

# Meaning Moderates the Persuasive Effect of Physical Actions: Buying, Selling, Touching, Carrying, and Cleaning Thoughts as if They Were Commercial Products

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**ABSTRACT** We review research showing that the meaning of physical actions matters, that meaning can vary, and that the key element of meaning to affect judgments is the perceived validity of the thoughts. This article first describes studies on embodied persuasion for which changing the meaning of a behavior also changes the effect of that behavior on attitudes. Second, this article focuses on the impact of objects that people wear on their judgments. The last section covers a paradigm in which thoughts are treated as if they were consumer products (e.g., buying vs. selling thoughts). Across these three sections, we argue that judgmental effects having to do with the physical actions and physical objects associated with concepts such as intelligence, power, and happiness, all can work by the same mechanism. That is, the important factor concerns the impact each of these has on the perceived validity of one's thoughts.

Bodily responses influence what consumers like and dislike. For example, head nodding increased preference for a consumer product (e.g., a new pen) compared to shaking (Wells and Petty 1980; Tom et al. 1991). Other research has shown that simply having stimuli (e.g., a brand) move vertically versus horizontally on a screen is associated with more positivity (Ostinelli, Luna, and Ringberg 2014). Beyond vertical versus horizontal movement, some research has shown that logos presented while a person performs an approach behavior (e.g., using one's hands to pull up from underneath a table) are evaluated more positively than logos presented during an avoidance behavior (e.g., pushing down on a table top surface: Cacioppo, Priester, and Bernston 1993; or flexing arms: Van den Bergh, Schmitt, and Warlop 2011; Streicher and Estes 2016). Still other studies have shown that people can draw direct inferences about their attitudes based on their facial expressions (e.g., "if I am smiling I might like this"; Labroo, Mukhopadhyay, and Dong 2014; see also Strack, Martin, and Stepper 1988).

Similar findings have been found for a large number of behaviors, postures, and bodily movements in the domain

of consumer attitudes and persuasion. Briñol and Petty (2008) organized the literature on embodied persuasion around the basic mechanisms of influence specified by the elaboration likelihood model (ELM; Petty, Cacioppo, and Schumann 1983). The ELM holds that physical actions, like other variables in persuasion settings, can influence attitudes by affecting one or more of the core underlying processes of attitude change. In particular, if thinking is low, physical actions and bodily responses can serve as simple cues to evaluation in accord with their valence (e.g., if I am smiling, I must like it). Under low thinking, attitudes are influenced by a variety of low effort processes, such as mere association (classical conditioning; Tom et al. 1991; Cacioppo et al. 1993) or reliance on simple heuristics (Chaiken 1987) such as those involved in self-perception (Bem 1965). Within the ELM, these specific low effort processes all fall under the peripheral route. If thinking is high, bodily responses work in other ways such as biasing thinking (e.g., smiling can make positive thoughts more accessible), serving as arguments (e.g., smiling can be seen as evidence that a joke is good), or validating thoughts (e.g., smiling can make people like their thoughts more). In accord

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with this view, Stepper and Strack (1993) argued that bodily responses can directly trigger compatible thoughts that facilitate encoding and processing of evaluatively congruent information affecting evaluation (Zajonc, Murphy, and Inglehart 1989; Laird and Bresler 1992). Within the ELM, these specific processes fall under the central route to persuasion. If thinking is not constrained to be high or low, bodily responses can affect how much thinking occurs (e.g., smiling, if it makes people feel that everything is fine, could reduce thinking about a message; Schwarz, Bless, and Bohner 1991).

Understanding these processes and the conditions in which they operate is essential in order to predict whether, when, and how attitudes will change in the short and long term. Although physical actions can influence attitudes in multiple ways, in this article we focus mostly on how our bodies can influence attitudes by affecting confidence and liking for our thoughts, a meta-cognitive process called “self-validation” (Briñol, Petty, and Tormala 2004). According to this perspective, if a physical action makes people like their thoughts more or to have more confidence in them, this will make people rely on their thoughts more than if an action makes people dislike their thoughts or doubt their validity.

