review has shown that explicit language (e.g., "I recommend it") is more effective than implicit language (e.g., "I like it") because readers infer stronger liking and expertise of the endorser when explicit languages are used (Packard & Berger, 2017).

Lastly, one stream of research examined how the characteristics of the online communication platform influence the content of the message (Berger & Iyengar, 2013). For example, due to the text-based (vs. oral) nature of the online product reviews, it was shown that online reviews tend to mention more interesting brands and product (Barasch & Berger, 2014; Berger & Iyengar, 2013; Buechel & Berger, 2018). Research into this stream has also shown that the content of online communication depends on the size of audiences such that large number of audiences elicit self-image maintenance motivation whereas small number of audiences shift people focus on the recipients and lead to the generation of contents that is more useful and tailored to the recipients (Barasch & Berger, 2014; see also Buechel & Berger, 2018).

Building off the extant literature of online product review and word of mouth behavior that focused the characterstics of review creators, review recipients, and the communication

platform, the current reserach focus on a novel dimension that is previously unexamined: the perceived validity of online product reviews. Based on the models of *meta-cognitions* and *self-validation* positing that consumers primary thoughts can be influenced by the secondary thoughts about the primary thoughts (Briñol et al., 2004; Pham & Muthukrishnan, 2002; Rucker et al., 2008; Schwarz, 2004; Valenzuela & Raghubir, 2009), we hypothesize that high or low validity meaning associated with online product review behavior would further moderate the primary effect of review on subsequent product evaluation. For example, leaving a positive (negative) review about a product would further strengthen one's valenced attitude about the product as a function of the perceived validity of the thoughts. Leaving a review could mean that one's thoughts are shared with millions of other consumers and useful to their decisions. In contrast, the same action could mean that the review is merged with thousands of reviews and made invisible to other consumers, not being useful for other consumers to make decisions. We posit that such high vs. low validity meanings could influence the extent to which the content (e.g., valence) of the review influence the consumer's subsequent evaluation of the product. When the action is associated with low validity meaning, we predict that the effect of valence on subsequent evaluation will be attenuated. To our best knowledge, however, these possibilities were never examined. Thus, the current research examines previously unexamined dimension, namely, the meta-cognitive meaning that consumers associate with online product review, and contribute to the literature of consumer product review and word of mouth behaviors.

Overview of Experimental Studies

In four studies employing a thought-objectification paradigm, participants wrote either positive or negative product reviews for a product that they recently purchased (Study 1), a famous consumer brand (Study 2), their current courses taken at their university (Study 3), and

one's own university (Study 4). Identical actions were then performed with these thoughts and the meanings of these actions were varied to indicate either high or low validity. Study 1 closely mimicked consumer online product review context and examined whether varying the validity of product review behavior differently influence subsequent evaluation of reviewed product. Studies 2 and 3 examined whether this effect can further extend to behavioral intentions potentially resulting from changes in meta-cognitive mechanisms of thought-reliance as a theoretical mechanism. Studies 2 and 3 also tested the proposed mechanism by taking a mediation approach. Study 4 was designed to examine whether internally generated variation in the meaning of an action could impact self-validation and lead to more or less thought usage.

Study 1

The purpose of Study 1 was to test our thought-objectification paradigm in a consumer online product review context. Research has shown that creating an online product review not only influences the purchase intention of the readers of the review, but also the attitude of the individual who created the review (Chen & Kirmani, 2015; Huang, Burtch, Hong, & Polman, 2016; Moore, 2011). In Study 1, we examined how consumers' evaluation of the reviewed product changes depending on the valence of the review and the perceived meaning of the action.

We expected that consumers' directional thoughts reflected in their reviews will influence their product evaluation to a greater extent when leaving a review is perceived as a action with high validity rather than an action with low validity. Therefore, we predicted that directional thoughts would influence subsequent product evaluation consistent with the direction of the thoughts especially when the action has a valid meaning. Because previous research on meta-cognition showed that invalid meaning could make individuals doubtful or lose confidence in one's thoughts (Briñol et al., 2004), we predicted attenuation of the effect of thought direction on

subsequent evaluation when the same action had a relatively low valid meaning. To test this notion, we manipulated both thought direction and the meaning of action. When leaving a review is perceived as a valid action, we predicted that leaving a positive review will lead to a more favorable evaluation of the product than leaving a negative, a result that is consistent with the direction of generated thoughts. When leaving a review is perceived as an action associated with low validity, we predicted that leaving a positive review or negative review will not differently influence consumers' subsequent product evaluation. Therefore, we predict an interaction between the thought direction and meaning of action.

Method

Participants and design. Two hundred individuals from M-Turk (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 direction: positive, negative) x 2 (meaning of action: high vs. low validity) between-subjects design. We took Briñol et al. (2013) as a reference point for determining minimum sample size and attempted to collect as many participants as possible across studies. Sample size was also influenced by the size of the participant pool made available to the authors in the given semester. On average, we had 219 participants for each study that had 2 x 2 between-subjects design. Gender and age neither predicted nor interacted with the other independent variables to predict 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 online shopping experience. First, we manipulated the direction of thoughts. In particular, participants were told to recall several products that they have recently purchased. Then, participants were instructed to specifically describe either positive or negative aspects of

the chosen product during a three-minute period. This manipulation was shown to successfully induce positive or negative thoughts toward various attitude objects (Briñol et al., 2013; Killeya & Johnson, 1998).

Upon completion of the directional writing task, participants were told that their writing will be uploaded and made public anonymously at one of the major online review websites. In order to manipulate the validity of this action, we varied the potential impact of this action to other consumers. In the high validity condition, participants were told that their review will 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 will be "posted on one of the product review websites and merged with thousands of other reviews." Although this induction was rather subtle, a pretesting confirmed that varying the visibility and potential impact of one's review on other consumers successfully manipulates the extent to which it is perceived as a meaningfulness and usefulness of the action[1].

