

Self-Validation Theory: Confidence can Increase but also Decrease Performance in Applied Settings

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Abstract. This article presents *self-validation theory* (SVT) as a framework predicting when mental contents guide performance. First, we illustrate how confidence can validate people's thoughts (goals, beliefs, identity) increasing and decreasing performance, depending on what thoughts are validated. This first section reviews examples of validation processes in guiding intellectual performance in academic settings, sport performance in athletes, as well as performance on diverse social tasks. SVT specifies moderating conditions for validation processes to operate. Therefore, in the second section of this review, we identify unique and testable moderators for metacognitive processes demonstrating when and for whom validation processes are more likely to occur. A third section calls for future research identifying new validating variables (e.g., preparation, courage) capable of increasing usage of unexplored thoughts relevant to performance (e.g., expectations). This final section examines new domains for validation (e.g., group performance, cheating in performance), discusses to what extent people can use self-validation strategies deliberately to improve their performance and addresses when performance can be impaired by invalidation (e.g., due to identity threat).

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We introduce a framework for understanding changes in performance based on self-validation theory (SVT; Briñol & Petty, 2022). The core notion of SVT is that any salient thought become more consequential for judgment and action as the perceived validity of that mental content is increased. Perceived thought validity is a metacognition because it involves thinking about the validity of one's own thinking. As will be described, perceived validity can be measured easily by asking people how confident they are in their thoughts, and it can also be experimentally manipulated to vary across conditions.

Various theories beyond SVT have highlighted the importance of metacognition in determining to what extent thoughts are translated into action (e.g., Bernstein et al., 2015; Goupil & Kouider, 2019; Jost et al., 1998). However, unlike most prior research which has focused on the accuracy of metacognitions (e.g., whether individuals are sure that their responses to a knowledge test are correct or not; Flavell, 1992; Fleming et al., 2010;

Koriat & Goldsmith, 1996), SVT is less concerned with the actual accuracy of thoughts, and focuses also on their *perceived* validity and how this subjective perception is associated with thought use.

We focus on SVT as a conceptual umbrella for covering recent work on performance for a number of reasons. First, SVT has guided the studies described throughout this article. The studies were selected based on whether (a) an initial thought was primed to then be validated, (b) a measure or a manipulation of the confidence in that initial thoughts was also included, and (c) any behavioral consequence relevant to performance was measured as a dependent variable. We will cover examples of validation processes guiding intellectual, physical, and social performance. Understanding performance as an outcome is important because performance is a special kind of action that is typically based on comparing skilled behavior against some objective standard, leaving less room for subjectivity than other behaviors typically examined in social psychology (Fishman et al., 2020; Organ, 1997; Sheeran, 2002; Webb & Sheeran, 2006).

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SVT is particularly useful in this context because validation processes can apply to *any* mental contents available in mind. Although much of the work on SVT has varied the valence of initial thoughts (positive or negative), the present review also covers other types of mental content relevant to performance, such as goals, self-efficacy beliefs, and chronic dispositions. Consistent with SVT, the first two sections of this review will describe how diverse mental content (motives, beliefs, traits, etc.) can affect performance through validation processes.

Furthermore, we focus on SVT because it explains the effects of a wide array of variables capable of affecting the perceived validity of one's initial thoughts, including variables that are both relevant as well as completely incidental to that mental content. Consistent with SVT, this review illustrates this idea by covering a variety of validating variables that influence thought confidence, ranging from power and perceived ease of thought generation to psychological distance.

Beyond applying validation processes to different thoughts and validating variables, SVT identifies unique and testable moderators for metacognitive processes. As will be described in the second section of this article, a benefit of considering moderators is that it allows SVT to make predictions regarding which individuals and situations are more likely to take thought confidence into consideration in guiding their performance. Specifically, the second section of this article focuses on elaboration as a key moderating variable influencing the extent to which people rely on their metacognitive assessments.

A final section identifies areas for future research and discusses to what extent people can use self-validation strategies deliberately to produce self-change. This final section also reveals that SVT is applicable to many new validating variables and also identifies unexplored thoughts to be validated, such as expectations, and a variety of other mindsets relevant to performance.

SVT Applications to Performance

As just introduced, SVT postulates that the impact of diverse mental content on performance can be magnified when that mental content is validated and attenuated when it is invalidated. Consistent with this SVT notion, in a series of studies DeMarree and colleagues (2012) showed that the incidental confidence that emerge from feeling powerful can validate people's goals of either competition and cooperation, depending on which was made salient at the time. In one experiment, participants were first primed with the goal to cooperate or compete and then were instructed to reflect on previous times when they held high or low levels of power. Power can validate mental constructs available

in mind because it is associated with feelings of confidence (Briñol et al., 2007; see Briñol, Petty, Durso, et al., 2017, for a review on self-validation by power). The impact of the initial primes was assessed using two economic decision-making tasks that served as dependent variables in this study (i.e., the dictator game; Bolton et al., 1998, trust game, Berg et al., 1995). Induced power validated the initial goals primed magnifying the impact of those goals on subsequent behavior. As a consequence, there was more goal congruent behavior (i.e., cooperative or competitive) in the economic tasks among individuals made to feel powerful than powerless. For those in the powerless condition, the impact of the goal primes on task behavior was eliminated.