### MEANING OF PHYSICAL ACTIONS

In this article we emphasize the role of meaning in understanding physical actions and how they can influence attitudes and persuasion through self-validation and other processes. Most of the behaviors and subjective experiences studied in embodiment experiments have a very clear meaning attached. For example, head nodding is often associated with agreement, arm flexion tends to be associated with approaching objects, smiling mostly is a positive emotional sign, and the fluency that emerges from repeating a behavior is often associated with positive affect or confidence, which can often lead to one’s active mental contents seeming more valid. However, the meaning of these and other behaviors can vary among individuals and situations. For example, nodding can be associated with disagreement in certain contexts, such as when people nod to say “yeah yeah, whatever” or when they roll their eyes up while nodding. Also, some particular cultures (e.g., in Bulgaria, Iran, Lebanon, and others) associate nodding with saying no and shaking with saying yes. Similar to the case of nodding, arm extension can be seen as a sign of approaching rather than avoiding in some settings (e.g., extending the arm to reach a desired consumer product). Finally, smiling can be not

only a positive sign indicating liking or validity, but it also can be a negative sign indicating disliking and doubt for some people and for some situations (e.g., when a fake rather than Duchenne smile indicates lying, or when a smile is a smirk indicating laughing at or trivializing an idea; Labroo et al. 2014; Lewinski, Franssen, and Tan 2016). In the current article 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. In particular, we provide evidence that when the meaning of an action shifts from concepts associated with validity to those associated with invalidity, the impact of the inductions changes.

As we describe throughout our article, the meaning associated with different physical actions can reflect very different psychological states, including agreement versus disagreement (for head movements), approaching versus avoiding (for arm flexion), being happy versus ridiculing (for smiling), high versus low power (for body postures), removing dirt versus adding purity (for cleansing), 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 given consumer associates the meaning of a particular posture or action with high or low validity, we can make a precise, a priori prediction regarding the consequences for attitude change.

### *Confident Postures*

People who feel confident act confidently (e.g., having more erect postures, making expansive use of physical space, expressing their opinions in public), and people who lack confidence act as if they are doubtful (e.g., showing compressive postures and more hesitations). In one relevant study examining the impact of confident postures, Briñol, Petty, and Wagner (2009) asked participants to think about and write down their best or worst qualities while sitting with their backs erect, chests inflated (i.e., powerful posture associated with high confidence) or while sitting slouched forward (i.e., low-power posture associated with low confidence). Then, participants completed a number of measures, including self-

esteem. It was predicted and found that the self-relevant thoughts generated affected self-evaluation more in the confident, powerful posture. Importantly, changes in self-esteem were mediated by differences in participants' confidence in the self-beliefs (thoughts) they had listed.

Another pose potentially related to confidence is when people make aggressive or threatening facial expressions. Briñol, Petty, and Requero (2017) showed that the effect of the direction of thoughts (positive vs. negative) on self-evaluation was greater after people engaged in a behavior associated with threat to others (i.e., having participants show their canine teeth as if they were about to attack, which is a posture associated with high confidence) than after engaging in a control embodiment induction (i.e., participants covering their teeth with their lips in a neutral pose).

Relevant to the present article, it is important to note that the observed effects of confident postures on thought reliance are dependent on various situational factors. First, the research shows that the very same action (pushing the chest out) can have different effects depending on the mental content that is currently active in people's minds. Confident postures increased self-esteem when people were thinking about their strengths but decreased self-esteem when people were thinking about their weaknesses. This research suggests an important caveat to the recent trend of encouraging "power posing" as a means of becoming more successful across different domains of life (Lammers et al. 2013). Rather than being inherently positive, the confidence that comes from body postures magnifies whatever its mental target is (i.e., both good and bad), at least when it operates through a self-validation mechanism.

Second, the self-validation mechanism requires a level of elaboration that is sufficiently high for individuals to both generate thoughts and to consider their validity. Instead, if elaboration is low, power is more likely to serve as a simple cue or heuristic allowing people to evaluate something as positive or negative (Briñol et al. 2007, experiment 4). For example, under low ability and motivation to think, the positive feelings that emerge from power can lead people to believe that they are more correct than others or even that they are more attractive. This moderating condition helps clarify how a meta-cognitive process such as self-validation fits within the other ELM processes that emphasize primary cognition.

