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# Fundamental processes of positive change

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**Abstract**

Many strategies designed to facilitate the generation of positive thoughts (focusing on strengths, imagining the best possible self, reflecting on achievements) are effective in making people feel better and increasing their wellbeing. But, the question is why? We review the underlying processes by which these and other positive actions (from smiling, expressing gratitude, being kind, etc.) can operate. In addition to drawing a distinction between relatively low and high thinking processes relevant to primary cognition, the present article introduces for the first time meta-cognitive processes of change as relevant to this domain. By examining thought validation and invalidation mechanisms, we make predictions about the circumstances in which positive and negative thoughts are more or less likely to produce the desired effects. Also, by identifying moderators of validation process and outcomes, we contribute to improving the benefits of many positive variables even further, specifying why, when, and for whom various positive treatments are more likely to work or to backfire.

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Popular wisdom suggests that people can improve their lives just by thinking about good memories, by reminding themselves of their strengths, by expecting the best from the future, by acting more extraverted, and by smiling more often (Ehrenreich, 2009; Wiseman, 2013). Indeed, wide arrays of positive strategies have been shown to make people feel good and increase wellbeing. For example, recalling the things you like about yourself (Ghielen et al., 2018), expressing positive affect (e.g., by smiling; Lyubomirsky & Layous, 2013); and behaving as if you already are the ideal person you want to be (Heekerens & Eid, 2021) have all proven effective. Writing affirmations like ”I am strong,‘ ’I can handle whatever comes,‘ or ’Ihave a smile that lights up the room” also boost well-being (e.g., Ferrer & Cohen, 2018). Positive outcomes also have been identified for a variety of other interventions, such as expressing gratitude, being compassionate and forgiving, practicing

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kindness, and acceptance, appreciating beauty, savouring past and present pleasures, looking to the future with curiosity, hope and optimism, allowing for amusement, etc (e.g., Gudka et al., 2021).

Many of these positive approaches have been shown to be beneficial regardless of whether they are designed to target the self or others. Thus, making others feel good (Titova & Sheldon, 2022) and being helpful to others (Archer et al., 2024) can lead to positive consequences not only for those receiving help but also for the agent of those actions, with potential benefits also for groups and organisations (van Zyl et al., 2024).

Although the ability of a variety of positive thoughts and actions to bring benefits seems to be a well-established phenomenon, research on positive psychology has not always focused on the psychological mechanisms by which this influence occurs (e.g., W. Lomas et al., 2021). As outlined next, a close look at the underlying *processes* by which these techniques operate reveals that those potential mechanisms can vary in their nature with consequences for predicting the direction and duration of change.

## Dual processes of positive change based on primary cognition

What are the processes by which these positive initiatives operate to influence well being? We explain that in accord with dual process models of persuasion such as the elaboration likelihood model (Petty & Briñol, 2012; Petty & Cacioppo, 1986), these impacts can occur by relatively low or high thought processes. Thus, when thinking is relatively low, acting as if one is happy (e.g., smiling more; Noah et al., 2018; Strack et al., 1988), being more responsive to others by nodding one's head (Wells & Petty, 1980), or behaving more extraverted (Kuijpers et al., 2022) have been assumed to produce benefits by facilitating simple inferences (e.g., "*I am smiling therefore I must be happy,*" Bem, 1972). Beyond self-perception, it can also be that when people think of happy memories, these memories facilitate the generation of positive mood which can operate as a simple *cue* or as a heuristic through mood misattribution or by classical conditioning (e.g., a person might quickly reason that "*I like this because it makes me feel good*," without much thought; Petty et al., 1993).

In contrast, when people are motivated and capable of thinking, then the processes by which these same positive actions operate can vary. Thus, when people are incentivised to think or they enjoy effortful thinking, many of the same positive actions can influence evaluation and wellbeing through more effortful processes of primary cognition. For example, thinking of happy memories or focusing on personal strengths could *bias* the valence of thoughts that come to mind (i.e., prompt a greater number of other positive thoughts) when considering the past, present, or future. Acting like an extravert also

has been proposed to influence self-evaluation and wellbeing by biasing the direction of thoughts (e.g., by making people pay more attention to rewards; Smillie, 2013). Sharing good news with others has been proposed to work by positively biasing processing (e.g., Peters et al., 2018). Interventions based on focusing people on their best possible selves can also work by biasing affect and thoughts (e.g., making expectations more positive, Heekerens & Eid, 2021). Similarly, Neumann and Strack (2000) showed that overt behaviour like smiling can trigger compatible thoughts that facilitate encoding and processing of evaluatively congruent information. Indeed, research generally supports the notion that positive thoughts are more likely to come to mind when engaging in positive actions (e.g., head nodding, Wells & Petty, 1980).