This research demonstrated that the sense of perceived validity that comes from power can magnify whatever mental content is accessible at the time increasing and decreasing cooperation or competition depending on what the validated thoughts (e.g., goals) are to begin with (see, DeMarree et al., 2014; Hirsh et al., 2011, for additional examples). Beyond power, in subsequent sections of this review, we illustrate how other variables associated with a sense of perceived validity (ease, head nodding) can validate different initial thoughts (e.g., achievement goals, self-improvement motives) influencing performance and other behavioral outcomes in other domains.

Validation Increases Goal-Pursuit

We have just described how one variable associated with validity (felt power) can validate mental constructs initially primed (cooperation vs. competition) affecting goal-congruent behavior. We now focus on how other variables associated with validity beyond felt power (e.g., ease) can validate other initial thoughts (achievement motivation) influencing actual performance (solving anagrams).

In a study by DeMarree et al. (2012), an achievement goal was first primed in all participants by having them recall past instances of achievement striving. Thus, achievement memories served as the initial thoughts to be validated. 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 (easy) or many (difficult) achievement memories. SVT research had demonstrated that ease of thought retrieval affects confidence in the recalled content (Tormala et al., 2002; 2007; see Briñol et al., 2013, for a review on self-validation by ease). Therefore, ease was the validating variable in this study. After the ease induction, all participants completed a series of difficult anagram items and were given a chance to raise their score on the 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 SVT predictions, the achievement goal initially primed had a larger effect on task persistence when people associated the achievement prime with the experience of ease (confidence) vs. difficulty (doubt).

Confidence Can Increase but also Decrease Academic Performance

The two studies described so far reveal that SVT principles apply to goal pursuing in laboratory studies. Next, we provide a recent example demonstrating how SVT also has been useful in understanding thought usage in guiding performance in more natural settings.

Across a series of studies, Moreno, Briñol, and Petty (2022) examined students who were led to engage in either positive or negative thinking about themselves. Therefore, the valence of self-relevance thoughts (positive or negative) served as the initial cognition to be validated in this paradigm. The perceived validity of those thoughts was either measured or was experimentally manipulated to be relatively high or low (e.g., by having students recall past episodes of confidence or doubt; Petty et al., 2002). After manipulating thought direction and thought validity, academic performance was assessed using a battery of academic tasks including a knowledge test and a visual task consisting of rotating a series of geometrical figures. The results across studies showed that the validation induction moderated the impact of valenced thoughts on performance. When thoughts were positive, increased validation improved performance. However, when thoughts were negative, the same increased validation induction reduced performance. Thus, validation inductions can lead to opposite findings on performance depending on whether positive or negative self-relevant thoughts are validated.

Validation of Self-Efficacy Beliefs: Consequences for Academic Performance

As noted, SVT applies to whatever thought people have in mind. Beyond primed goals and self-relevant thoughts, consider the possibility of validating self-efficacy beliefs. Self-efficacy (SE) is defined as beliefs in one's ability to produce outcomes or to attain goals (Bandura, 1977). In one study on validation of SE by Moreno, Briñol, and Petty (2022), undergraduate students were first asked to complete the general SE scale (Schwarzer & Jerusalem, 1995). Participants' reports of their own SE served to classify the students according to their beliefs regarding their own competence. Thus, SE beliefs served as the initial cognitions to be validated in this study. Next, participants reported the perceived

validity of their responses to the SE scale. This measure of the perceived validity was the metacognition of this study since it required participants to consider the confidence with which they held their own SE beliefs. Finally, students were asked to complete a battery of tasks relevant to academic performance which included a geometric-shapes task, syllogism problems, and a knowledge test. As predicted, the results of this study showed that confidence in the scale responses moderated the impact of SE on performance. In accord with SVT, participants' SE scores were more associated with performance across these different tasks when participants perceived those beliefs to be more valid.

This study revealed that measuring the validity with which SE beliefs are held can lead to increased predictability of the effects of SE on performance. This is important because students likely come into the classroom with different beliefs about themselves, as well as with different levels of confidence. In fact, a subsequent SVT study revealed that natural variations in confidence associated in SE beliefs can moderate academic performance for undergraduates during an entire academic semester (e.g., measuring SE and confidence at the time of enrollment and predicting grades on final exams; Horcajo et al., 2022).