Third, body and facial postures are more likely to influence consumer evaluation by self-validation when induced following or during (rather than preceding) the generation

of thoughts. When body postures associated with power precede thinking, they are more likely to serve in another role such as determining the extent of thinking. In an early example of this possibility, Petty et al. (1983) asked undergraduate students to wear and evaluate headphones. Some participants were told to stand up straight while testing the headphones (a posture associated with high confidence), whereas others were told to lie down. Consistent with the hypothesis that confident postures (such as standing up) can affect the amount of thinking, Petty et al. (1983) found that reclining participants were differentially persuaded by the strong and weak arguments, but standing participants were not. The confident posture may have led individuals to believe that they were already correct in their views and did not need to process the opinions of others. This was not the case for the more vulnerable supine individuals. Thus, along with elaboration, timing is another boundary condition for self-validation process to operate.

Fourth, for most people in most situations, it seems that feeling powerful and confident would have a clear positive association (e.g., validity, rightness, pleasantness). However, the meaning associated with power can vary across individuals, situations, and cultures (Cesario and McDonald 2012; Garrison, Tang, and Schmeichel 2016). For example, the experience of power can include appraisals of negative valence (e.g., power is bad when it is associated with corruption and abuse) and uncertainty (e.g., powerful people are sometimes wrong due to incompetence or carelessness), and an avoidance orientation (e.g., power can paralyze when it is associated with ambivalence and conflict during decision making or when perceived as undesirable or as illegitimate; Durso, Briñol, and Petty 2016). Similarly, although making an attacking face might often be associated with power and confidence, the effects of this induction would be quite different if the facial expression is viewed differently (e.g., as a symptom of worry or tension).

In an illustration of this spontaneous variation in meanings, Schubert (2004) found that performing a single physical display of power (making a fist) increased feelings of power (high confidence/validity) in men while activating feelings related to frustration and loss of power in women (low confidence/validity). As noted, our proposition is that if the meaning and the basis associated with a physical display changes, then the effect of that display on subsequent attitudes could also change. For example, if people feel guilty about possessing power or they do not like it (Hays and Goldstein 2015), this negative association might reduce

persuasion through a variety of process such as serving as a simple negative cue (under low thinking conditions) or biasing thinking in an unfavorable way (under high thinking).

### *Cleaning Our Minds from Biases*

We have seen that research clearly demonstrates that body postures such as those associated with confidence can affect judgments by various processes such as giving people more confidence in their thoughts and thereby polarizing judgments based on the valence of those thoughts. These effects of posture tend to occur naturally in that people are presumably not aware of the impact that their postures are having. However, if people became aware that their bodily responses were inappropriately influencing their judgments (e.g., do I like this advertisement just because my face is in a smile?), they might adjust their judgments in a direction opposite to the expected bias, just as they do for many other perceived biasing factors such as the likability of a message source (Petty, Wegener, and White 1998).

Importantly, not only can people correct their attitudes if they perceive physical actions to be an unwanted contaminating factor, but they can also do the opposite; that is, sometimes physical actions can be used to metaphorically clean or correct their judgments (Lee and Schwarz 2011). In a line of research examining this possibility, Paredes, Briñol, and Petty (2016) tested a very subtle action-oriented way of inducing bias correction. Participants were first exposed to a persuasive message about a new brand of detergents presented by a credible versus noncredible source and then were told to engage in a task that involved completing mathematical operations of addition versus subtraction. It was predicted and found that credible sources were more persuasive than noncredible ones for participants primed with adding compared to subtracting. However, the traditional effect of source credibility on persuasion was reversed (showing more favorable attitudes for low credibility) for participants assigned to the subtraction condition.

These findings are conceptually consistent with prior research showing that cleansing actions (e.g., washing our hands, removing dirt) can reduce not only the impact of negative responses (e.g., guilt associated with a previous transgression) but can also reduce the impact of positive responses (Lee and Schwarz 2011; Florack et al. 2014). In line with the proposition outlined throughout this article, we argue that if the meaning of the cleansing action varies, the subsequent effect of this action can also change. In an initial examination of this possibility, Kim et al. (2017) had participants thinking about a recent time they did something

wrong and then gave them the opportunity to wash their hands. When the action of washing was framed as removing dirt, the results showed that guilt decreased, replicating the original effect of hand washing. In contrast, when 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), the results showed that guilt increased, reversing the original effect (Lee and Schwarz 2011). Future studies should examine to what extent these variations in meaning can not only have an impact on the use of negative thoughts but also positive thoughts. Furthermore, forthcoming work can benefit from examining whether other products potentially related to deletion (e.g., using a pencil eraser to write thoughts, using disinfecting gel to clean hands) can also be associated with an impact on thought usage (validation) depending on the meaning.

