

**A process approach to influencing attitudes and changing behavior:  
Revisiting classic findings in persuasion and popular interventions**

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## **Introduction**

Many psychological interventions designed to improve people's lives rely on attempts to change peoples' attitudes in a desired direction (e.g., more favorable toward a healthy diet) or by creating new attitudes capable of influencing behaviors (e.g., using a new medicine). In this review, we rely on the elaboration likelihood model of persuasion (ELM, Petty & Cacioppo, 1986; Petty & Briñol, 2012) as a conceptual framework for understanding how to produce attitudes that will have important consequences. Although the ELM identifies five core psychological processes by which variables can influence attitudes, in this review we focus on two of those processes that have proven to be particularly useful in producing consequential attitudes.

One important insight from the ELM is that attitudes can be changed by relatively low or high thought processes, but that high thought processes are more likely to produce impactful attitudes. Thus, it is important to understand what variables will be effective in producing high amounts of thinking or elaboration with respect to a persuasive message. Second, however, when thinking is high, research shows that it not only matters what people's thoughts are to a message (i.e., whether they are favorable or unfavorable), but what people think about their thoughts (Briñol & Petty, 2009). Thus, in addition to discussing elaboration processes, we also focus on thought validation processes. We begin with the role of elaboration in persuasion and then turn to validation.

Throughout the review we also include suggestions useful for designing practical interventions that take into consideration these psychological processes. Although there are many studies guided by the ELM, the ones we have chosen to review illustrate how to produce attitude changes that are strong (i.e., persistent over

time, resistant to change, and impactful on behavior; Krosnick & Petty, 1995). We do not focus on attitude changes based on low thought processes such as those that stem from reliance on simple heuristics. Such changes, though they can be equal in magnitude to high thought changes in the short term, are not as consequential.

### **ELABORATION**

As noted earlier, the ELM distinguishes thoughtful from non-thoughtful determinants of judgment and holds that variables (e.g., source credibility, a person's mood) can influence attitudes by affecting one of five core persuasion processes. These core processes are (1) serving as a simple cue, (2) serving as a persuasive argument, (3) biasing thinking, (4) validating thinking and (5) determining the extent of thinking or elaboration.

A focus on elaboration highlights the importance of considering the amount and direction of people's thoughts in response to persuasive attempts. One of the most studied variables that affect the degree of message elaboration is the degree of personal relevance of the communication (Petty & Cacioppo, 1979). The importance of personal relevance has also been highlighted among researchers and practitioners who have recommended increasing personal involvement in order to make applied programs more successful (e.g., Bryan, Walton, Rogers, & Dweck, 2011; Cohen & Andrade, 2018; Galton & Wilson, 2018; Harackiewicz, Rozek, Hulleman, & Hyde, 2012). However, by focusing on the process by which involvement helps persuasion to be successful (i.e., elaboration) we demonstrate that involvement can either be good or bad for persuasion. According to the ELM, when the personal relevance of a message is high, people scrutinize the evidence more carefully than when it is low. This results in higher personal relevance being associated with more favorable thoughts and attitudes when the message arguments presented are strong and compelling, but with more unfavorable

thoughts and attitudes when the arguments presented are weak and specious (Petty & Cacioppo, 1990).

In one prototypical early study illustrating this point, Petty, Cacioppo, and Schumann (1983) varied participant's interest in an advertisement for the "Edge razor" by informing them that they would receive a razor for participating in the experiment (high relevance) or a tube of toothpaste (low relevance). Subsequently, participants were exposed to a razor advertisement containing either strong (e.g., "In direct comparison tests, the Edge blade gave twice as many close shaves as its nearest competitor") or weak (e.g., "In direct comparison tests, the Edge blade gave no more nicks or cuts than its competition") arguments. In addition to the quality of the arguments, this study also varied whether the two endorsers featured in the ad were famous athletes or ordinary people. The results revealed a larger argument quality effect on attitudes (i.e., more persuasion for the strong than weak arguments) when the razor advertisement was high as opposed to low in personal relevance. However, the simple cue of endorser attractiveness had a larger impact on attitudes when the ad was low rather than high in personal relevance (see also Haugtvedt, Petty, & Cacioppo, 1992).

Thus, processing arguments mattered more when relevance was high but the simple source cue mattered more when relevance was low. Does it matter which kind of persuasion was produced? Importantly, in addition to measuring attitudes toward the razor, participants were also asked about their likelihood of purchasing the razor the next time they needed one. Under high relevance conditions, not only did argument quality affect attitudes, but it also affected purchase intentions. In stark contrast, under low relevance, although positive endorsers produced more positive product attitudes than neutral endorsers, these positive endorsers failed to produce more positive purchase

intentions. That is, positive attitudes failed to translate into behavior in the low relevance condition. This result is also demonstrated in the finding that people's product attitudes predicted their purchase intentions less strongly in the low than in the high relevance conditions. In short, the greater thinking involved in changing attitudes under high than low relevance also led those attitudes to be more consequential.