Because the perceived validity associated with SE was measured in these two lines of research, it is possible that other, unmeasured factors (e.g., self-knowledge, intelligence, etc.) might have been confounded with confidence. Therefore, in a follow-up study by Moreno et al. (2023), perceived validity in SE beliefs was manipulated to demonstrate the causal role of this variable more clearly. In this follow-up, Moreno et al. (2023) also began by assessing SE using the general SE scale (Schwarzer & Jerusalem, 1995). Next, the perceived validity of SE beliefs was manipulated (rather than measured) to be relatively high or low. Specifically, participants were randomly assigned to either recall past episodes of confidence or past episodes of doubt. The idea behind this induction is that the felt confidence emerging from the recall task would be misattributed to the current beliefs available from recently completing the SE scale (Petty et al., 2002; Requero et al., 2020; Paredes et al., 2021). As a dependent measure, participants were asked to complete the same academic tasks used in the first study previously described (e.g., geometric-shapes task, syllogism problems, and knowledge test). Moreno et al. (2023) expected and found that participants' SE scores were more associated with performance in these academic tasks when perceived validity was manipulated to be high rather than low. In sum, this study provided evidence for the causal role of perceived validity in moderating the effects of SE on performance.

The results of these studies revealed that a higher sense of SE was associated with better academic performance when participants were sure of their SE beliefs. Viewing this interaction differently, for participants scoring higher in SE increasing confidence was associated with increased academic performance. However, for those scoring relatively lower in SE increasing confidence was associated with decreased academic performance. Thus, these findings are important because they reveal that promoting feelings of confidence in students can have opposite effects on academic performance depending on their initial scores in SE inventories. In fact, rather than being inherently beneficial, the induction of confidence led to positive academic outcomes in some cases (for those with relatively higher levels of SE) but also led to negative academic outcomes in other cases (for those with relatively lower levels of SE).

Validation of Self-Talk: Consequences for Physical Performance

Beyond academic and social performance, consider other recent SVT work focused on how this metacognitive process can serve to improve sport performance (Horcajo et al., 2019). In this research, cross fit athletes were recruited for an experiment while practicing at their gym. Athletes were randomly assigned to generate and then record on a smartphone either positive or negative statements about themselves. This thought-valence induction has been used extensively in research showing that what athletes say to themselves through self-talk can influence their physical performance (e.g., Hatzigeorgiadis et al., 2011). Following thought generation, the athletes were randomly assigned to a validation induction using the head nodding technique (Briñol & Petty, 2003). That is, the athletes were assigned to either nod (validate) or shake (invalidate) their heads while listening over headphones to the self-statements they had recorded. After this, performance was assessed using a vertical jump task, a squat test, and a deadlift task.

Consistent with SVT predictions, athletes' performance was impacted by an interaction between the valence of the self-talk and its perceived validity from the head nodding induction. Specifically, listening to positive self-statements while nodding increased physical performance relative to shaking. However, listening to negative self-statements while nodding reduced performance relative to shaking. Thus, this study showed that a validation induction (head movements in this case) can either facilitate the impact of what people say to themselves (validation by nodding) or eliminate the impact of thoughts (invalidation by shaking; see also Horcajo et al., 2020).

Validation of Self-Efficacy Beliefs: Consequences for Sport Performance

In recent follow-up research relevant to physical performance, Horcajo and colleagues (2022) began by asking cross-fit athletes at the gym to complete an adapted version of the SE measure specifically designed to assess their perceived competence in physical activities (Bandura, 1997). Therefore, in this study SE beliefs served as the initial cognition. Then, the participants rated the confidence in their responses to the SE domain-specific scale. Thus, confidence in SE served as the measure of perceived validity in this study. The dependent variable was the number of pull-ups that athletes were able to complete in a given time. In accord with SVT, confidence moderated the effect of SE on physical performance as indicated by the number of pull-ups completed. SE beliefs were more associated with performance as confidence in those initial beliefs increased.

A second study by Horcajo and colleagues (2022) assessed SE and manipulated (rather than measured) confidence in order to more accurately infer the causal role of perceived validity. Specifically, after measuring SE, participants were asked to describe past personal episodes in which they felt confidence or doubt. As noted earlier, this manipulation was adopted from previous SVT research and it has been found to influence momentary feelings of confidence that can be misattributed to any content available in mind at the time (Petty et al., 2002). After measuring SE and manipulating its perceived validity, physical performance was assessed by measuring vertical jump during another cross fit training session at a gym. In addition, this study included both baseline and post-intervention assessments to obtain within-participant comparisons. As predicted, the SVT interaction between SE and confidence emerged again. That is, the effect of SE on physical performance was greater for participants assigned to the confidence (vs. doubt) conditions.