### *Facilitating Access to Products and One's Thoughts*

Marketers are interested in making it easier for consumers to access products. For example, Topolinski, Zürn, and Schneider (2015) found that when the name of a product, a brand, or a company is easier to pronounce, attitudes are more positive than when the same name was difficult to articulate. Valenzuela, Raghurir, and Mitakakis (2013) showed that products located in an easy to reach location (e.g., in the middle, top of a shelf) received more positive evaluations than when the same products were located in a difficult location (e.g., at the very bottom of the shelf). Elder and Krishna (2012) showed that the orientation of a product toward a participant's dominant hand was associated with more positive evaluation of the product. There are many reasons why this might occur such as one's dominant hand serving as a simple positive cue. But there are other possibilities as well. For example, in line with the self-validation hypothesis, we argue that using one's dominant hand could increase thought confidence (because it is an easier action than using one's nondominant hand), by polarizing positive evaluations for liked products but also increasing negative evaluations of disliked products.

In one study using this induction conducted by Briñol and Petty (2003), participants were asked as part of an ostensible graphology study to think about and write down their best or worst qualities using their dominant or nondominant hand. Then participants rated the confidence they had in the thoughts they listed, and they reported their self-esteem. Because writing with the nondominant hand is difficult and looks shaky (low confidence), whereas writing with the dominant hand is quite easy and looks good

(high confidence), it was expected and found that using the nondominant hand decreased the validity associated with the thoughts people had listed. Consequently, the effect of the best or worst qualities manipulation on stated self-esteem was significantly greater when participants wrote their thoughts with their dominant rather than nondominant hand.

Importantly, we argue that the persuasive effect of ease on thought reliance is meaning dependent. People generally perceive difficulty in retrieving thoughts as something bad, thereby associating difficulty with low validity. In contrast, by default, ease is good and therefore associated with high validity. However, as was the case with feelings of power induced by power postures, if people's naïve theories regarding the meaning of ease vary (or could be manipulated to vary), then different judgments could arise following the experience of ease. In one study investigating this possibility, Briñol, Petty, and Tormala (2006) asked participants to write their thoughts using an easy to read font (black over white) or a difficult font (pink over yellow). In addition, they also manipulated the perceived meaning of ease versus difficulty. Half of the participants were told that ease in generating thoughts generally reflected thoughts that were low in complexity (low validity) 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 (high validity). Consistent with expectations, results indicated that the traditional fluency effect emerged only among participants who received the "ease is positive" instructions. That is, among these participants, from those who listed their thoughts in black over white format reported more favorable attitudes than did those participants listing positive arguments in pink over yellow. Among participants receiving the "ease is negative" instructions, the opposite effect emerged; this group reported more favorable attitudes when listing thoughts that were difficult to list rather than easy.

In conclusion, in this first section we have introduced the idea that the glue that ties together the studies on the impact of physical actions on judgment is the meaning that those actions have for the people who engage in them. In particular, we demonstrated that when the meaning of an action is something associated with high validity (as is often the case for ease, agreement, happiness, high power, intelligence, etc.), then the action will increase thought usage. In contrast, if the meaning of the very same physical action is

associated with low validity (difficulty, disagreement, sadness, low power, stupidity, etc.), then it will decrease thought usage. Furthermore, we went one step further to show that even these default meanings can be modified for certain people or in certain situations. Thus, we showed that if people came to believe that ease or high power were associated with something bad, the typical effects of these normally positive states would reverse.

## PHYSICAL PRODUCTS AND OBJECTS

Not only people's bodies but also the physical actions that involve wearing or using physical objects can influence evaluation when those actions relate to the underlying processes of influence (Slepian et al. 2015; Civile and Obhi 2017). First, physical objects have been shown to influence evaluations by affecting the amount of thinking in which people engage. For instance, wearing a white coat labeled as a doctor's coat (high validity) prior to a task, increased attention on that task compared to those who did not wear the coat (Adam and Galinsky 2012). Wearing a doctor's white coat has also been found to enhance argument quality effects in persuasion (Belding, Petty, and Briñol 2012). Importantly, when the white coat was labeled as a painter's coat (low validity), the effects on elaboration disappeared, revealing the importance of meaning in this context.