In sum, it might be that positive behaviours such as smiling and nodding serve as simple cues for judgements and action or it might make people think about everything in a more positive light. Because these (and other) mental operations based on primary cognition (e.g., operating as a cue; changes in the valence of thinking) are very different and can lead to different consequences, it is important to understand the basic mechanisms by which the positive thoughts and actions influence attitudes. That is, although we might like things more when we smile (vs. frown) or when we are kind, it is essential to understand the underlying processes responsible for these changes in evaluation because of the different consequences in the short and long terms. In particular, more thoughtful mechanisms of change are more likely to be enduring and impactful on behaviour than the same changes produced when thinking is low (Petty & Briñol, 2008; Petty & Cacioppo, 1986).

As a final illustration, consider work on gratitude. Although the ability of expressing gratitude to bring benefits is robust (Emmons & McCullough, 2003), most research in this domain has not focused on specifying the psychological mechanisms by which this influence occurs. And, when those processes are taken into consideration, most research has revealed that gratitude can lead to positive outcomes by affecting exclusively processes of primary cognition (Alkozei et al., 2018). For example, expressing gratitude can lead to a self-perception inference that does not require much thinking (e.g., *I did something good so I am a good person*). These simple inferences are more likely to operate when people do not engage in extensive thinking. When more thinking takes place, however, then expressing gratitude can shape evaluation by affecting the valence (i.e., positivity or negativity) of the thoughts that come to mind (Watkins et al., 2004). That is, gratitude increases wellbeing by biasing the generation of positive thoughts whether those thoughts stem from mood biasing thoughts or self-directed thinking processes, and regardless of

whether that positive bias occurs in exposure, attention, processing, and/or recalling positive over negative information.

## Novelties of the present meta-cognitive approach

Instead of focusing on the important distinction between relatively low and high thinking processes relevant to primary cognition, the present article supplements this distinction by drawing attention to a new mechanism by which being kind, expressing gratitude and many other positive variables can lead to positive (as well as negative) outcomes. That is, we focus on how a plethora of positive variables change how people see their own thoughts and what they do with them. As described next, we argue that for positive thoughts to become consequential they have to be perceived as valid. Thoughts perceived to be invalid will be discarded. Sometimes, thoughts will be perceived as valid by default, but increasing perceived validity above that default can enhance the impact of those thoughts whereas decreasing perceived validity below that default can decrease their impact. Furthermore, we propose that a wide variety of positive strategies can enhance perceptions of validity affecting evaluations through meta-cognitive processes. Based on this meta-cognitive approach, we argue that merely generating positive thoughts (such as focusing on strengths, self-efficacy beliefs, being kind, etc.) is not sufficient for these thoughts to have an impact on judgements and actions. Rather, one must also perceive some validity to those thoughts (i.e., have confidence in them or feel good about them). Also, the mere presence of negative thoughts does necessarily have to make people feel bad if the perceived validity of those thoughts islow.

Briefly, the key idea of this meta-cognitive *self-validation theory* (SVT) is that psychological impact depends not only on the amount and direction of relevant thoughts people generate (Petty & Cacioppo, 1986), but also on the perceived validity of those thoughts (Briñol & Petty, 2022). We introduce SVT as a way to understand when validation processes can magnify the impact of desired and undesired thoughts but also how it can undermine the impact of thoughts. As will be described, perceived validity can be measured easily by asking people how confident they are in their thoughts and how pleasant it is to have their thoughts. Validation processes can also be experimentally manipulated. The examples described in the current article review some published research as well as recent research revealing that perceptions of validity can emerge from previously unexplored origins like expressing gratitude, feeling secure and connected, as well as feelings of hope, curiosity, wonder, and beyond.

Instead of focusing only on how to magnify positive consequences, taking this metacognitive process approach into consideration allows us to specify when and why positive interventions can sometimes backfire. Along with

other researchers (e.g., Grant & Schwartz, 2011; Gruber et al., 2011; Humphrey et al., 2022; Oettingen et al., 2016), we argue that this is important because although some popular positive interventions thought to be universally beneficial can often yield positive consequences, under certain circumstances, the outcomes can also be negative when examined from the lens of SVT.

By taking this metacognitive process approach, we also aim to contribute to advancing positive psychology by addressing a new generation of questions in this domain (W. Lomas et al., 2021; van Zyl et al., 2023). Just as moving from questions of "whether" to "when" and "why" questions was critical in the field of persuasion (Petty & Briñol, 2008), addressing process questions also can be fruitful in this domain.