Why were the attitudes formed under high thinking more consequential than those formed under low thinking? Subsequent research has pointed to at least two benefits of high thinking. First, when thinking is high, people tend to access their attitudes as they update them with each new argument processed. This updating leads high thought attitudes to be more readily accessible in the future when the attitude object is confronted (Tormala & Petty, 2001). The more likely attitudes are to come to mind quickly and spontaneously, the more people can use them to guide their behavior (Fazio, 1990). Second, attitudes based on high thought are held with more confidence than those based on little thought (Barden & Petty, 2008). Importantly, when people are deciding what to do, they are more likely to act on an attitude if they are sure it is right than if they are not (e.g., Rucker & Petty, 2004).

### **Elaboration and Intentions to Use Doping Substances**

As just explained, whether attitude change occurs as the result of relatively high or low amounts of thinking matters not only for determining what attitude is formed initially but also because it determines how consequential or strong that attitude is (Petty & Krosnick, 1995). Specifically, the more a judgment is based on thinking, the more it tends to persist over time, resist attempts at change, and have consequences for other judgments and behavior (Petty, Haugtvedt, & Smith, 1995).

In a recent illustration of the elaboration-strength link in an applied context, Horcajo and Luttrell (2016) showed that influencing athletes' attitudes about doping

through high (vs. low) elaboration processes made the newly formed attitudes more predictive of behavioral intentions and resistant to subsequent attacking messages. The participants in this study were all soccer players from registered teams. Elaboration was manipulated by varying personal involvement. Specifically, in the high elaboration condition, the athletes were told that the legalization of doping proposal was being analyzed by the *Fédération Internationale de Football Association (FIFA)* and that legalization could be implemented in soccer rules the next season. Participants in the low elaboration condition were told that it was being analyzed by a relatively less powerful organization, the World Anti-Doping Agency (WADA), and that legalization could be implemented only in other sports (cycling and athletics) in ten years.

Following this manipulation, participants received a persuasive message that presented strong arguments either against the legalization of doping or in favor. These strong messages also included some peripheral cues (e.g., credible sources, a large number of arguments), which can lead to persuasion even when people do not think carefully about the arguments. After participants read the first message, they reported their attitudes and behavioral intentions regarding the legalization proposal. Behavioral intentions included measures such as willingness to sign a petition supporting the legalization proposal and the estimation of the likelihood of using the substances if legalized.

Next, participants received a second message that argued for the opposite conclusions as the first message. Therefore, someone who first received a strong message arguing in favor of legalization proposal would receive a message arguing against that proposal, and vice versa. Attitudes toward the legalization proposal were then assessed again. In accord with the ELM predictions, participants showed greater attitude-consistent intentions when they formed their initial attitudes through thoughtful (vs. nonthoughtful) consideration of the first message (i.e., in the high relevance

conditions). Moreover, there was also more resistance to the subsequent attacking message when participants formed their initial attitudes through thoughtful vs. non-thoughtful processes.

### **Elaboration and Prejudiced Attitudes**

As another illustration of the link between elaboration and attitude strength, consider the modification of prejudiced attitudes. In two studies, Cárđaba, Briñol, Horcajo, and Petty (2014) presented participants with a persuasive message composed of compelling arguments in favor of a minority group or a control message in favor of vegetables. In one study, the degree of elaboration was measured by asking people how much they had thought about the message and in a second study, motivation and ability to think about the message were manipulated by framing the message as personally relevant or not and by presenting a distraction task along with the message or not.

Following the message, one study assessed the perceived strength of the participants' attitudes (i.e., how much they were resistant to the opposite point of view) and the other study measured actual resistance to a subsequent attacking message. The results showed that even though the obtained attitude change to the first message (vs. control) was equivalent under low and high thinking conditions, the attitudes were stronger when thinking was high. That is, participants not only rated their attitudes toward the minority group as stronger but they also were more resistant to an attacking message. As this research demonstrates, understanding the nature of the processes by which attitudes change is essential because it is informative about the consequences of persuasion (see also Cárđaba, et al., 2013; Wegener, Clark, & Petty, 2006).

### **Elaboration and Personal Involvement Revisited**

As described, prior research suggests that making a persuasive message more self-relevant (such linking the advocacy to one's values, outcomes, identity) can

enhance information processing (Petty & Cacioppo, 1990; Fleming and Petty, 2000). When relevance is high versus low, people become more persuaded if the evidence is found to be strong, but if the evidence is found to be weak, less persuasion occurs with high relevance. It is important to highlight this fact because intervention programs typically recommend increasing personal relevance to enhance effectiveness (e.g., Bryan, et al., 2011; Cohen & Andrade, 2018; Galton & Wilson, 2018; Harackiewicz, et al., 2012; Hulleman, Kosovich, Baron, & Daniel, 2009). However, as just described, personal involvement increases elaboration leading to more persuasion for strong arguments, but to *reduced* persuasion if the arguments presented are specious.

Since these initial demonstration of an interaction between personal involvement and argument quality on attitudes, this outcome has been replicated many times by independent labs using a variety of materials and inductions (see Carpenter, 2015). Notably, in all of this prior work, message recipients were plausibly motivated by their desire to learn about the issue advocated in order to form an accurate opinion. Indeed, one of the major motivations that governs human thought and action is the *need to know*. Gaining accurate knowledge is the typical or default goal orientation assumed by contemporary persuasion theories such as the ELM (see also, Chaiken, Liberman, & Eagly, 1989).