Then, participants moved a slider from left to right on their computer screen to post their reviews. Therefore, all participants conducted the same action but the meaning of this action varied depended on participants' conditions. After engaging in this action, all participants were told that their reviews are successfully posted. By leading participants to think that the post was successful and that will reach other people in all cases we prevented any experimental demands regarding validity.

[1] In a pretest in which 100 M-Turk participants were randomly assigned to either valid or invalid meaning condition, participants were instructed to imagine that their review will be posted on a website with million daily visitors (i.e., validity condition) or that their review will be merged with other thousands of reviews (i.e., invalidity condition). In the subsequent questions measuring the extent to which posting an online product review is "meaningful" and "useful" (averaged to create the index of validity, $\alpha = .99$), validity associated with the action was higher in the validity condition ($M = 7.47$, $SD = 1.40$) than in the invalidity condition ($M = 6.46$, $SD = 2.01$), $F\ (1.98) = 8.61$, $p = .004$, $\eta_p^2 = .08$.

Next, participants were asked to tell more about the product they wrote about. In particular, the participants evaluated the product based on the same items used in previous studies ("good," "desirable," and "useful;" 1 = not at all, 9 = very much). The three items were averaged to create the index of product evaluation (α = .80) and served as our dependent variable. In order to ensure that no participants correctly conjectured the purpose of the study, participants were asked to guess the purpose of the study. Analysis of this suspicion probe question revealed that no participants correctly inferred the actual purpose the study. Also, this was true across all studies and it will not be discussed further. Finally, participants were thanked and debriefed.

In order to examine whether the manipulation of thought direction was successful, two independent judges coded the positivity of participants' written thoughts 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 (α = .92) and persuasiveness (α = .71). Therefore, the two judges' scores on thought positivity were averaged to create an index of thought positivity. The two judges' scores on thought persuasiveness were also averaged to create the index of thought persuasiveness. The length of writing (i.e., number of words used in the writing) was measured as a proxy of effort exerted for the generation of thoughts.

Results

Thoughts. The positivity of thoughts was higher among the participants who were assigned to the positive thought direction condition (M = 3.92, SD = .74), than those who were assigned to the negative thought direction condition (M = 1.91, SD = .61), $F(1, 198) = 438.71$, $p < .001$, $\eta_p^2 = .69$. Thus, the manipulation of thought direction was successful. A comparison

revealed that 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. The perceived persuasiveness of thoughts was not significantly different between the positive thought condition (M = 3.87, SD = .76) and the negative thought condition (M = 3.91, SD = .77), $F(1, 198) = .17$, $p = .68$, $\eta_p^2 = .001$. Thus, thoughts differed in their directionality but not in their perceived quality. Participants' writings were coded and analyzed in the same manner in other studies as well and we found consistent results (to see these analyses, see appendix A in the MDA).

Product evaluation. We submitted the index of product evaluation to a 2 (thought direction: positive, negative) × 2 (meaning of action: high vs. low validity) ANOVA. The result revealed a significant main effect of thought direction, $F(1, 196) = 15.93$, $p < .001$, $\eta_p^2 = .08$. This main effect was qualified by the significant interaction between the thought direction and the meaning action, $F(1, 196) = 10.80$, $p = .001$, $\eta_p^2 = .05$. To further examine the nature of 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 condition, product evaluation was not significantly different in the positive (M = 6.63, SD = 1.74) and negative thoughts direction conditions (M = 6.48, SD = 1.59), $F(1, 196) = .24$, $p = .62$, $\eta_p^2 = .002$ (see Fig. 1) (for all other pairwise comparisons and discussion on them, see additional analysis provided in appendix B in MDA).

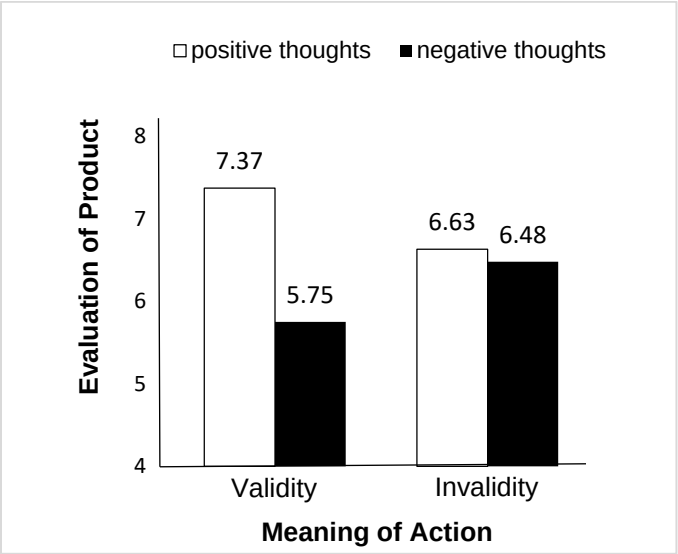

Figure 1. Product evaluation as a function of meaning of action and thought direction (Study 1)

Discussion

As expected, participants who associated their action with a high validity meaning evaluated the reviewed product more favorably when they generated positive (vs. negative) thoughts. However, the effect of thought direction on subsequent product evaluation was attenuated when the same action was associated with a relatively low validity meaning. These results provide initial evidence showing that the same action (i.e., posting a review) can produce distinct effects on thought usage depending on the meanings associated with the action. To our best knowledge, this is the first to show how meta-cognitive validity of online product reviews can influence consumer attitudes toward the reviewed product, thus contributing to the literature of product reviews.