As described next, the current article advances beyond what was an introduction to SVT organised around formal postulates (Briñol & Petty, 2022) and its application to specific domains like prejudice reduction (Briñol & Petty, 2020), to a totally different but very relevant field of positive psychology. In doing so, SVT offers a conceptual framework from which to examine commonalities across many seemingly diverse variables and outcomes relevant to positive psychology.

Finally, along with explaining the moderating role of thought direction on validation outcomes, we articulate a number of moderators relevant to validation processes including the amount of thinking, the meaning of the validation variable, and the timing of validation inductions. Furthermore, this article also offers other unique features, such as distinguishing between different types of invalidation outcomes, covering exceptions and limitations, outlining future avenues, and more.

## A theory of making thoughts count

Various theories in addition to 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). However, unlike most prior research which has focused primarily on the accuracy of metacognitions (e.g., whether individuals are sure that their responses to a knowledge test are correct or not; Koriat & Goldsmith, 1996), SVT is less concerned with the actual accuracy of thoughts, and focuses also on incidental sources of *perceived* validity and how this subjective perception is associated with thought use. SVT emphasises a sense that one's thoughts are perceived to be valid or appropriate *to use* in guiding judgements or action whether or not the perceived validity of the thoughts is linked to any actual accuracy. Thus, SVT highlights the fact that perceived thought validity often comes from incidental inductions. For example, people can misattribute the confidence that emerges from some induction (e.g., recalling past episodes of

feeling secure) to ongoing or recently generated thoughts that are unrelated to the induction of confidence (Petty et al., 2002). As will be described shortly, an incidental induction of confidence based on recalling past episodes of confidence would lead to positive outcomes when validating positive thoughts but to negative consequences when validating negative thoughts. Indeed, many inductions of confidence and pleasantness can either increase or decrease positive evaluations and wellbeing depending on the valence of the thoughts validated.

In addition to postulating that thoughts become more consequential for judgement and action as the perceived validity of the thoughts is increased, SVT makes a number of additional predictions that we briefly summarise and then develop in this article. For example, SVT describes two kinds of validation. People can come to rely on any thought more when they perceive that thought is likely to be true (cognitive validation) or because they feel good about the thought (affective validation). This distinction is important because it explains how the same emotion (e.g., hope, awe) can work to affect thought use by either mechanism (cognitive or affective validation) depending on which appraisal (certainty or pleasantness) is salient for the emotion.

Another important postulate of SVT is that perceptions of thought validity can change with the meaning of the validating variable. For example, feelings of ease or fluency are often associated with high validity meanings like pleasantness, truth, certainty, beauty, and flow (Schwarz et al., 2020). However, if people's naïve theories regarding the meaning of ease were changed to a low validity meaning (e.g., ease as signaling low complexity or low thinking) then different judgments should arise because ease would reduce (rather than increase) thought impact (Briñol et al., 2006). Similarly, although gratitude is typically conceptualised as a virtue (associated with pleasantness and certainty), gratitude can also be associated with low validity meanings (such as indebtedness, guilt, vulnerability, and others; e.g., Atad & Russo-Netzer, 2022). Thus, gratitude can be expected to either increase or decrease thought usage depending on which of those meanings dominates.

Finally, SVT makes predictions about moderators. In particular, the formation and reliance on perceptions of validity is more likely when thinking is relatively high. Validation, a metacognitive process, requires more thinking than the operation of primary cognition processes alone because not only must people have some thoughts to validate, they also need some motivation and ability to care about the validity of their thoughts. The current article is the first SVT review introducing elaboration as a moderating variable capable of distinguishing whether previously generated confidence is then subsequently used. Unlike the research described in prior SVT reviews (Briñol & Petty, 2022) which focused on the role of elaboration when induced before generating meta-cognitive judgements, the research reviewed in the current article includes a role for elaboration when induced after (rather than before)

generating meta-cognitions. Beyond elaboration, we also cover other moderating variables relevant to validation processes and outcomes (e.g., meaning, timing of inductions).

## Overview and scope

The studies included in this article were selected based on a number of factors. First, in these studies an initial thought was either measured or primed to then be validated. Consistent with SVT, perceived validity can be applied to whatever mental elements are salient at the time, regardless of their specific content, valence, and nature. Prior SVT articles focused on how validation processes operated for thoughts in response to persuasive proposals, thoughts about groups, prejudiced thoughts, egalitarian goals, national identity, and such (e.g., Briñol & Petty, 2020, 2022). The present selection of studies focuses more uniquely on the validation of primary cognitions relevant to positive psychology, such as developing self-efficacy beliefs, focusing on personal strengths, being compassionate towards the self- and others, being humble and oriented towards self-improvement, engaging in holistic thinking, generating fantasies, etc. Concentrating on these positive thoughts as the object of subsequent validation is an innovation of the present work illustrating how SVT is an integrative framework from which to examine the impact of many different positive thoughts.