Notably, in some recent research on personal involvement, researchers compared the motivation to gain knowledge to an alternative one in which people aim to process information in order to be entertained -- a *hedonic* rather than an *epistemic* goal. The goal of seeking entertainment is an important motivation within communications (e.g., see Slater, 2002; Zillman & Bryant, 2002; Bridges & Florsheim, 2008). In fact, some authors have considered the hedonic mindset as one of the most predominant precursors of communication processing strategies (Bartsch, & Schneider;



2014; Green, Brock, & Kaufman, 2004). For example, when people have hedonic goals, they look to become transported into fictional characters, moving focus away from themselves (Green, 2006) and identifying with other people in a story, real or imagined (Cohen, 2001). So, what would the impact of personal relevance be if people had a hedonic goal prior to receipt of a persuasive message rather than an epistemic goal? We hypothesized that people having a knowledge goal would elaborate more under high vs. low involvement conditions, the typical effect observed in the prior literature. In contrast, people having a hedonic goal would elaborate more under low vs. high involvement conditions. Furthermore, consistent with the *elaboration-strength* notion of the ELM, conditions fostering greater elaboration were predicted to produce attitudes that are stronger and more predictive of behavioral intentions.

In one study examining this idea (Cancela et al., 2019), participants were informed that they were going to take part in a mass media study and were then given one of two goals. In the *epistemic goal* condition, participants read: “The goal of this editorial is for people to learn and have an informative and knowledgeable experience. Please read the following information in order to have a clear and accurate view.” In the *hedonic goal* condition, participants read: “The goal of this editorial is for people to enjoy the experience and have a pleasurable and fun experience. Please read the following information in order to enjoy and have fun.” This induction was pretested to produce the intended goal. Next, participants’ personal involvement was manipulated by framing the communication as high or low in personal involvement. In the high involvement condition participants were told that the message had to do with their self-concept whereas in the low involvement condition they simply told the topic of the message (Briñol, Petty, & Wheeler, 2006). After this induction, participants received a persuasive message composed of either strong or weak arguments about consuming

more vegetables. Finally, participants completed the dependent measures (i.e., attitudes and behavioral intentions toward vegetables). An example behavior intentions item was “To what extent would you advocate in favor of increasing vegetable consumption?”

The results of this experiment revealed that information processing goals and personal involvement interacted as predicted to affect elaboration and persuasion (see Figure 1). Increasing high personal involvement increased information processing (and argument quality effects on attitudes) over low involvement when people had an epistemic goal. The reverse was true when people had a hedonic goal. Furthermore, conditions with greater elaboration produced attitudes that were more predictive of behavioral intentions than conditions with lower elaboration (see Figure 2).

This research has important potential implications for practical interventions. This research indicates that researchers can motivate people to think in different ways when they are in different contexts. For example, in educational contexts teachers could increase the motivation of their students by making the communication more personally relevant for them. Similarly, because patients usually come to a doctor’s office in a high personal involvement circumstance, the doctor is better off using strong arguments within an epistemic rather than an entertainment appeal. Also, in these examples, making the communication more personally relevant would translate into stronger attitudes in guiding behavior as the arguments would receive greater elaboration and thus, they would be translated into better therapy adherence, healthier behaviors, better grades, and so forth (see also, Higgins, et al., 2010).

Although this advice fits with conventional wisdom, the research we reviewed also points to limits of invariably making communications more personally relevant. Specifically, the research by Cancela and colleagues (2019) is notable in its implications for people processing communications in the context of entertainment programs.

Whereas past research might have led practitioners to think that communications always should be high in self-relevance to maximize thinking, the research we reviewed suggests that this is more likely to be an effective strategy for messages embedded in a news program than an entertainment program. Indeed, in the latter case, increasing personal involvement might even be counterproductive if people maintain their hedonic orientation during the message.

### **Summary**

In sum, the core elaboration idea from the ELM outlined in this section has been shown to be applicable to arenas as diverse as attitudes toward doping, prejudice toward minority groups, and views about healthy eating (e.g., vegetables). Across these and other domains, attitudes that came about through relatively thoughtful (vs. less thoughtful) processes were shown to be more resistant to change as well as particularly impactful on a person's behavioral intentions. However, as demonstrated, simply having attitudes is not sufficient for behavioral influence. Those attitudes must come to mind and when they do, people must have confidence in them (Rucker, Tormala, Petty, & Briñol, 2014). Similarly, the persuasion research that we describe in the next section demonstrates that in order for thoughts to impact attitudes and behaviors, people must perceive those thoughts as valid.

## **VALIDATION**

In this section, we describe the role of thought validation processes in producing consequential attitudes. The process of validation highlights the distinction between primary and secondary cognition, and emphasizes the importance of considering what people think and feel about their own thoughts. As in the section on elaboration, we explain that variables that are sometimes seen as invariably good for persuasion (e.g., making people feel empowered; see Burgmer & Englich, 2012; Hertwig & Grüne-

Yanoff, 2017; Lammers, et al., 2013; Pratto, 2016), are actually sometimes good and sometimes bad for persuasion. This understanding comes from appreciating the underlying process by which feelings of power affect attitudes.