Process Moderators

Validation processes do not occur for all people in all situations. SVT research has identified individual and situational differences in the propensity to rely on thought validation processes. Whereas the SVT research described so far highlights the importance of considering both the initial cognition and its perceived validity, the present section describes variations in the extent to which people care and rely on perceived validity.

Specifically we focus on a key determinant of reliance in metacognitive assessments previously identified by SVT research: Elaboration. The idea is that because thought validation is a metacognitive process, it requires a greater extent of thinking than merely generating initial thoughts or responding to an individual

differences inventory. That is, for thought validation to operate, not only must people have an initial thought to validate, they also need some motivation and ability to engage in additional thought about the validity of that mental content. In line with this SVT logic, we next describe how elaboration can moderate reliance on confidence judgments in the domain of performance.

Elaboration Affects Reliance on Confidence: Consequences for Social Performance

As described previously, some of the most recent research conducted on SE has been designed to identify for whom SE is more likely to influence individual performance in academic and sport domains. These studies revealed that the greater the confidence associated with SE beliefs, the greater the predictive validity of those beliefs in both contexts. Beyond individual performance, further research has examined the link between SE and performance in the relatively less explored inter-personal context. Next, we describe those studies conducted by Moreno et al. (2023).

A first series of studies in this section examined the impact of SE in guiding social performance. Across three studies, participants' SE was first measured or manipulated. Thus, SE served as the primary cognition to be validated. The perceived validity in participants SE beliefs was also taken into consideration. Perceived validity was assessed by asking people to report the confidence in their responses to the SE scale (Study 1) and was also manipulated through an incidental induction of confidence (Studies 2, and 3). The impact of these two variables (SE beliefs and perceived validity) were examined as predictors of performance in several social domains (i.e., distinguishing between real and fake laughs, emotion recognition, differentiating between social and computer-generated messages, and lie detection).

Across these varied inter-personal outcomes, results revealed that perceived validity moderated the extent to which SE beliefs predicted social performance, with greater consistency between SE and performance obtained from those individuals and conditions for which confidence was relatively high rather than low. According to SVT, validation processes are more likely to occur for individuals motivated to engage in thinking. Therefore, Study 1 included a measure of reported elaboration, Study 2 assessed Need for Cognition (Cacioppo et al., 1984) to classify participants according to their motivation to engage in extensive thinking, and Study 3 manipulated elaboration just before the social performance task, keeping SE and confidence unaffected (since it came afterwards). As predicted, results of these three studies showed that the effects of already existing confidence in SE beliefs on social

performance were more likely to occur for high (vs. low) thinking participants. That is, regardless of the type of task, or whether SE, confidence and elaboration were measured or manipulated, results showed that participants' SE beliefs were more associated with performance in social domains when confidence was relatively high rather than low. Most importantly, in accord with SVT, this set of studies also showed that the effects of confidence on SE in predicting inter-personal performance was more likely to occur for high (vs. low) thinking participants.

Validation of Identity Influencing Performance in STEM-Related Tasks

Beyond self-relevant thoughts and SE beliefs, consider the possibility of validating another mental construct potentially relevant to performance: Identity. A recent series by Moreno, Briñol, Gandarillas, et al. (2022), focuses on scientific identity, examining the influence of STEM (Science, Technology, Engineering, Math, Medicine) identity and the perceived validity of such identity on STEM-related outcomes. In this paradigm, participants' STEM identity was first measured using different procedures. Therefore, participants' STEM identity served as the initial thought in this research. Then, the perceived validity of that identity was assessed by asking participants to report their certainty in their initial responses to the identity scales (Studies 1-3) or it was manipulated (Study 4). Across several studies in this series, Moreno, Briñol, Gandarillas, et al. (2022), tested the impact of these two predicting variables (identity and perceived validity) on STEM-related decisions and performance. The dependent measures ranged from perceived interest in STEM fields, performance in tasks relevant to STEM (Studies 1 and 4), and career choices relevant to STEM fields (Studies 2 and 3). We expected STEM identity to be more associated with STEM-related outcomes when the perceived validity of such identity was relatively high rather than low, especially under relatively high elaboration conditions.

Consistent with these SVT predictions, results showed that participants' STEM identity was more impactful on several outcomes relevant to STEM when such identity was held with higher confidence. Beyond predicting for whom STEM identity is more likely to guide decisions and behaviors in STEM fields, the present research also tested the SVT prediction according to which reliance on metacognitive assessments, such as confidence, is more likely to occur for individuals motivated to engage in thinking. To test this prediction, Studies 1 and 2 measured elaboration to classify participants according to their motivation to engage in extensive thinking, and

Studies 3 and 4 manipulated the ability to think through a cognitive load (Study 3) or a personal relevance (Study 4) induction.