Recent research has shown that wearing physical objects can influence attitudes not only by affecting elaboration but also validation processes. For instance, Belding et al. (2012) examined how the use of reading glasses and baseball caps can both validate and invalidate one's thoughts, depending on whether a message recipient is in a cognitive mind-set or an affective mind-set and if the object is made salient following (rather than prior to) thinking. The authors hypothesized and found that wearing reading glasses could validate one's thoughts because they are associated with concepts like intelligence (high validity), but that this occurred only when people were in a cognitive mind-set, where the meaning of glasses was linked to intelligence. Similarly, wearing a baseball cap was found to validate one's thoughts because it is associated with fun (e.g., being cool, high validity), but that this only occurred in an affective mind-set, where the meaning linked to fun was the dominant association.

These insights can be applied to other domains relevant to consumer behavior. For example, cognitive and affective mind-sets might make a difference when people wear certain clothes (e.g., fake reading glasses, professional suits, etc.) while making purchase decisions. For example, Gino, Norton, and Ariely (2010) found that the effect of wearing

sunglasses was to make people think that something is wrong because that product can be associated with suspicion and low credibility (having something to hide). We argue that such a negative effect is more likely to occur when confidence appraisals are salient (cognitive mind-set) but that the effect can be reversed when people focus on the pleasantness (affective mind-set) of wearing a cool, fun, attractive product such as sunglasses. Furthermore, recent research suggests that wearing an object associated with safety (a bicycle helmet) compared to a control object (a baseball cap) increased risk-seeking behavior (Gamble and Walker 2016). We expect these results are more likely to be observed when participants are in a cognitive mind-set (e.g., a cover story focused on calibration), where the meaning of a helmet as an object associated with safety might be more salient but not in an affective mind-set condition when fun associations come to mind.

In closing this section, consider the case of having a customer try to throw punches at a new punching bag promoted at a store. The very same action of throwing a few light punches can have different effects on evaluation depending on whether that physical action is appraised either as an entertaining practice in a liked sport (boxing), as a confident act of preparation to attack, as pleasant movement that becomes graciously fluent with repetition, or even as an empathic act of synchrony with others. These are all meanings associated with high validity. However, the same action can be associated with low validity (as when punching means an unpleasant violent behavior against others). Importantly, all these variations in meaning can influence attitudes and persuasion through elaboration or validation processes depending of what mind-set is salient (affective vs. cognitive) and depending on when it is made salient (before or after thought generation).

#### PHYSICAL PRODUCTS OF THE MIND

In this section, we describe a recent paradigm in which thoughts are understood and treated as if they were physical objects. We argue that what people do with physical manifestations of their thoughts has psychological significance. As an initial illustration of this paradigm, Briñol et al. (2013) asked participants to write down either positive or negative thoughts about Mediterranean diets on a piece of paper. Then they were randomly assigned to one of three conditions: thought disposal (low validity), thought protection (high validity), or a control condition. Those in the disposal condition were asked to take the page on which they had objectified their thoughts and place it in a trash can.

In the protection condition, participants were asked to take the page on which they objectified 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. After this, all participants were then asked to rate their attitudes regarding the Mediterranean diet. Physical disposal of one's thoughts led to mental disposal as well. Thus, the low validity action of discarding the thoughts led participants to use their thoughts less in forming their judgments than in the control condition. Furthermore, protecting one's thoughts (i.e., the high validity action of folding and keeping the paper) was found to lead to more thought usage in forming judgments than in the control condition.

#### *The Meaning of Actions: Protecting versus Hiding Objectified Thoughts*

Subsequent research has shown that variations in the meaning of the action taken with objectified thoughts are also important in this domain. For example, Kim et al. (2014) had participants first writing positive or negative thoughts about increasing their level of physical exercise. Then, all participants were asked to move what they wrote to a box labeled as a "trash can" (low validity) or as a "safety box" (high validity). Results showed that physically moving objectified thoughts to a trash can led them to be mentally discarded as well, whereas physically moving them to a safety box led them to be relied upon more, even though the physical action was the same in both conditions. Conceptually similar results were obtained when people were told to put their thoughts in their pockets but in some conditions this was described as "out of sight" (low validity; e.g., Li, Wei, and Soman 2010; Sparrow, Liu, and Wegner 2011) and in other conditions it was described as "a safe place" (high validity). That is, there was less thought used in the former than the latter condition.