We have argued that one way in which interventions can change behavior is by creating strong attitudes through high elaboration. Another way is to produce confident thoughts to a message via validation. The ELM holds that not only do variables affect the extent of elaboration but they can also influence what people think and feel about the thoughts they have generated. These thoughts and feelings then can determine the extent to which people use their thoughts in forming their attitudes and ultimately guiding their behavior. This general notion of people's reactions to their own thoughts determining their use is referred to as the *self-validation hypothesis* (Petty, Briñol, & Tormala, 2002). The key tenet is that merely having favorable thoughts stemming from high elaboration are not sufficient for predicting subsequent attitudes and behavior. Rather, people must also perceive their thoughts are valid. Thus, any variables that can increase perceptions of thought validity will increase use of thoughts in forming evaluations and guiding actions. In contrast, perceiving thoughts as invalid attenuates their use.

Unlike elaboration which focuses on first-order cognition (e.g., vegetables are nutritious), validation emphasizes secondary or meta-cognitions (e.g., I am sure that vegetables are tasty). Given its meta-cognitive nature, validation requires relatively high thinking. Petty and colleagues (2002) demonstrated that self-validation is more likely to operate when people have the motivation and ability to think about their thoughts (e.g., if participants are high in need for cognition, Cacioppo & Petty, 1982; when there is high personal relevance of the persuasion topic, Petty & Cacioppo, 1979). Thus, for validation processes to matter, people need to have some thoughts to validate, and also

need to be motivated and able to consider thought validity. Another boundary condition on the operation of validation processes is that confidence from the validating variable should be salient during or following thought generation rather than prior to it.

In an early study examining self-validation, Briñol and Petty (2003) had participants nod or shake their heads while listening to a message containing strong or weak arguments advocating that students be required to carry personal identification cards on their campus. Head movements were varied because nodding one's head is associated with more confidence in what one is thinking than is shaking. Thus, when people listened through headphones to strong arguments for the advocacy, vertical head movements led to more favorable attitudes than horizontal movements – the result that would be expected if vertical movements increased confidence in one's favorable thoughts. However, when people listened to weak arguments, vertical movements led to less favorable attitudes than horizontal movements – the result that would be expected if vertical movements increased confidence in one's negative thoughts. These results were obtained in conditions that fostered high motivation and ability to think, and when head movements were performed during the generation of thoughts. Furthermore, the attitude changes resulting from head nodding were mediated by perceptions of thought confidence.

Although prior research had shown that head movements during a message could affect attitudes (Wells & Petty, 1980), the study just described was the first to show that the mechanism responsible for attitude change was self-validation. This is because unlike the prior research which had only used strong arguments and showed a positive effect of head nodding versus shaking on attitudes, the more recent study showed that head nodding could also reduce persuasion if thoughts to the message were negative (see also Briñol, DeMarree, & Petty, 2015; Wichman et al., 2010).

### **Embodied Validation Influences Sport Performance**

In a recent experiment conducted in the domain of sport performance (Horcajo, Paredes, Higuero, Briñol, & Petty, 2019), cross fit athletes were recruited for an experiment while practicing at the gym. The athletes were randomly assigned to first generate and then record on a smartphone either positive or negative statements about themselves. We relied on this thought-direction induction because extensive research has found that what athletes say to themselves through self-talk can influence their performance (e.g., Tod, Hardy, & Oliver, 2011; Van Raalte & Vincent, 2017). Meta-analyses of this literature have documented the robustness of this positive effect of self-talk (Hatzigeorgiadis, Zourbanos, Galanis, & Theodorakis, 2011; Tod, Edwards, McGuigan, & Lovell, 2015).

We predicted that a self-validation framework could contribute to this domain by specifying when and why self-statements can influence physical performance. Therefore, the athletes were randomly assigned to a validating induction (nodding or shaking their heads) while listening over headphones to the self-statements they had recorded. Finally, after listening to the self-statements, physical performance was assessed in various tasks (e.g., vertical jump). Consistent with the self-validation hypothesis, athletes' self-statements were significantly more impactful on their physical performance in the head nodding than in the head shaking condition. As illustrated in Figure 3, listening to positive self-statements while nodding increased physical performance relative shaking. However, listening to negative self-statements while nodding reduced performance relative to shaking. Thus, this study shows that bodily movements can either magnify or attenuate the impact of what people say to themselves. As noted earlier, this self-validation effect is most likely when conditions foster thinking and the validation variable comes during or after thought generation.

If the head movements had occurred prior to generating self-statements, then other processes would be more likely to occur (e.g., head movements could have affected the amount and direction of the thoughts that came to mind; see Briñol, Petty, & Hinsenkamp, 2018).

Also relevant, given that the cover story used in this study (testing the use of headphones at the gym) aimed to hide the connection between head movements and subsequent physical performance, an important matter to consider for applied interventions in this and other domains is whether head movements could also be used to *intentionally* produce changes in performance. Indeed, people not only use their self-talk to intentionally improve their own performance, but they also use their non-verbal behavior to deliberately influence their own performance or the performance of others (e.g., when an audience smiles or cheers for their team). However, it is not clear whether people could also use their own nodding and shaking head movements to deliberately improve their performance by validating their own thoughts. Thus, future research should examine to what extent the findings obtained by Horcajo and colleagues (2019) can be generalized to interventions including intentional overt behaviors performed with the explicit goal of improving performance.