In Study 1, we manipulated the validity of action by varying the extent to which one's review is made visible and potentially make an impact on other consumers' decision making. Employing a more direct manipulation of meaning, we asked participants to save or delete their thoughts in Study 2. In Study 2, we also extended the inquiry to evaluations of a popular

consumer brand, McDonald's, and examine whether these effects would extend to impact another key consumer consequence, namely behavioral intentions associated with their attitudes. Furthermore, we tested whether these effects are mediated by thought confidence.

Study 2

Study 2 had two important goals. First, Study 2 designed to examine whether the effects observed in Study 1 is replicated when individuals generated thoughts about a different attitude object. For this purpose, we used McDonald's as a new attitude object. In doing so, we also examined whether the effects observed in Study 1 extend beyond mere evaluation of the focal object to influence a measure of behavioral intentions related to the object of consumers' thoughts. Another important goal of Study 2 was to examine the mechanism that underlies the thought-objectification effect. For this purpose, we examined whether thought confidence changes depending on the validity of one's action conducted on their thoughts. We predicted that engaging in a high (vs. low) valid action would increase (decrease) thought confidence.

Method

Participants and design. Two hundred and thirty-eight individuals were recruited via M-Turk (M_{age} = 35.73, SD_{age} = 12.80; 66% women) to participate in Study 2. Participants were then randomly assigned to one of the conditions in a 2 (thought direction: positive, negative) × 2 (meaning of action: high vs. low validity) between-subjects design.

Procedure. The experiment took place in the university behavioral lab. Upon arrival to the lab, participants were seated in one of nineteen cubicles in front of a computer. Participants were told as a cover story that the study examined consumers' food preferences and choices. The manipulations of thought direction and meaning of action were conducted based on similar methods used in the previous study. For the manipulation of thought direction, participants were

randomly assigned to list either positive or negative thoughts about a restaurant chain, McDonald's, during a three-minute period. Therefore, the procedure of thought direction manipulation was identical to Study 1, except attitude object was McDonald's instead of a product that participants recently purchased.

After listing their thoughts, participants were randomly assigned to either the high or low validity action condition. Participants in the high validity condition were told that their writing 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 thoughts needed to be "deleted" from the computer before the next phase of the study could begin. Then, a slider appeared on a computer screen and participants were instructed to move the slider all the way to the opposite side to implement the action (i.e., saving or deleting) they were assigned to do on their thoughts. Therefore, all participants conducted the same action but the meaning of this action varied depended on participants' conditions.

After engaging in the action of saving or deleting, 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 actually use the coupon in the near future (1 = not at all, 9 = 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 and persuasiveness of participants' thoughts. Just as in the previous study, the

persuasiveness of the thoughts was not significantly different between the two thought direction conditions but the positivity of thoughts was significantly different, indicating that thoughts differed in its directionality but not in its perceived quality. More information on this analysis is provided in appendix A.

Results

Intention to consume McDonald's food. Our dependent measure (i.e., intention to redeem the coupon) was submitted to a 2 (thought direction: positive, negative) × 2 (meaning of action: high vs. low validity) ANOVA. The results of the ANOVA revealed that the main effect of thought direction was significant, $F(1, 234) = 23.32$, $p < .01$, $\eta_p^2 = .09$, and the main effect of the meaning of action was not significant, $F(1, 234) = .04$, $p = .85$, $\eta_p^2 < .01$. The main effect of thought direction was qualified by a significant interaction between thought direction and meaning of action, $F(1, 234) = 7.70$, $p < .01$, $\eta_p^2 = .03$. Specifically, within the high validity condition, those who generated positive thoughts about McDonald's ($M = 7.87$, $SD = 2.19$) indicated a stronger intention to redeem the coupon compared to those who generated negative thoughts about McDonald's ($M = 5.17$, $SD = 3.12$), $F(1, 234) = 28.95$, $p < .001$, $\eta_p^2 = .21$. Within the low validity condition, the difference between the positive ($M = 6.95$, $SD = 2.84$) and negative thought condition ($M = 6.22$, $SD = 2.78$) was not significant, $F(1, 234) = 2.11$, $p = .15$, $\eta_p^2 = .02$ (see Fig. 2) (for all other pairwise comparisons and discussion on them, see additional analysis provided in appendix B in MDA).

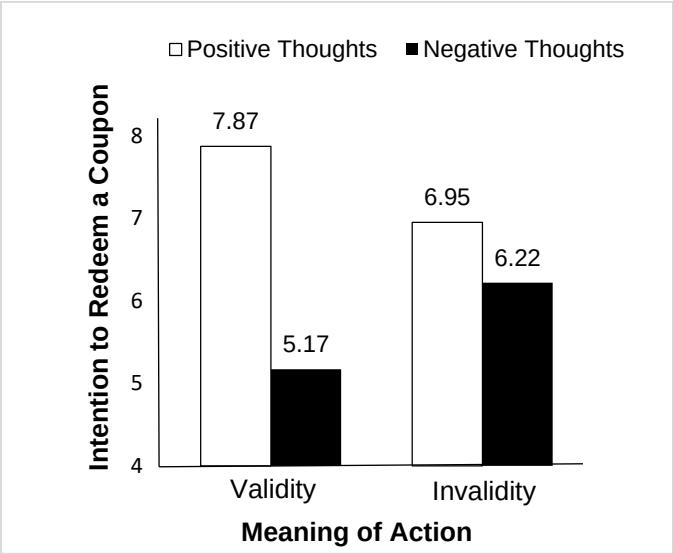

Figure 2. Behavioral intentions as a function of meaning of action and thought direction. (Study 2)