As predicted, results showed that the effects of confidence were more likely to occur for higher thinking participants regardless of whether thinking was measured or manipulated. Specifically, the four main studies showed that the effects of perceived validity on identity-behavior correspondence were more likely to occur for participants reporting higher extents of elaboration (Study 1), but also for participants who chronically enjoy engaging in thinking (Study 2) and for those who were randomly assigned to high (vs. low) elaboration conditions (Study 3 and 4). Together with the results described previously, these studies reveal that using perceived validity is especially likely when the person or situation fosters relatively high thinking.

Further studies have replicated these findings using other primary cognitions to be validated (e.g., art identity), other validating variables (e.g., confident emotions), other domains of performance (e.g., creativity), while also varying the timing of the induction of the key moderator described in this block (elaboration). Besides all the variations, there is convergent evidence showing that the effects of confidence were more likely to occur for high (vs. low) thinking participants and situations.

Summary and Future Directions

This review offered several insights based on SVT. First, we showed how incidental inductions of confidence can validate people's thoughts increasing and decreasing performance, depending on what mental contents are validated. This initial section described research examining the impact of validation processes in guiding performance in various areas of application, including natural settings. The initial section focused on validation SE beliefs to produce consequential changes for academic performance in school settings and for physical performance in professional athletes.

The second section focused on moderation of these effects, specifying the conditions in which validation processes are more likely to operate to guide performance. Consistent with SVT, taking confidence into consideration was shown to require relatively high motivation and ability to think allowing thought about the perceived validity of initial thoughts.

In this third section, we propose that SVT is applicable to identifying new validating variables and to validate unexplored thoughts in new performance-relevant domains. We begin this final section by revealing that validation outcomes can vary as not only as a function of the content of thoughts (positive or negative thoughts, high or low SE beliefs), but also as a function of the nature of those thoughts (univalent

or ambivalent), and depending on the relevance of those thoughts for the validating variable (content dependent or independent). This final section also includes research on validation by expectancy confirmation, stereotype validation, and identity threat. Next, the final section continues by calling for further research to identify new validating variables (e.g., preparation, courage, liking by others) beyond the validating variables already described throughout this review (power, ease, recalling confidence). Among other features, this section offers the possibility of revisiting the link between physical objectification and intellectual performance from the lens of SVT. Furthermore, this section describes recent research on how validation processes are relevant for understanding why people cheat in their performance. Finally we close by discussing to what extent people can use self-validation strategies deliberately to change their own performance.

New Thoughts to Validate

Perceived validity can be applied to whatever mental elements are salient at the time, regardless of their specific content, valence, and nature. In the studies reviewed so far, self-validation processes operated for goals, self-relevant thoughts, self-efficacy beliefs, and scientific identity. Given that any thought can be susceptible to a SVT analysis, future research can examine a large number of unexplored thoughts and beliefs ranging from growth mindsets (Dweck, 2006) to expectations (Durso et al., 2021) in a variety of domains. For example, a recent review used the SVT to offer concrete steps doctors, practitioners, and researchers could take to amplify the placebo component of medical treatments by validating placebo expectations and invalidating nocebo expectations (Geers et al., 2019). This tutorial focused on expectations about medical treatments, but the same validation process would be relevant for understanding how to magnify expectations about legal performance-enhancing products and undermine expectations about illegal products in this domain (see Horcajo et al., 2020, for an application of SVT to changing attitudes toward doping).

Next, we describe recent SVT research showing (a) how validation outcomes can vary depending on the nature of initial thoughts (univalent or ambivalent), (b) the relevance of those thoughts for the validating variable (content dependent or independent), and (c) the implications for stereotype validation and stereotype threat.

Validation of Ambivalence: Consequences for Action and Inaction

In many examples reviewed so far, the thoughts that were validated or invalidated had a dominant direction (e.g., positive or negative, cooperative or competitive).

As illustrated throughout these examples, validation of univalent thoughts leads to behavioral polarization. But what if thoughts are mixed in direction (e.g., some cooperative, some competitive)? That is, what if people are ambivalent in their thoughts (positive and negative reactions toward becoming a scientist; Kaplan, 1972), and this ambivalence is validated? Consistent with SVT, validating ambivalence should magnify the typical effects of being ambivalent. In accord with this, research has shown that validation inductions can increase the feelings of conflict that ambivalent people have (DeMarree et al., 2015), can prompt more careful deliberation about information relevant to the object of ambivalence (Clarkson et al., 2008), and result in reduced attitude stability over time (Luttrell et al., 2016; 2020).