### **Validation Increases Goal-Behavior Correspondence**

We have reviewed so far how variables associated with validity (head nodding) can validate mental constructs (self-talk) affecting behavior (sport performance). We next focus on how other variables associated with validity (power, ease) can also influence behavior (e.g., academic performance, donations). Specifically, across three experiments, we manipulated participants' sense of power, the ease with which goal-relevant behavior is recalled, and an episodic recall of one's own past experiences of confidence versus doubt to examine whether these variables would affect subsequent

behavior as a result of thought validation.

In one study, DeMarree, Loersch, Briñol, Petty, Payne, and Rucker (2012) examined whether power could validate people's goals of competition versus cooperation. Participants were first primed with words related to being competitive (e.g., compete, win) or cooperative (e.g., help, share) using a word completion task (i.e., filling in the missing letters of the words). Following this, participants wrote about times when they had power over someone else or when someone else had power over them. Finally, participants engaged in simulated economic games where they had an opportunity to share money with another participant or not. Consistent with the idea that power produces confidence (and powerlessness produces doubt; see Briñol, et al., 2007), the primed goal affected participants' behavior in the economic games to a greater extent when they subsequently wrote about high power. That is, under high versus low power conditions, cooperation-primed participants gave more money to their partner in the economic games than did competition-primed participants.

A second study by DeMarree et al. (2012) used a new prime to vary initial cognitions, a different variable to induce validity, and also a new behavioral dependent measure. In this study, an achievement goal was first primed in all participants by having them recall past instances of achievement striving. The number of examples recalled served as a manipulation of participants' subjective ease of retrieval (Schwarz et al., 1991). Participants were randomly assigned to recall few or many achievement memories. Research on self-validation had demonstrated that ease (versus difficulty) of thought retrieval increases confidence in the recalled content (Tormala et al., 2002; 2007). Therefore, ease was the validating variable in this study. After completing the ease/difficult induction, all participants completed a series of difficult anagram items and were then given a chance to raise their score on the anagram task by completing



additional, easy, items. The amount of time spent on the second anagram task served as the behavioral measure of achievement striving. In line with self-validation predictions, the achievement goal initially primed had a larger effect on task persistence when people associated the primes with the experience of ease (vs. difficulty).

In a third experiment, DeMarree et al. (2012) primed participants either with a self-improvement or a money saving goal immediately prior to having them reflect on times when they experienced confidence or doubt. After the priming and confidence inductions, participants' intentions to donate to charity were recorded and served as the main dependent measure. Consistent with self-validation, participants who articulated past instances of confidence relied on the primed goal more than those who reflected upon instances of doubt. Specifically, confident participants in the self-improvement condition were willing to donate more than twice as much money (\$13.00) as people in the confident saving money condition (\$5.28). In the doubt conditions, no significant effect of prime emerged. Taken together, this research on goal validation reveals that the extent to which prime-related mental contents are viewed as valid can determine whether a primed concept influences motivated behavior.

### **Power Validates Ambivalence Leading to Inaction**

As just described, power can influence behavior through validation processes. In a recent review, we have shown that a wide variety of power inductions can magnify the impact of any current thoughts via the self-validation process (Briñol, Petty, Durso, & Rucker, 2017). But, as already noted, for power to influence judgment via a self-validation mechanism, elaboration must be sufficiently high for individuals to both generate thoughts, and to consider their validity. Second, power inductions are more likely to influence judgments by self-validation when the induction accompanies or follows the generation of thoughts rather than precedes it.

Given that the validation effect that emerges from power can be applied to any cognition, an interesting case is whether power can also validate ambivalence. This is interesting because past research suggests that more power generally leads people to be more likely to take action (Galinski, Gruenfeld, & Magee, 2003; Keltner, Gruenfeld, & Anderson, 2003), whereas ambivalence (the feeling of being mixed or conflicted about something; Priester & Petty, 1996), leads to *less* action (van Harreveld, van der Pligt, & de Liver, 2009). These observations allow for the simple conclusion that two main effects could emerge in a situation where people vary both in power and ambivalence: people should be most inclined to act when they are powerful and have consistent thoughts and be least inclined to act when they are powerless and have ambivalent thoughts. However, if power can validate any mental content including individuals' ambivalent thoughts, then power should magnify the extent to which this ambivalence was trusted and thus reduce participants' propensity to act, a novel hypothesis from the self-validation approach.

A recent set of experiments tested this unique prediction regarding power and ambivalence. Specifically, Durso, Briñol, and Petty (2016) had participants read information about an employee whose behavior was either consistent (entirely good or bad) or ambivalent (both good and bad). Subsequently, participants were induced to feel more or less powerful. Next, participants indicated the extent to which they preferred action versus inaction in making a decision about an employee. Finally, they were required to make a decision as to whether the employee should be promoted or fired. The time invested in making that decision was recorded.

Consistent with previous work demonstrating that power leads to action, among participants who received univalent information, participants induced to feel powerful were more likely to express a preference for taking action and actually made quicker

decisions compared to low-power participants. In contrast, among participants who received ambivalent information, those who were made to feel more powerful were more likely to prefer inaction and made their decisions more slowly than low power participants (see Figure 4). These results are informative as to the conditions under which feeling powerful leads to more versus less action (see also, DeMarree, Briñol, & Petty, 2014; Hirsh, Galinsky, & Zhong, 2011). This is important because empowering people to take action has been shown to play a critical role in many interventions (Burgmer & Englich, 2012; Hertwig & Grüne-Yanoff, 2017; Kim, et al., 2018; Lammers, et al., 2013; Pratto, 2016).