Thought confidence. Next, the measure of thought confidence was submitted to a 2 (thought direction: positive, negative) × 2 (meaning of action: high vs. low validity) ANOVA. The main effect of thought direction, $F(1, 234) = .64$, $p = .42$, $\eta_p^2 < .01$, and the interaction between thought direction and meaning of action were not significant, $F(1, 234) = .01$, $p = .94$, $\eta_p^2 < .01$. The results showed the predicted significant main effect of the meaning of action on thought confidence such that confidence in one's own thoughts was higher when the thoughts were validated ($M = 7.72$, $SD = 1.64$) than when the thoughts were invalidated ($M = 7.24$, $SD = 1.72$), $F(1, 234) = 4.97$, $p = .03$, $\eta_p^2 = .02$ (See Fig. 3). In other words, the action of saving one's thoughts led to greater confidence in the thoughts compared to the action of deleting one's thoughts. Importantly, this was true regardless of the direction of one's thoughts.

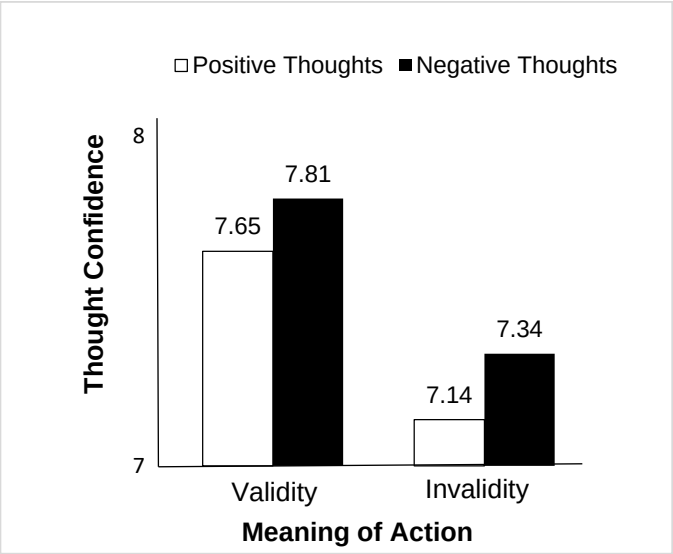

Figure 3. Main effect of meaning of action on confidence. (Study 2)

Mediation analysis. The method used for mediation analysis was adopted from previous self-validation research which had a similar experimental design to Study 1 (see the mediation analysis section in experiment 1 in Horcajo, Petty, & Briñol, 2010). In order to examine whether the level of thought confidence mediated the effect of the key theorized interaction on evaluation, we conducted a mediated moderation test using bootstrapping methods (Muller, Judd, & Yzerbyt, 2005). In this procedure, both thought direction (negative thoughts = -1, positive thoughts = 1) and the meaning of action (low validity = -1, high validity = 1) were contrast coded, and thought confidence was mean-centered. In order to test the hypothesized mediation by thought confidence, we conducted a biased-corrected bootstrapping procedure with 10,000 bootstrap re-samples using the Hayes process macro (model 4) (Preacher & Hayes, 2008; Shrout & Bolger, 2002). In this analysis, thought direction x meaning of action was an independent variable, intention to consume McDonald's food was a dependent variable, and thought direction x thought confidence was a mediating variable (see Fig. 4). This approach includes procedures that compute a 95% confidence interval around the indirect effect and mediation is indicated if

this confidence interval does not include zero. As predicted, the result of this bootstrapping procedure revealed that the 95% confidence interval of the indirect effect (i.e., the path through the mediator) did not include zero (indirect effect a x b = .09, 95% CI = [.02, .24]). Therefore, the mediation by thought confidence was supported.

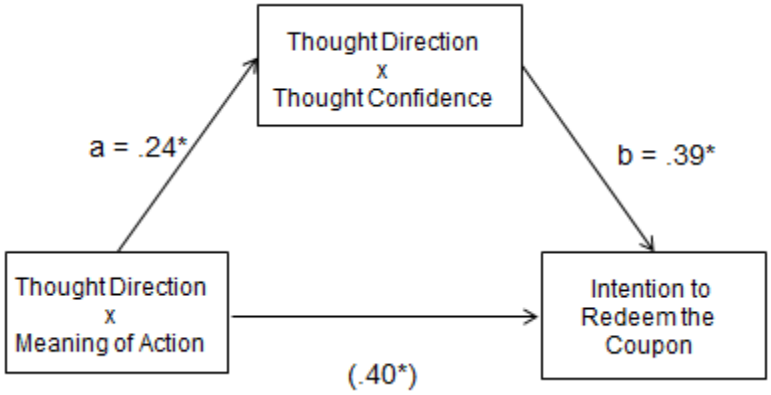

Figure 4. The mediating role of thought confidence[2] (Study 2)

Discussion

Study 2 had several important implications. First, we successfully extended the thought-objectification effect to a new domain, namely thoughts about a fast food restaurant. Second, we showed that the thought-objectification effect is mediated by thought confidence. To our knowledge, this is the first study showing evidence for the underlying mechanism of a thought-objectification paradigm. In Study 3, we examined the impact of thought-objectification on behavioral intentions in a new domain, and we varied the means by which thoughts were objectified; thoughts were generated using a pen and paper instead of being generated on a

[2] The figure in the parenthesis (i.e., .40) is the direct effect of "thought direction x meaning of action" on the "intention to redeem the coupon" after the effect through the indirect path is accounted for. * indicates $p < .05$.

computer. We thought that it was important to generalize from actions performed with a computer keyboard and a mouse to physical actions performed with different objects.