These results are conceptually consistent with work by Hadi and Valenzuela (2014) showing that performing a positive action (e.g., having people hugging a product with the excuse of testing how easy it was to carry around the laboratory) increased product evaluation and the willingness to pay for that product compared to performing other physical actions with neutral meanings. There is probably no need to protect or to hug the object since merely touching an object can be enough to increase perceived ownership and liking of it (Peck and Shu 2009). Future research should examine whether hugging and touching of disliked products also re-

duces negativity (as it does for previously liked products) or if it polarizes the initially negative response (as shown by Briñol et al. 2013). We argue that the former (touching operating as a valence cue) is more likely to occur under low thinking conditions, whereas the latter (touching validating thoughts) is more likely to happen under high thinking conditions.

An important assumption in this kind of research on “physical contagion” is that ownership probably increases liking and thought usage due to, at least in part, the self being evaluated positively. Consistent with this view based on psychological balance principles (Heider 1958), recent research has shown that ownership effects are more likely to emerge for people high (vs. low) in self-esteem (Horcajo, Briñol, and Petty 2010). Also consistent with this assumption, Argo, Dahl, and Morales (2008) found that products that were touched by a perceived highly attractive person were better evaluated compared to products touched by a person of average attractiveness.

### ***Thought Endowment: Buying and Selling Objectified Thoughts***

Given that thoughts can be objectified and treated as physical objects, an interesting extension is to what extent the physical manifestation of our thoughts can be bought, sold, and traded as if they were commercial products. Drawing from research on the endowment effect, we suggest that people will value their objectified thoughts more if those thoughts are perceived as belonging to themselves rather than someone else. In their seminal research on the endowment effect, Kahneman, Knetsch and Thaler (1990) told participants that they would be participating in a simulated market, and they could trade tokens. Participants were assigned either to be the owners or the buyers of the tokens. Participants were told they should indicate their price for buying or selling the tokens. Results indicated the selling prices were more than twice as high as the buying prices.

Although most research on endowment has examined the possession of physical products (such as lottery tickets or coffee mugs), we argue that endowment principles can be also applied to the possession of less tangible objects (such as intellectual or legal property). In line with this proposition, Gascó et al. (2016) examined whether objectified thoughts could also be treated as physical products to be bought and sold. In one of the studies, students were told that they were going to participate in a role-playing exercise where they would have to play the part of a publicist working on an advertising campaign about fast food. The role of

the publicist was to come up with ideas, arguments, and slogans for the campaign. Participants were asked to write down either positive or negative thoughts about fast food on different pieces of paper, and then they were assigned either to play the role of buyers or sellers. Participants in the sell condition were told they could sell their thoughts to another student, but by doing this, they would lose the right to use their thoughts in their own campaigns. On the other hand, participants in the buying condition were told they could buy thoughts from other students in order to use them in their own campaigns. Finally, all participants had to indicate their attitudes toward fast food as the main dependent measure. Participants’ self-esteem was also measured as a potential moderator since previous research has suggested that self-esteem might moderate traditional endowment effects (Horcajo et al. 2010).

In this research, selling thoughts to others was found to increase thought usage for low (vs. high) self-esteem participants. This suggests that the action of selling was construed by those with low (vs. high) self-esteem as providing value for the thoughts, making them more useful (“if others are buying my thoughts they might actually have some value”). That is, for low self-esteem people, seeing others buy their thoughts was associated with high validity, thereby increasing thought usage. In contrast, for low self-esteem people, buying others’ thoughts was not informative of validity regarding their own thoughts, therefore keeping them from using them (the effect by default for those with low self-esteem; Briñol and Petty, forthcoming). Among other things, this work on thought endowment illustrates that people can make different inferences from the very same action, which can have different downstream consequences.

### **SUMMARY, CONCLUSION, AND FUTURE RESEARCH**

In the present article we have argued that the meaning of physical actions and physical objects can vary across individuals and situations. For example, nodding can be associated with disagreement in certain settings or cultures, arm extension can be seen as approaching a desired object, and pulling the chest out can be associated with negative meanings such as a sign of pain or tiredness in the lower back. As a result of the meaning, we have seen that body movements can have opposite effects depending on their meaning.