### **Elaboration and Validation: Practical Tips for Separating Processes**

As noted throughout this review, maximizing the chances of designing effective interventions depends in part on the psychological processes underlying the impact of any variable on behavior. This review focused on two fundamental mechanisms of behavioral influence -- elaboration and validation -- which are critical for predicting attitude and behavior change in the desired direction, and are also relevant for specifying how consequential mental constructs (attitudes, goals) are in guiding behavior over time.

Given that many variables (power, ease, body movements) can affect attitudes and behavior through these two processes, a natural concern is how researchers and practitioners can explain and test the effects of interventions on persuasion in any given context of interest. Fortunately, systematic methods exist to help identify the fundamental process by which any given variable is operating to produce influence. For example, as noted, the effects of variables such as power can be predicted *a priori* based on contextual factors, such as the general levels of elaboration as well as the order in which events occur. Therefore, to examine the methods for systematically separating the

processes by which variables can influence attitudes and behaviors, researchers and practitioners can rely on moderation and mediation approaches. In fact, a number of methods have been identified for both separating out and predicting when different processes occur.

One means to test for a particular process is to manipulate elaboration and the quality of the arguments in the communication of interest. Because different processes operate at distinct levels of elaboration, manipulating elaboration is an excellent tool allowing researchers and practitioners to isolate and understand the nature of an underlying effect. Manipulating argument quality is a means to see if a variable is affecting amount of thinking (elaboration) or reliance on those thoughts (validation). As alluded to earlier, the time at which variables are made salient can systematically alter the process by which it affects persuasion. Variables are more likely to influence judgments by a process of thought validation when introduced after, rather than before individuals generate their thoughts, but are more likely to influence extent of thinking when induced before rather than after. For instance, inducing an experience of power after a message allows for people to reflect upon their existing thoughts about the message, whereas inducing power before a message affects individuals' likelihood of processing the message (see Briñol, Petty, Valle, Becerra, & Rucker, 2007).

In addition to identifying moderators such as timing and elaboration, persuasion research has also developed mediators of attitude change that can be used to understand how variables affect influence. Measuring both the type of thoughts that participants generate as well as participants' perceptions of thought validity can help assess the underlying processes involved in social influence. When a variable affects persuasion by increasing individuals' amount of thinking, this should result in a shift in the proportion of message-relevant thoughts that are consistent with the message. That is,

the valence of thoughts (favourable or unfavourable) becomes more congruent with the quality of the message (strong or weak) as thinking increases. Alternatively, if a variable affects persuasion by validating participants' thoughts, then differences should be observed in participants' self-reported perceived thought validity and this should mediate persuasion. In contrast, if a variable has no effect at all on message-relevant thoughts or thought validity, then this can signal that the variable is serving as a peripheral cue, a process most likely to occur when thinking is low (see Petty, Schumann, Richman, & Strathman, 1993). In sum, thought favorability and validity can be measured to help examine the underlying process by which variables affect persuasion in a given context.

### **Revisiting Popular Interventions by Taking Process into Consideration**

As should be clear so far, changing people is complex. However, taking a process-orientation to intervention can be helpful in understanding such complexity. As noted, the research we reviewed suggests some important caveats to popular interventions that propose relatively simple “tricks” to changing people's lives (Nair, et al., 2014; Wiseman, 2012; 2013; see Walton, 2018, for a review). For example, our work has qualified a recent trend of emphasizing feeling powerful as a means of becoming more successful across different domains of life (Lammers, Dubois, Rucker, and Galinsky 2013; Wiseman, 2013). Rather than being inherently positive, we explained how the confidence that comes from body postures or feelings of power can magnify whatever mental content is accessible, at least when power operates through a self-validation mechanism. Self-validation research has shown that feelings of power or confidence can increase self-esteem (Briñol, Petty, & Wagner, 2009) and physical performance (Horcajo et al., 2019) when people are thinking about their strengths but decrease self-esteem and performance when people are thinking about their weaknesses.

Beyond power, other popular interventions often rely on additional positive inductions such getting people to express positive affect (smiling; Lyubomirsky et al., 2011; 2013) and expressing one's values (self-affirmation; Cohen, et al., 2009). Our process-oriented approach, suggest that inductions of happiness and self-affirmation techniques would increase influence in some cases but decrease persuasion in others. For example, like the effects of feeling powerful, feeling happy or affirmed can influence attitudes by affecting one or more of the five ELM processes of attitude change. For example, if thinking is low, simple valenced cues such as feeling powerful, happy or affirmed can serve as simple cues to evaluation in accord with their valence (e.g., if I am happy, I must like it). If thinking is high, these same variables work in other ways such as biasing thinking (e.g., happiness can make positive thoughts more accessible), serving as arguments (e.g., happiness can be seen as evidence that a joke is good), or validating thoughts (e.g., happiness can make people view their thoughts as more valid). If thinking is not constrained to be high or low, these same inductions can affect how much thinking occurs (e.g., see Petty & Briñol, 2015, for an extensive review of multiple processes of emotion; see Briñol, Petty, Gallardo, and DeMarree, 2006, for multiple roles of self-affirmation; and Briñol et al., 2017 for multiple roles for power).