Study 3

In Study 3, we employed a novel attitude object to examine whether the thought-objectification effect would influence evaluations by affecting thought confidence. Also, in contrast to the previous studies in which thoughts were generated and typed on a computer, in Study 3, we focused on thoughts that were generated and written on a sheet of paper with a pen. Recent research has shown that handwriting (vs. writing on a computer) results in more elaborative processing (Mueller & Oppenheimer, 2014; Spitzer, 2014). Thus, Study 3 tested the robustness of the thought-objectification effect with respect to a new method of thought generation. We predicted that the change in behavioral intention observed in the previous study would replicate regardless of the method used for thought generation that may induce different level of processing.

In this study, participants chose one of the courses that they were taking in the same semester that the experiment was conducted, and were instructed to generate either positive or negative thoughts about the chosen course using a pen and paper. After listing their thoughts, participants placed their written thoughts into a box. The action was described to them with a meaning implying high validity (extending their thoughts beyond themselves) or with a meaning implying low validity (placing their thoughts out of sight). These meanings were adopted from the Chinese Lantern Festival in which releasing a lantern could mean spreading one's thoughts around the world (e.g., as one might want to do with one's hopes and dreams) or letting go of or discarding one's thoughts (e.g., as one might want to do with one's worries and concerns) (Melton, 2011).

In order to further examine the evidence of thought-objectification effect on behavioral intention, we measured behavioral intentions in Study 3. In particular, willingness to invest effort in a task has been shown to be an important variable relevant to how much people like and enjoy the task, as well as the interest in the activity (Higgins, Cesario, Hagiwara, Spiegel, & Pittman, 2010). Therefore, we measured participants' intention to invest time and effort in their coursework. We expected the valid meaning to increase the impact of thought direction on course effort intentions. Also, we measured participants' confidence in the thoughts initially listed. We predicted the impact of meaning to be mediated by changes in thought confidence, conceptually replicating previous results with a different induction of meaning and a different topic.

Method

Participants and design. Two hundred and forty-nine business undergraduate students (M_{age} = 20.75, SD_{age} = 1.25; 45% women) participated in Study 3 in exchange for partial course credit. The study was presented as a school-wide survey that aimed to examine students' thoughts about their coursework. Participants were randomly assigned to one of the conditions within a 2 (thought direction: positive, negative) × 2 (meaning of action: high vs. low validity) between-subjects design.

Procedure. Participants were told as a cover story that the university was conducting a survey that aimed to examine students' thoughts about their coursework. Next, participants were asked to choose one of the courses that they were taking at the time of the experiment, which served as an attitude object. Manipulations of thought direction and meaning of action were identical to previous studies, except the attitude object was participants' coursework. First,

participants were instructed to generate either positive or negative thoughts about their chosen course over a three-minute period as a manipulation of thought direction.

After listing their thoughts, participants were instructed to place their written thoughts into a box that was located on each participant's desk and the meaning of this action was described as having a high or low in validity. Specifically, participants in the high validity condition were told that the action meant "extending thoughts beyond the self." In contrast, participants in the low validity condition were told that the action meant "placing thoughts out of sight."

Next, participants indicated the extent to which they intended to exert effort for the course in response to three items, which served as our dependent variables (e.g., "I am willing to spend time on the coursework," 1 = not at all, 9 = very much. The three items were averaged to create an index of intended effort in their course ($\alpha = .88$).

Just as in Study 2, participants were asked to recall the thoughts that they listed about the course and stated 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 direction: positive, negative) × 2 (meaning of action: high vs. low validity) ANOVA. Neither the main effect of thought direction, $F(1, 245) = 1.16$, $p = .28$, $\eta_p^2 = .01$, nor the main effect of meaning of action, $F(1, 245) = .01$, $p = .91$, $\eta_p^2 < .001$, on the intention to exert effort was significant. As predicted, the results revealed a significant interaction between thought direction and the meaning of action, $F(1, 245) = 7.48$, $p < .01$, η_p^2

= .03. In the high validity condition in which thoughts were extended beyond the self, positive thoughts about their course led to a greater intention to exert effort (M = 7.57, SD = 1.28) as compared to negative thoughts (M = 6.89, SD = 1.53), $F(1, 245) = 7.23$, $p < .01$, $\eta_p^2 = .06$. In the low validity condition in which thoughts were kept out of sight, however, the positive thoughts (M = 7.06, SD = 1.46) and negative thoughts conditions (M = 7.36, SD = 1.29) were not significantly different in the intention to exert effort, $F(1, 245) = 1.38$, $p = .24$, $\eta_p^2 = .01$ (see Fig. 5) (for all other pairwise comparisons and discussion on them, see additional analysis provided in appendix B in MDA).

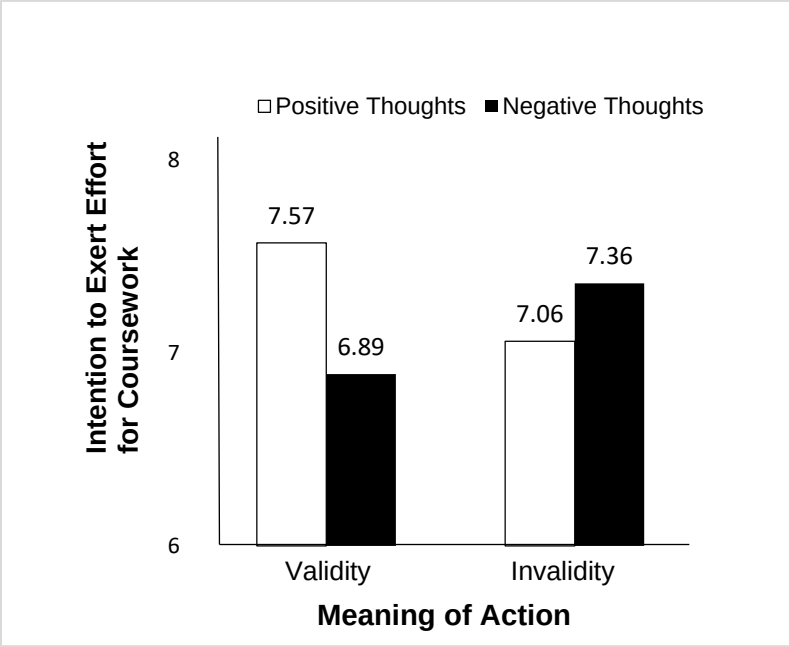

Figure 5. Study intention as a function of meaning of action and thought direction. (Study 3)