Second, a measure or a manipulation of the validity of those initial thoughts was also included in all the studies covered in this article. As mentioned, perceived validity can be measured and it can also be made to vary. SVT has previously shown that many variables can validate thoughts including source credibility, source numerical status, ease of retrieval, andbeyond (Briñol & Petty, 2020, 2022). Along with those previously examined validating variables, the studies described here introduce new research revealing that perceptions of validity can emerge from previously unexplored origins like expressing gratitude, feeling secure and connected, as well as feelings of happiness, hope, curiosity, admiration, and wonder. By using the same analysis for these different variables (see Figure 1 for a conceptual illustration), SVT provides an overarching framework from which the effects of many diverse positive variables can be understood.

Third, the impact of both primary and secondary cognition variables will be examined with regard to consequences relevant to positive psychology. In the prior reviews, self-validation processes were shown to be consequential for attitudes and behavioural intentions towards persuasive proposals (e.g., capital punishment, genetically modified foods, raising tuition), and also for outcomes ranging from willingness to pay, to discrimination, sacrifice, and aggression. In contrast, the dependent measures covered here focus more

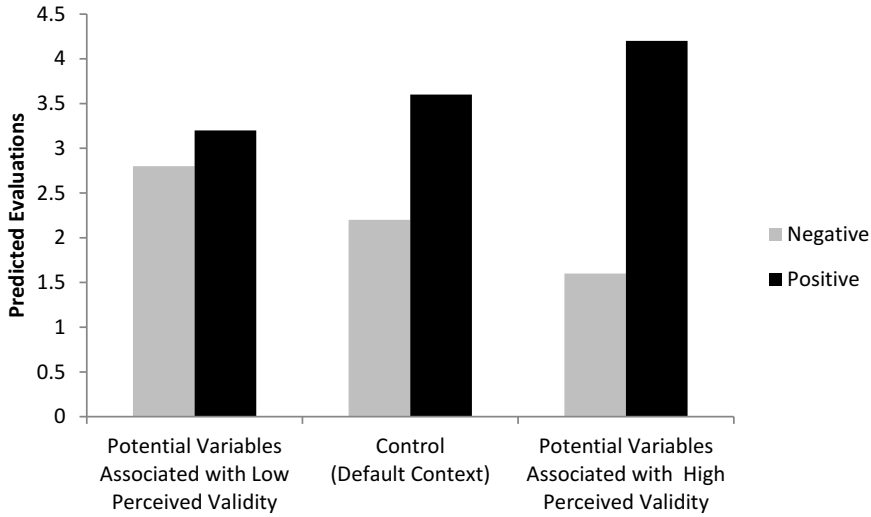


**Figure 1.** Conceptual figure illustrating the predicted SVT two-way interaction between any variable associated with validity and the valence of any mental content. The figure depicts cases in which possible inductions produce both higher and lower perceived validity than the default context. Variables that induce pleasantness and/or confidence (e.g., happiness, smiling, head nodding, kindness, gratitude, etc.) induce relatively high perceived validity and can enhance the subsequent impact of any salient mental constructs (both positive and negative) over the default context. Variables that induce unpleasantness and/or doubt (e.g., sadness, frowning, head shaking, etc.) induce relatively low perceived validity and can decrease the subsequent impact of any salient mental constructs over the default context. Although not depicted, invalidation outcomes can also lead to null effects, to reversed effects, or even to compensatory effects (see "invalidation" section).

exclusively on the self (e.g., self-esteem, satisfaction, wellbeing, and self-improvement) and positive judgements and actions relevant to others (e.g., empathy, cooperation, helping, mentoring). In short, SVT is a general framework to examine the use of thoughts across diverse mental contents, validating variables, outcomes, and domains relevant to positive psychology.

As should be clear from these criteria, the goal of this article is to describe SVT as a fundamental framework that can extend the utility of meta-cognitive processes to positive psychology, increasing the benefits of positive thoughts and actions and undermining the potential boomerang effects that might sometimes occur. The studies reviewed will reveal that SVT is integrative, replicable, and applicable to advancing understanding of how to make positive interventions more beneficial and also to prevent them from backfiring. This article also covers a number of new conceptual points, including, as noted, the introduction of a new moderator capable of distinguishing between generating meta-cognitive judgments and subsequently using them.