To provide a specific SVT example, Durso and colleagues (2016) had participants read information about an employee whose behavior was either consistent (entirely good or entirely bad) or mixed (both good and bad). Subsequently, participants were induced to feel powerful or powerless by having them recall incidents in their lives in which they had power over another person or in which someone else had power over them. Then, participants were required to decide to promote or to fire the employee. The time it took to make the decision was recorded. For the entirely positive or negative employees, feeling powerful was associated with faster decision making, replicating previous research in this domain (e.g., Galinsky et al., 2003). However, in contrast to prior work, for the mixed (ambivalent) employees, feeling powerful led for the first time to *slower* decision making. In sum, when individuals' thoughts were ambivalent, power validated these conflicting reactions, which ironically caused greater power to lead to slower action.

Validation by Expectancy Confirmation

Imagine reading a message about a new performance enhancing product (e.g., caffeine-based, energy drink) from some unidentified individual that you are thinking is probably a salesperson for the company. If you then learn that the source is indeed trying to sell that energy drink, your thoughts about the source would be validated whereas if you learned that the source was a doctor, your thoughts about the person's identity would be invalidated. In general, people are likely to have more confidence when the content of their thoughts matches or fits the nature of the validating variable rather than when the content does not fit or mismatches the expectancy. Note that in this case, learning that the source is a salesperson is *validating* your thoughts about the source, but if you had been thinking about the merits of the drug (rather than about the source) and then learned that the source was a salesperson, this would *invalidate* those

thoughts (Tormala et al., 2006) because salespeople are not the most accurate providers of information about their products. Thus, it matters whether the content of your thoughts is about the validating variable or not. This example suggests that sources with low (vs. high) power, expertise or status can affect judgments by validating (rather than invalidating) thoughts under some circumstances such as when the source is the object of the thoughts, and when thoughts are about the validating variable itself.

In a series of experiments examining this idea, participants received information about an elementary school student who performed either reasonably well or poorly on an intelligence test (Clark et al., 2009). The good performance information of the child would lead the recipients to have positive thoughts about the target's intelligence whereas the poor performance information would lead them to have negative thoughts about the target's intelligence (see Wegener et al., 2006). Following the information, participants listed their thoughts about the target and then learned that the target was either from a low Socio-Economic Status (SES) household or a high SES household. When the SES information matched the performance expectations (i.e., poor performance with low SES and high performance with high SES), participants had more confidence in their thoughts and used them more in forming their judgments about the intelligence of the target. In accord with SVT, the obtained findings were mediated by thought-confidence, and have been replicated in a several domains relevant to performance, as described next.

Validation by Expectancy Confirmation: Stereotype Validation

Following the work on validation by expectancy confirmation just described, Clark and colleagues (2015) applied SVT to the domain of "stereotype validation." This idea has to do with how identity threat can influence intellectual performance through validation processes in paradoxical ways. Whereas the previous research focused on the perception of others' performance, we now describe research focused on how validation by expectancy confirmation affects the performance of the self. The key notion behind stereotype validation is that members of (stigmatized) groups may feel more certain of their own (poor) performance when (negative) stereotypes are made accessible after finishing a task.

This idea is important because, while much work in social psychology has examined how negative stereotypes can undermine subsequent performance when the stereotype is activated before a task (i.e., stereotype threat; see Steele et al., 2002), the SVT research by Clark

and colleagues reveals that stereotype activation that occurs *after* performance has been already completed can also hold pernicious consequences for subsequent performance. In initial research on this paradigm, Clark et al. (2015) found evidence that post-performance activation of negative stereotypes can validate a person's evaluation of their initial performance. Across a series of studies, participants were more certain they had performed poorly on a difficult test when self-relevant, negative stereotypes were made salient afterward compared to when they were not (i.e., stereotype validation). In turn, these validating effects of stereotypes were found to hold downstream consequences wherein higher certainty predicted diminished beliefs in one's abilities, decreased career interests, and lowered expectations for future performance.

In another study of this series focused on childcare performance (Clark et al., 2015, Study 6), the poor performance of male but not female participants was validated after activating the gender stereotype ("men are bad at childcare"/ "women are good at childcare"). Increased confidence occurred because the stereotype information was viewed as valid, consistent, or convergent with respect to an individual's perceptions of their own performance. Conversely, when the activated stereotype did not have an influence, it was ostensibly viewed as less valid. Thus, participants might have downplayed, disregarded, or rejected this stereotype information as invalid in this context. For additional examples of stereotype validation and performance, see Clark et al., 2017, Clark & Thiem, 2015; 2018).