Although in the examples just described, feelings of happiness (or affirmation or power) may often lead positive attitudes, the underlying process by which this occurs can vary, and therefore we argue that the attitudinal consequences are also likely to differ (e.g., with high thinking processes leading to more attitude-behavior-correspondence). Importantly, positive variables like happiness (or affirmation or power) can also lead to negative attitudes such as when these variables reduce

elaboration of strong arguments or validate negative thoughts (e.g., Briñol, Petty, & Barden, 2007; Paredes, Stavraki, Briñol, & Petty, 2013).

Other popular interventions have been very successful in getting people to self-distance when they analyze their feelings. For example, cueing people to analyze their past negative experiences from a self-distanced (vs. from a self-immersed) perspective makes a significant difference in health-related outcomes (Finkel, Slotter, Luchies, Walton, & Gross, 2013; Kross et al., 2012; 2014). According to our self-validation analysis, however, distance from thoughts (either through perspective, through mindfulness, or through other means; Lee, & Schwarz, 2011) will decrease the use of not only negative thoughts (making people feel good) but also the use of positive thoughts (making people feel worse). In fact, recent research has demonstrated that physical distance from one's thoughts can either increase or decrease positive outcomes (Briñol, Gascó, Petty, & Horcajo, 2013). In short, this final section reinforces the notion that taking the psychological processes underlying change into account can provide a very fruitful framework for understanding many different intervention paradigms in psychology.

## **Conclusion**

In this review, we have argued that practical initiatives and applied interventions can be designed by taking into consideration elaboration and validation processes so that the induced mental contents (e.g., thoughts, attitudes, goals) are likely to have an impact and guide behavior. The research we reviewed indicates that attitudes based on high thinking processes predict behavioral intentions and behavior better than attitudes based on little thought. As noted, elaboration processes are relevant for understanding short and long term change, and illustrate how the same treatment can produce the same initial response (attitudes) but lead to very different behavioral outcomes depending on

how people perceive the validity of their attitudes. Validation processes are also important for understanding attitude and behavioral change and illustrate how the same treatment can produce the same initial response (thoughts) but lead to very different judgmental and behavioral outcomes depending on how people perceive the validity of their own thoughts.



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Figure 1: Interaction between personal involvement and argument quality as a function of epistemic goals (top panel) and hedonic goals (bottom panel). Adopted from Cancela, Briñol, & Petty (2019).

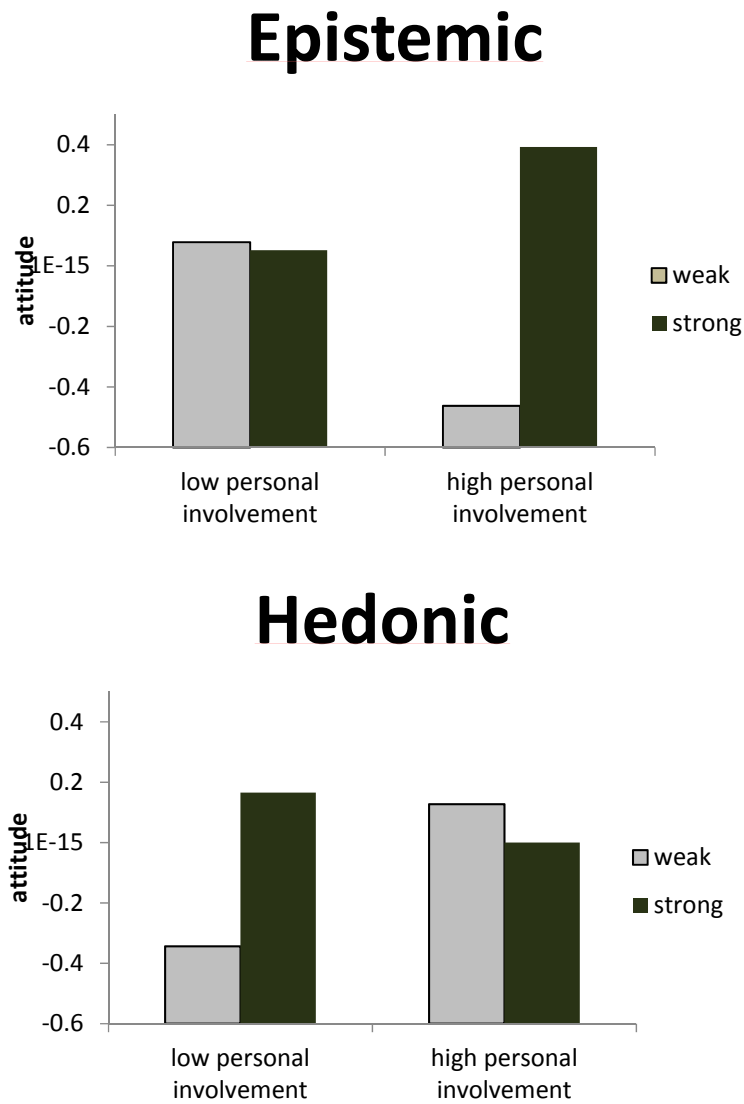


Figure 2: A match between goal orientation and involvement (i.e., epistemic orientation and high personal involvement and hedonic orientation and low personal involvement) led attitudes to be more predictive of behavioral intentions than a mismatch between goal orientation and involvement (i.e., epistemic orientation and low personal involvement and hedonic orientation and high personal involvement). Adapted from Cancela, Briñol, & Petty (2019).