The same principle applies to physical objects. Just as wearing a white coat can prime people with a doctor or a painter with different psychological implications, wearing glasses can be associated with intelligence or with a dis-

ability. Actions performed with physical manifestations of our thoughts are also meaning dependent. As described, thoughts were more impactful when they were physically kept in a place with a positive (high validity) meaning (e.g., safety box) rather than a place with a negative (low validity) meaning (e.g., trash can). Furthermore, thoughts can be bought and sold as if they were a commercial product, and different people can make different inferences from those trading actions (e.g., selling one's thoughts implies high validity for those with low but not high self-esteem). As noted throughout, our point is that if the meaning associated with an action changes, the effect of that action on subsequent attitudes could also change.

In sum, we recommend that marketers not only understand the physical aspects of the person and situation but also take into consideration the meanings that consumers associate with physical actions. Without considering meaning, a marketer could incorrectly believe that a variable will have a positive effect when, in fact, it may have a negative effect. Furthermore, given that meaning is subjective and that it can vary across consumers and settings, we recommend that marketers assess this important variable with special emphasis on how the meaning of action relates to validity.

A first important question for future research is to what extent changes in meaning are capable of affecting all measures relevant to attitude change and under what conditions they are more likely to do so. Our suggestion is that induced changes in the meaning of physical actions can produce changes in attitudes, but based on the ELM, the mechanism involved will depend on the extent of thinking. For example, if people interpret ease as associated with stupidity (i.e., low validity) rather than with intelligence (i.e., high validity), and they do not think much about an easy to process message, they may come to dislike it by a simple heuristic process. But under high thinking conditions, the negative inferences from ease would lead to reduced thought use, which would reduce persuasion if thoughts were relatively positive but increase persuasion if thoughts were relatively negative. Of course, if there is an automatic default meaning of a posture or action for most people, that is the meaning that is likely to be activated under low thinking conditions but under high thinking conditions, that meaning could be more malleable.

### *The Role of Physical Action*

Another important question for future research concerns the extent to which it might be necessary to physically act

for behavior to produce attitude change or whether imagining behavior is sufficient to produce the same effects. That is, would visual illusions suggesting that a person acted, providing false feedback about behavior, and computer-controlled digital representations of the person acting in a virtual environment have the same effects as physical actions (e.g., Krishna, Morrin, and Sayin 2014)? It could be that actual behavior (embodiment) produces the same effects as any other form of priming (e.g., semantic priming of behavioral words, recalling past behavior, imaging a behavior, observing a behavior in others). We think that there are several reasons why effects can be stronger for actual rather than imagined actions. First, it is possible that performing an action or embodying an object allows for more precise associations than mere observation of the same object. Consider as an example the research we covered on wearing reading glasses on validation processes (Belding et al. 2012). Although this research had people physically wear the glasses, it could be that merely seeing reading glasses sitting on a table could have produced equivalent effects. Alternatively, seeing reading glasses might prime multiple constructs including intelligence, the elderly, and so forth whereas wearing the item may disambiguate the meaning associated with that item and more clearly prime intelligence. Furthermore, it is possible that performing an action or embodying an object leads to more complex representations (with more associations of different kinds, including experiential memory) than thinking about the action or looking at the object (Niedenthal et al. 2005).

A second way in which observation and embodiment or enclothing of objects may differ is in the way they influence one's self-concept. The active-self account of prime-to-behavior effects suggests that primes can change the content of one's self-concept and linking the prime to the self-concept increases the impact of primes on judgments and behavior (DeMarree, Wheeler, and Petty 2005). Perhaps performing physical actions or wearing an external object such as glasses makes one feel more intelligent compared to seeing the glasses. That is, although wearing the glasses and seeing them might both prime the concept of intelligence, it would be mostly those wearing the glasses who come to view themselves as intelligent. To the extent that people feel more intelligent, they are more likely to act intelligently by processing a persuasive message more carefully. If intelligence is primed but people do not incorporate this trait into the self-concept, the prime is less likely to affect behavior and judgments. This is consistent with recent research showing that perceived agency is an important aspect of embodiment

effects (Taylor, Lord, and Bond 2009). This is also consistent with research by Peck and Shu (2009), who found that touching an object can increase the perceived ownership of that object, and with research by Kettle and Häubl (2011) showing that signatures influence consumer behavior by priming the self.