One of the stereotype validation follow-ups has identified the potential benefits of activating positive (rather than negative) stereotypes after performance (Clark et al., 2017). Such positive stereotype validation served in this research to bolster—rather than hinder—important beliefs related to one's abilities and task performance. Across three studies, the accessibility of positive group stereotypes was manipulated after participants completed several initial tasks. Specifically, Studies 1 and 2 of this series examined positive stereotypes about math aptitude among a sample of Asians (Study 1) and men (Study 2), respectively. Study 3 focused on positive stereotypes of women with regard to childcare abilities. Consistent with SVT predictions, the activation of positive, self-relevant stereotypes after the initial test was found to increase how certain participants were that they performed well on it. Furthermore, these increases in confidence predicted more positive ability beliefs, higher expectations for future performance, and better performance on a follow-up test that participants completed. Taken together these two lines of research on stereotype validation reveal that members of different groups can feel more certain of their own (bad or good) performance when (negative or positive) stereotypes are

made accessible after finishing a task thereby increasing and decreasing performance depending on what thoughts are validated.

New Validating Variables

As illustrated, SVT is a comprehensive approach that can explain the effects of a wide array of validating variables that have been examined separately under the rubrics of different theories in previous research. Validating variables covered throughout included recalling past episodes of confidence, felt power, ease of retrieval, and beyond. The most recent SVT examples reveal that the confidence that emerge from feeling prepared (Carroll et al., 2020) and from being ready to take action (Blankenship et al., 2013; Briñol, Petty, & Belding, 2017). Confidence can also be misattributed to (and therefore, validate) any thoughts in mind at the time, including thoughts that are completely irrelevant to the domain of preparation. Future research could benefit from studying other unexplored validating variables beyond feeling prepared that can be relevant for confidence performance, such as courage and determination (variables associated with confidence, Wong et al., 2020).

Future studies could also examine how variables associated with the person and the situation can not only be examined in isolation but also interact with each other to influence validation processes. According to SVT, when the situation matches or fits one's nature, thought use is increased (Briñol & Petty, 2005; Evans & Clark, 2012). Although some matches have already been investigated empirically (e.g., a violent personality playing a violent videogame; Santos et al., 2022), there are many unexplored person-situation combinations that can be examined as determinants of validation processes such as matching person and social roles (e.g., agent vs. recipient in expressing and receiving task information, Xu et al., 2021), matching personal identity and occupation (Schmader & Sedikides, 2018), and matching virtually any dispositions and situations more generally (see, Teeny et al., 2021; for a review on validation by matching).

Beyond matching person and situations, many other validating variables also can be explored in future studies. For example, in one early SVT study, Petty and colleagues (2002, Experiment 4) examined how having similar others agree with one's thoughts can increase the perceived validity of those thoughts and thereby make those thoughts more consequential. Similar results have been observed in more recent research when testing the validating effects of being liked by others. Specifically, Guyer et al. (2023), began by asking participants to generate either positive or negative thoughts about their abilities to do well taking exams. These initial thoughts

about exams served as the primary cognition to be validated. Following this thought valence induction, participants were exposed to several profiles in a new dating app and were given the opportunity to upload their own profile as well. Then, participants received false feedback about the number of people from that dating app who liked them. Specifically, participants were assigned to receive either a high or low number of matches from other people. Following these two inductions, intellectual performance was assessed using a battery of exams including a knowledge test and a visual task consisting of rotating a series of geometrical figures. As predicted, the results showed that the validation induction moderated the impact of valenced thoughts on task performance. When initial thoughts about exams were positive, being liked by many others improved performance. However, when initial thoughts were negative, the same induction (receiving matchings by many others) increased reliance in negative thoughts and therefore reduced (rather than increased) performance. These findings reveal one more time that confidence (in this case the confidence emerging from receiving matches) was capable of producing opposite findings on performance depending on whether positive or negative thoughts are validated.

An innovative feature of this study is that receiving a large number of matches in the dating app not only increased confidence but also led to feelings of objectification. Being liked by many (vs. few) others made participants feel like they were treated as physical objects but still increased feelings of confidence in the context of this study. As noted, when thoughts about exams were negative, validation reduced tests performance, conceptually replicating the traditional effect according to which feeling like one is being treated as an object impairs cognition (Fredrickson et al., 1998), but in this case due to greater thought usage and the operation of a metacognitive process of thought validation. In contrast, when initial thoughts toward exams were positive, feeling liked by others increased (rather than decreased) thought usage and intellectual performance. That is a counter-intuitive, novel outcome, reversing the direction of the classic association between physical objectification and intellectual performance because being liked increased the perceived validity of positive thoughts making people more likely to act on them, thereby increasing thought usage and cognitive performance (see Briñol, Petty, & Belding, 2017, for a review on validation and objectification).