Thought confidence. Next, the measure of thought confidence was submitted to a 2 (thought direction: positive, negative) × 2 (meaning of action: high vs. low validity) ANOVA. The main effect of thought direction, $F(1, 245) = .23$, $p = .63$, $\eta_p^2 < .01$, and the interaction between thought direction and meaning of action 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 action on thought confidence, $F(1, 245) = 11.69$, $p = .001$, $\eta_p^2 = .05$. Consistent with previous results, the confidence in one's own thoughts was higher when participants believed that their thoughts were being extended ($M = 7.44$, $SD = 1.25$) than when thoughts were placed out of sight ($M = 6.76$, $SD = 1.82$), $F(1, 245) = 11.69$, $p = .001$, $\eta_p^2 = .05$ (See Fig. 6). Importantly, this was true regardless of thought direction. In other words, the action that meant extending one's thoughts (vs. placing one's thoughts out of sight) led to greater confidence in their thoughts, regardless of the thought direction.

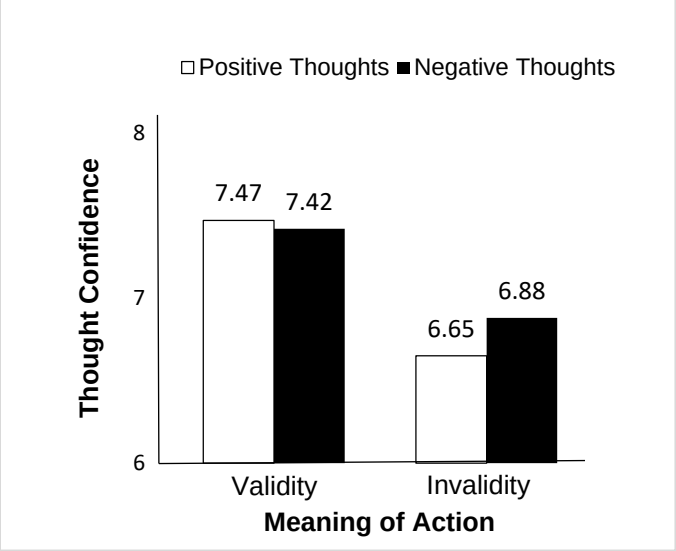

Figure 6. Main effect of meaning of action on confidence. (Study 3)

Mediation analysis. A mediation analysis was conducted based on the same method used in Study 2. Both thought direction (negative thoughts = -1, positive thoughts = 1) and the meaning of action (low validity = -1, high validity = 1) were contrast coded, and thought confidence was mean-centered. In the mediation model, thought direction x meaning of action was an independent variable, intention to exert effort was a dependent variable, and thought direction x thought confidence was a mediating variable. The result of this bootstrapping

procedure with 10,000 bootstrapped re-samples revealed that the 95% confidence interval of the indirect effect (i.e., the path through the mediator) did not include zero (indirect effect = .74, 95% CI = [.20, 1.30]). Therefore, the mediation through thought confidence is supported (Shrout & Bolger, 2002).

Discussion

Study 3 provided additional support for the key theory. Specifically, participants exhibited stronger impact from their thoughts when the meaning of action was associated with high validity (i.e., extension) rather than low validity (i.e., out of sight). Also, Study 3 demonstrated that our key effect was present when thoughts were handwritten. Additionally, the meanings ascribed to the actions in Study 3 were different compared to previous studies, but they still produced the same though-objectification effect due to their common association with high or low degrees of validity across semantic variations. Study 3 also provided further evidence that thought confidence is the underlying mechanism. So far, the meaning of action was provided externally in the experiment; “saving” versus “deleting” in Studies 1 and 2, “extending” versus “making out of sight” in Study 3. In the next study, we examined whether meanings internally generated by consumers produces the same thought-objectification effects observed in previous studies.

Study 4

Consumers often ascribe different meanings to their own action. For example, making a fist could mean feelings of confidence to one consumer whereas the same action could mean feelings of frustration to another. The primary goal of Study 4 was to examine whether these internally generated meaning of action produces effects similar to previous studies in which the meaning of action was externally provided in the experiments. For this purpose, participants

conducted the same action on their positive or negative thoughts about their university, just as in Study 1, but this time whether this action meant saving or deleting was chosen by the participants. Just as in Study 1, we expected that physically saving one's objectified thoughts would lead to greater use of these thoughts in reporting attitudes, whereas deleting one's objectified thoughts would lead to less use of these thoughts in attitudes.

Method

Participants and design. One hundred and eighty-eight business undergraduate students (M_{age} = 20.67, SD_{age} = 1.17; 47% women) participated in Study 4 in exchange for partial course credit. They were assigned to one of the conditions in a 2 (thought direction: positive, negative) x 2 (meaning of action: high vs. low validity) design. Participants were randomly assigned to one of the conditions in the first factor (i.e., thought direction) and chose either high or low valid meaning on their own in the second factor (i.e., meaning of action). Therefore, the second factor was a self-assigned variable.