A third way in which observation and embodiment or enclothed cognition might differ from other forms of priming is that performing physical actions could function as a stronger prime. Research on priming suggests that stronger primes show larger effects. For example, participants primed with professor for nine minutes answered significantly more questions correctly on an intelligence test than those primed with professor for only two minutes or a control condition (Dijksterhuis and Van Knippenberg 1998). It is possible that although the time of exposure to the objects was held constant in embodiment research, physical acting or physically wearing the object increases the strength or salience of the prime compared to mere observation/imagination and therefore produces stronger effects.

These three possibilities provide some reasons why actual behavior could produce stronger effects than imagined behavior. In addition to these conceptual reasons, there is some empirical evidence suggesting that actual behavior can produce stronger effects than imagined behavior (e.g., Briñol et al. 2013).

### *Deliberative Use of Behavior for Self-Change*

Another important matter to consider is the question of whether physical actions can be used deliberately to produce changes in one's own psychological processes. On the one hand, we know that people can deliberately choose to experience negative emotions such as anger when they think that those emotions can help them to achieve a desired goal (e.g., fighting; Tamir and Ford 2012). We also know that people can deliberately correct their attitudes from the impact of embodiment if they perceive bodily responses to be an unwanted source of bias (Wegner, Erber, and Zanna 1993). On the other hand, the effects of most bodily responses (and other incidental inductions, including the retrieval of past memories) are likely to be eliminated when people become aware of their incidental nature (e.g., Schwarz and Clore 1983). Therefore, it is not clear whether people can use their behaviors deliberately to intentionally influence their evaluations.

We think that many of the embodiment effects described in this article can (and are likely to) operate by influencing evaluation without awareness. The presence of bodily re-

sponses capable of changing evaluation and the association between those actions and their meanings can indeed work automatically to affect attitudes. However, sometimes consumers might be aware that their bodily responses might be affecting their evaluations, and they might also be aware of the meaning of those actions. When people perceive their actions to change their attitudes, they can respond differently depending on whether they want that potential impact to occur or not (Wegner and Petty 1997). For example, it might be helpful for some consumers to know that their actions can influence their likes and dislikes. In fact, our bodies can provide us with valuable information in many cases (e.g., elevated heart rate and stomach butterflies when encountering a brand informs us that we like that brand). However, if people who believe that their judgments are somehow biased or influenced by their bodily actions do not want this to occur, they may adjust their judgments in a direction opposite to the expected bias (correction processes). Of course, if people think that the bias is desirable, they can even adjust their judgments to enhance the biasing effect (e.g., McCaslin, Petty, and Wegner 2010).

Thus, future research should examine the question of whether, when, and how awareness of the effects of incidental physical experiences can decrease and increase their impact. Future research should also examine the role of awareness and placebo effects when deliberately choosing to use consumer products designed to improve body postures (e.g., physical devices that help people to keep an erect back).

### *What Are the Implications for Replicability on Embodiment?*

Our view based on understanding the psychological processes underlying embodiment effects and the moderators of these processes may provide unique insight regarding attempts (successful and unsuccessful) to replicate various embodiment effects (see, e.g., Strack 2016). For example, it is now clear from the research we reviewed from the self-validation perspective, that bodily responses and physical actions can produce different (even opposite) effects on attitudes depending on the circumstances. The presence of opposite effects in the attitude change domain can lead to some confusion (e.g., for a historical review, see Briñol and Petty 2012; for a recent example, see Luttrell, Petty, and Xu 2017). It is confusing that something which seems as simple as nodding one's head, smiling, wearing a baseball cap, wearing a swimsuit, or pushing one's chest out can both increase and decrease evaluation in a persuasion paradigm (or it might

not work at all in producing any persuasion effects). It can also be challenging when the same body-action (e.g., making an expansive posture, smiling, or putting thoughts in a box) can decrease but also increase elaboration and validation processes, leading to different evaluations as a function of argument quality. However, evaluating these effects within the framework of the ELM used throughout our article helps to explain this complexity. Furthermore, our approach is very consistent with McGuire's (1983) contextualist framework for social psychology. The attitude change research we have presented in this article indicates that any given phenomenon (e.g., relating to body postures, wearing clothes, moving thoughts to boxes and beyond) can produce multiple effects by operating through multiple processes that operate under specific conditions. The ELM presents a guiding framework to organize and comprehend whether, when, and why embodiment effects are likely to appear, when they are not, and what direction of effect is most likely.

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