New Domains of Performance

Beyond identifying new thoughts to validate and new validating variables, future research should also examine new performance domains. We covered

throughout different performance contexts ranging from intellectual to physical to social performance. We argue that more work needs to be done to continue moving from understanding individual to collective performance. The SVT research described earlier on validating cooperation and competition goals represented an initial step in that direction (DeMarree et al., 2012; 2014). Also, the work described on validation processes applied to improving person perception and recognition of emotions in others belongs to this category (Moreno et al., 2023). Future research can examine SVT in the context of group and organizational performance.

Another domain that can be examined from SVT has to do with cheating in one's performance. Recent research suggests that SVT can be relevant not only for guiding objective performance but also for understanding how people communicate their performance results to others. Specifically, Lamprinakos et al. (2023) examined the extent to which people lie about their performance as a result of validating positive thoughts about cheating. As briefly illustrated next, this line of research revealed that the confidence that emerges from power can not only increase but also decrease cheating depending on the direction of the thoughts validated.

In one of the experiments of this series, participants were first asked to generate either positive or negative thoughts about cheating. These initial thoughts about cheating served as the primary cognition to validate in the study. Following this manipulation of thought direction, participants were induced to feel either high or low power by recalling past episodes in which they had power over others or other people had power over them, respectively. As noted earlier, power can validate thoughts because it is associated with confidence (Briñol, Petty, Durso, et al., 2017). After these two inductions, performance was assessed. Specifically, the key-dependent measures of this study were responses to two tasks in which participants were paid money according to their performance. The tasks consisted of solving a series of matrices and anagrams. Importantly for the purposes of the study, participants were given the chance to exaggerate their performance on these tasks to increase their monetary gains. In line with prior research on cheating (Lu et al., 2017; Mazar et al., 2008; Vohs & Schooler, 2008), the discrepancy between objective performance and reported performance served as the measure of cheating.

As expected, power was found to validate whatever participants were initially induced to think about cheating, polarizing the impact of those initial thoughts. That is, the direction of the initial cheating thoughts had a greater impact under high (vs. low) induced power. Specifically, power increased cheating only when initial thoughts about cheating were favorable. That result

replicated the traditional effect observed in the prior literature in which power increases cheating (Lammers et al., 2010; Leonidou et al., 2018; Yap et al., 2013). However, in this case, the result was due to the operation of a metacognitive process of thought validation. In contrast, when initial thoughts toward cheating were unfavorable, power reduced cheating. That was a novel result, reversing the direction of the classic association between power and cheating because power increased the perceived validity of anti-cheating thoughts making people more likely to act on them, thereby reducing cheating. Along with the research described earlier by DeMarree et al. (2012; 2014), this line of research revealed that the confidence that emerges from power can have opposite effects depending on the direction of the thoughts validated.

Deliberate Use of Self-Validation Strategies

Some areas for future research on SVT have already been mentioned earlier in this final section, but here we mention a few more. Indeed, there are several research questions that remain unanswered. For example, the studies described throughout do not clarify whether validation processes operate by causing people to desire to act more in line with their thoughts (e.g., thought-confidence changing the extremity of their intentions) or by making people feel more confident about performing (e.g., confidence moderating intentions-behavior correspondence).

Another relevant question for practical purposes refers to strategic uses of SVT to self-change. That is, can people use self-validation strategies deliberately to impact their own judgments and performance? For example, can people intentionally use physical actions such as head nodding, and mental activities such as generating confident memories, to validate their own thoughts? The response to this very practical question awaits further research. On the one hand, people can deliberately adjust their judgments to reduce (Wegener & Petty, 1997) or enhance (e.g., McCaslin et al., 2010) the effect of any perceived biasing variable in the desired direction (see also Risen, 2017). Furthermore, research indicates that people can be trained to re-appraise external situations, bodily sensations, and even to reappraise their theories of change strategically to meet their goals (see Ford & Troy, 2019). Finally, metacognitive therapy suggests that people can be trained to change the interpretation not only of their primary but also their secondary cognition (e.g., Wells, 2012). Taken together, these examples suggest that people may be able to deliberately use validation strategies to guide their performance.

On the other hand, a different set of research paradigms suggest that the effects of many psychological

interventions (e.g., retrieving memories of happiness or confidence) can be reduced or even eliminated when people become aware of their incidental nature (e.g., Schwarz & Clore, 1983). Just as it is sometimes difficult to initiate and maintain enjoyable thoughts intentionally (Wilson et al., 2019), other thoughts (e.g., placebo expectations) are less impactful when deliberately choosing to use them to improve evaluations and performance (Geers et al., 2019). Therefore, it is not clear when people can use their memories and actions to intentionally influence their feelings and behaviors through validation processes and future research should therefore address this important issue.

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