Procedure. Just as in Study 1, the cover story introduced the study as a part of a university improvement plan and the participants were randomly assigned to one of the two thought direction conditions in which they listed either positive or negative thoughts about their university on a computer over a three-minute period. The manipulation of meaning of action had a notable difference compared to Study 1. In Study 1, were randomly assigned to the condition in which they were instructed to either save or delete their thoughts from the computer by moving a slider on a computer screen. In contrast to this, participants in Study 4 *chose* whether to save or delete their thoughts and this choice was implemented by moving a slider on a computer screen. Described differently, participants in Study 4 conducted the same action as in Study 1, but this

time the meaning of this action was ascribed by the self instead of being provided externally in the experiment.

After participants saved or deleted their thoughts, they evaluated their own university using the same items from Study 1 ("good," "desirable," and "useful;" 1 = not at all, 9 = very much), which served as our dependent variable. Just as in Study 1, the three items were averaged to create the index of university evaluation (α = .90).

Following the same procedure used in previous studies, two independent judges coded the positivity and persuasiveness of participants' thoughts. More information on this analysis is provided in appendix A.

Evaluation of one's university

We conducted a regression analysis in which thought direction, meaning of action, and their interaction term predicted the evaluation of the university. The main effect of thought direction, β = .06, p = .64, and meaning of action, β = .08, p = .49, were not significant. As predicted, the interaction between the two variables was significant, β = .24, p = .04. In order to further examine the nature of the interaction, we conducted two separate regression analyses for both the high and low validity conditions. In the regression analysis conducted for the high validity condition, it was found that participants who saved their positive thoughts about the university reported more favorable evaluations of the university (M = 8.20, SD = 1.05) than those who saved their negative thoughts (M = 7.61, SD = 1.47), β = .30, p < .01. In the regression analysis conducted for the low validity condition, it was found that participants who deleted their positive thoughts about the university (M = 7.56, SD = 1.79) and those who deleted their negative thoughts about the university (M = 7.93, SD = 1.33) were not significantly different in their evaluations of the university, β = -.19, p = .43.

Discussion

Study 4 has several important implications. First, the results demonstrate that consumers, in an unprompted environment, spontaneously choose to take actions associated with specific meanings. Importantly, these natural choices, such as saving or deleting, had an impact on thought validation. Regardless of this difference, participants used their thoughts when the meaning of their actions implied high rather than low validity of their thoughts.[3]

General Discussion

This research emphasizes the role of meaning in understanding physical actions, as well as how those actions can influence evaluation through a self-validation process. In the current studies, we present evidence revealing that if the meaning associated with a behavior changes, the effect of that behavior on subsequent attitudes also is likely to change.

Across four studies, thoughts were generated in a variety of domains including one's recent product purchase (Study 1), McDonald's (Study 2), one's coursework (Study 3), and one's university (Study 4). These domains differ in many aspects, such as the extent to which they represent self-identity and are publicly expressed. We used two different writing methods to objectify thoughts, including typing on a computer (Studies 1, 2, and 4) and handwriting (Study 3). In addition, the procedure to vary the meaning of actions changed across studies: online product review to impact many vs. small number of other consumers (Study 1), saving vs.

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[3] These results were replicated in another study using the same topic. In this study, 74 undergraduate business students were randomly assigned to one of conditions in a 2 (thought direction: positive, negative) x 2 (meaning of action: validity, invalidity) between-subjects design, just as in Study 2. Then, participants evaluated their university. Consistent with other studies, we found a significant interaction between thought direction and meaning of action indicating that the effect of thought direction was greater when the action was associated with valid meaning, $F(1,70) = 6.71$, $p = .01$, $\eta_p^2 = .09$ (see appendix C in the MDA for more information on this study).

deleting (Studies 2 and 4), or extending vs. hiding (Study 3). Importantly, the common theme among these variations is the association with validity. For example, having a greater impact on other consumers' decision and being helpful to them is generally perceived as a valid reason to leave an online product review (Study 1). In the same vein, saving and extending bring validity to thoughts, whereas deleting and hiding undermine validity in thoughts (Studies 2, 3, and 4). Because of that association with validity (our unifying conceptual variable), those variations across inductions and studies did not make a difference. Meanings associated with high validity always led to more thought usage than meanings associated with low validity. Also, these effects were consistently observed regardless of whether meanings were externally provided by an outside source (Studies 1, 2, and 3) or internally generated by the self (Study 4). Despite these differences, we observed consistent results across studies such that high valid meanings amplify one's thought confidence whereas low valid meanings attenuate thought confidence. Furthermore, it was found that these effects are not limited to thoughts related to certain domains.

Across four studies, we showed that objectifying thoughts and performing various actions associated with these thoughts could impact both thought usage and, therefore, degree of self-persuasion as a function of perceived thought validity. Importantly, the fact that the action was held constant identifies the meaning of an action to be the key factor producing the effects. These findings suggest a 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. Our framework suggests that the

seemingly contradictory findings 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 does not need to memorized. These findings also suggest a new paradigm through which consumers' wanted or unwanted thoughts can be managed (Gawronski, Deutsch, Mhirkou, Seibt, & Strack, 2008; Wegner & Erber, 1992).

Theoretical contributions

The current research offers a unique paradigm that integrates the findings and theories in the literature on embodied cognition (Barsalou, 2008) and self-validation (Briñol et al., 2004; Petty et al., 2002). Adapting the perspective of self-validation and metacognitive theories, we showed that different levels of validity embedded in the meanings associated with an action can affect thought confidence (i.e., validation), which in turn can influence attitudes and behavioral intentions. By demonstrating the validating effect of meaning in the embodiment context, we bridge the literature of embodied cognition and self-validation and offer researchers fruitful new avenues through which the relationship between the two can be examined.