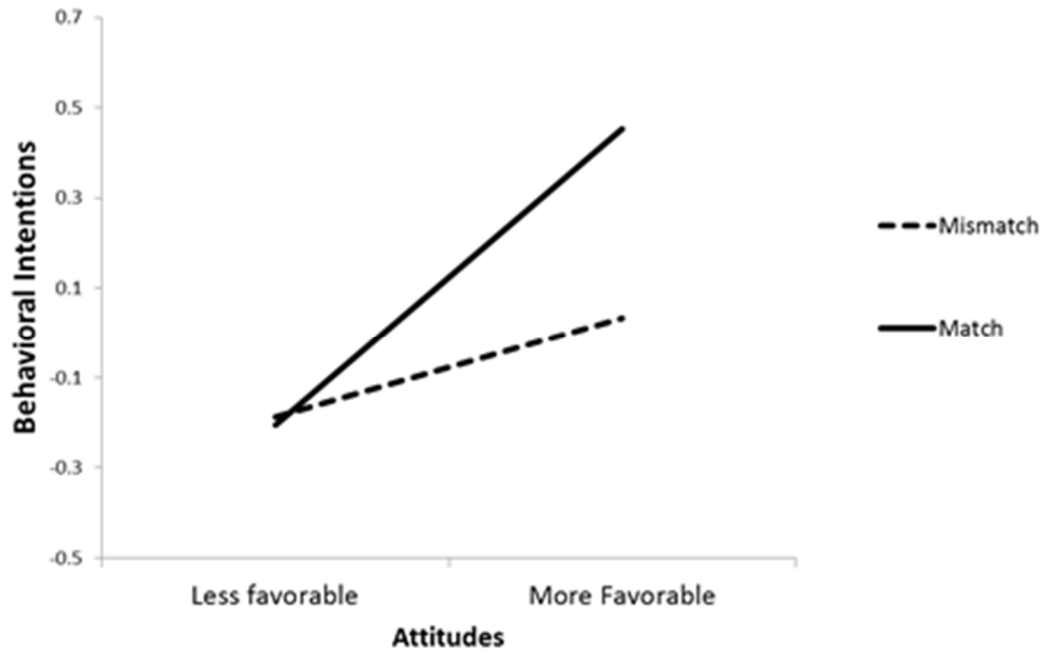


Figure 3. Vertical Jump (in centimeters) as a function of Self-Talk and Head Movements. Adapted from Horcajo et al., (2019).

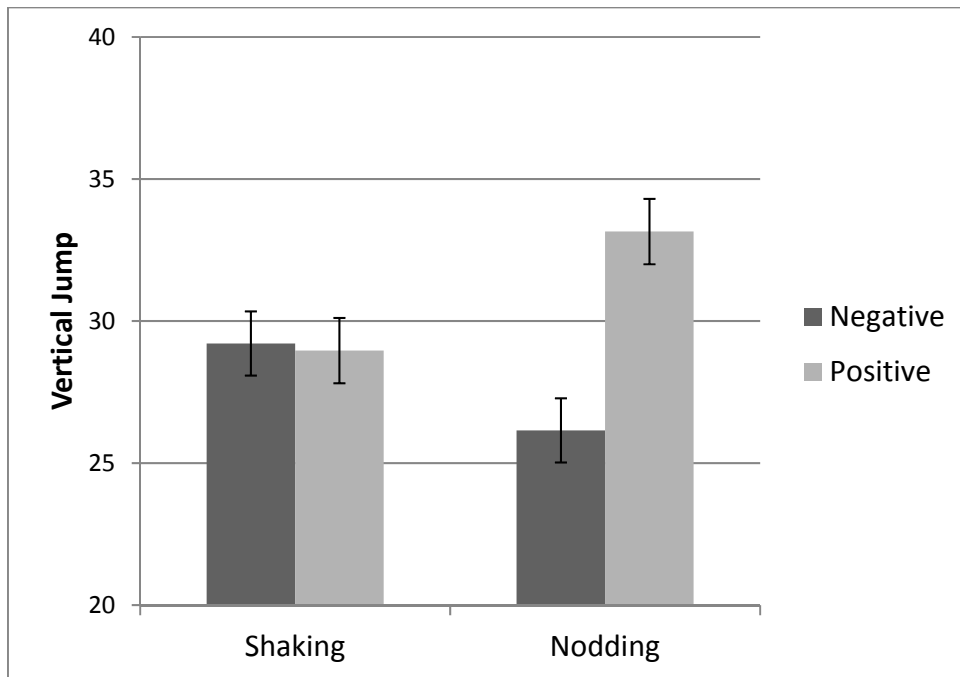


Figure 4. Behavioral inaction (decision time) as a function of Ambivalence and Power. Adapted from Durso, Briñol, & Petty (2016).