The current research makes several additional contributions to the literature on embodied cognition. Prior embodiment effects were produced based on actions that had predisposed meanings. For example, engaging in vertical head movement while listening to a persuasive message was shown to influence the extent of persuasion by the message because the nodding head movement implicitly means agreement with and validation of one's thoughts (Briñol & Petty, 2003). Similar effects were shown to be produced by other actions such as arm flexion or other approach behaviors (Cacioppo, Priester, Berntson, 1993; Chen & Bargh, 1999; Zwebner et al., 2014). In contrast to these studies, which utilized actions that have predisposed meanings, the

current research shows that chosen and assigned meanings of actions can produce changes in self-validation. Future research can examine boundary conditions based on the malleability of meanings of actions.

Recent research into naïve theories shows that the malleability of various beliefs increases when individuals are motivated to make some interpretations over others (Leith et al., 2014; Steimer & Mata, 2016). For example, individuals were shown to endorse the incremental (vs. entity) theory of personality after thinking about their past failures because the incremental theory (i.e., belief that people change over time) offers greater room for self-improvement. According to this motivational perspective, perhaps it is the case that the meaning of an action can be more or less malleable depending on the extent to which individuals are willing to accept the meaning. Future research can also examine how flexible people are in generating meanings about their own actions.

The current research also contributes to the literature on consumer word on mouth and online product review behavior. Past research in this area has focused on examining either how consumers are influenced by the product reviews created by other consumers (Packard & Berger, 2017; Rozenkrants et al., 2017) or the factors that influence the valence of reviews or the choice of product review venues (Angelis et al., 2012; Chen & Kirmani, 2015). The current research examined the perceived meaning associated with review behaviors, a previously unexplored factor in the literature, and demonstrated that the product reviews behaviors can influence consumer evaluation and attitude toward the reviewed product differently depending on the validity of the meaning associated with such behaviors. Our finding is consistent with previous research on meta-cognition and self-validation which posit that the effect of favorable or

unfavorable thoughts on attitude change depends on how much confidence and validity one ascribe to those thoughts (Briñol et al., 2004; Rucker et al. 2008).

Future directions

The present studies demonstrate that the effects of physical actions on thought usage not only depend on meaning of action, but are also dependent on thought direction. As illustrated by the obtained results, the very same action can have different effects depending on the mental content that is active in people's minds at that moment (e.g., saving thoughts, extending thoughts). When the action had high validity meanings (e.g., saving, extending), positive (vs. negative) thoughts increased persuasion. However, this effect of thought direction was attenuated when the action had relatively low validity meanings (e.g., deleting, hiding). Therefore, the present research suggests an important caveat to the recent trend of encouraging expansive body posture such as "power posing" (a behavior often associated with validity) as a means of becoming more successful across different domains of life (Lammers, Dubois, Rucker, & Galinsky, 2013). Rather than being inherently positive, the confidence that comes from body postures and physical actions may magnify whatever its mental target is (i.e., both good and bad), at least when it operates through a self-validation mechanism. Also, whether expansive body posture may or may not validate one's thoughts depending on whether the expansive body posture has valid meaning (i.e., expression of pride after winning a match) or invalid meaning (i.e., "being frisked by a police officer," Cesario & McDonald, 2013)

The idea that physical actions and mental content can interact in guiding evaluations is conceptually consistent with recent research showing that the action of cleansing (e.g., washing our hands, removing dirt) can not only reduce the impact of negative responses (e.g., guilt associated with a previous transgression), but also the impact of positive responses (Florack,

Kleber, Busch, & Stohr, 2014; Lee & Schwarz, 2011). In line with the results of the present studies, one could argue that if the meaning of the cleansing action varies, the subsequent effect of this action can also change. For example, if the action of washing was to be framed as *removing* dirt, one could expect guilt to decrease, replicating the original effect of hand washing. In contrast, if the same action was framed as *adding* spiritual preparation to purify the body and thus be ready to hear the inner voice (a meaning associated with high validity), we predict that guilt will be likely to increase, reversing the original effect (Lee & Schwarz, 2011). Of course, future studies should examine to what extent these variations in meaning can not only impact the use of negative thoughts, but also how they may impact positive thoughts.

These insights can be applied to other domains relevant to consumer behavior. For example, beliefs about the meaning of actions might make a difference when people wear certain clothes (e.g., sunglasses, professional suits, etc.) while making purchase decisions. For example, Gino, Norton, and Ariely (2010) found that the effect of wearing counterfeit (vs. authentic) sunglasses made people cheat more in various tasks. We argue that such embodiment effects are more likely to occur when wearing a counterfeit product is associated with invalidity (e.g., dishonesty), but that the effect might reverse when people interpret the same action with a valid or more desirable meaning (e.g., smartly saving money).

In conclusion, as these examples suggest, the meaning associated with different physical actions and experiences can reflect very different psychological states, including disposing versus saving (for moving thoughts to a box), high versus low power (for body postures), removing dirt versus adding purity (for cleansing), agreement versus disagreement (for head movements), approaching versus avoiding (for arm flexion), being happy versus wanting to be happy (for smiling), and so forth. We argue that besides these differences in precise meaning, all

of these variables can operate through the same psychological processes to produce attitude change. That is, each of these precise meanings can be associated with validation or invalidation of thoughts. For example, agreement, approaching, and ease are all meanings associated with liking, confidence, and overall validation of thoughts, whereas disagreement, avoiding, and difficulty are all associated with disliking, doubt, and overall invalidation of thoughts. As soon as one knows whether a consumer associates the meaning of a particular posture or action with high or low validity, marketing practitioners can make a precise, a priori prediction regarding the consequences for consumer attitude change.

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