## Using thoughts because they are perceived as valid

As just explained, SVT postulates that the impact of diverse mental content on judgements can be magnified when initial thoughts are validated and attenuated when the primary cognitions are invalidated. Also, we noted that many variable scan affect the perceived validity of one's initial thoughts, including variables that are both relevant as well as completely incidental to that mental content. This section provides some examples of how incidental variables arising from the situation (ease, power) and the person(self-esteem) impact self-evaluation through validation processes.

In an early SVT research, Briñol and Petty (2003) asked participants to think about and write down their best or worse qualities. These initial self-relevant thoughts served as the primary cognitions to be validated. Asking people to generate positive (vs. negative) thoughts about oneself is a technique that increases self-esteem (McGuire & McGuire, 1996) and performance (Moreno et al., 2021). Indeed, encouraging people to identify their strengths has proven to be effective in producing positive outcomes (Ghielen et al., 2018; Rashid, 2015) and reducing negative ones (Heekerens & Eid, 2021).

The key novelty of this experiment was that participants were asked to write their strengths or weaknesses using their dominant or non-dominant hands. The experiment was presented as part of a presumed graphology study to justify the hand writing induction. Following these two manipulations, participants rated the confidence in the thoughts they listed and reported their self-esteem. Since writing with the non-dominant hand is difficult, and because whatever is written with the non-dominant hand may appear "shaky," it was predicted and found that using the non-dominant hand decreased the confidence with which people held the thoughts they had listed. As a consequence, the effect of the direction of thoughts (i.e., strengths vs. weaknesses) on self-esteem was greater when participants wrote their thoughts with their dominant hand than when they wrote their thoughts with their non-dominant hand. When writing about strengths, using the dominant hand resulted in higher self-esteem relative to writing with the non-dominant hand. Therefore, SVT processes can serve to magnify the impact of positive thinking. However, when writing about weaknesses, the same action resulted in reduced self-esteem. Thus, the same action can be beneficial or detrimental depending on the direction of the thoughts validated. Importantly, these changes in self-esteem were mediated by differences in reported thought confidence.

In another study, Briñol and colleagues (2009) asked participants to type on a computer keyboard their best or worst personal qualities while sitting with their backs erect and chests inflated (i.e., a powerful posture associated with high confidence) or while sitting slouched forward with

their backs curved (i.e., a low-power posture associated with low confidence). Then, participants rated their thought confidence (mediator) and self-esteem (dependent variable). It was predicted and found that the initial thoughts affected self-evaluation more when typed in the confident, powerful posture. When the thoughts about the self were manipulated to be positive, sitting in the powerful posture increased self-esteem, but when thoughts about the self were negative, the same posture resulted in reduced self-esteem. As was the case for handwriting, the confidence emerging in this case from body posture was misattributed to the thoughts generated and it mediated changes in self-esteem (see also, Cesario et al., 2017; Elkjær et al., 2022; Körner et al., 2022; and see also, the section on replications).

The results of these two studies suggest that positive inductions such as doing something with ease (e.g., writing with dominant hand) rather than difficulty or getting people to feel relatively powerful (e.g., by sitting in powerful postures) rather than powerless can impact whether thoughts about oneself translate into self-evaluations. Therefore, validating (rather than invalidating) personal strengths can affect self-esteem beyond merely thinking about one's strengths. However, these validating inductions of ease and power should not invariably lead people to feel good or react in more positive ways. In fact, adding confidence due to the feeling of ease or power can decrease self-esteem when the confidence from these variables serves to validate negative thoughts about oneself (Briñol et al., 2017). Another paradoxical consequence of SVT is that two negative inductions such as focusing on weaknesses while being in an invaliding situation can lead to relatively positive outcomes (increasing self-esteem) since in this circumstance people would not trust their negative thoughts as much as if focusing on weaknesses when in a validating situation (see also, Bastian et al., 2012; Luong et al., 2016).

As was the case in these two examples, many other inductions designed to increase feelings of ease beyond hand writing e.g., varying the number of reasons to act more extraverted, Tormala et al., 2007; and the number of thoughts linked to achievement goals; DeMarree et al., 2012) have been shown to produce positive effects sometimes (when validating positive thoughts) but also backfire other times (when validating negative thoughts). Similarly, manipulations other than body postures designed to enhance feelings of power (e.g., recalling past instances of feeling powerful, completing words associated withpower, Briñol et al., 2007) have been found to produce positive and negative outcomes not only for the self but also for others (affecting cooperation, donations, and beyond). Although we do not cover them all here, perceptions of the validity of self-relevant thoughts can be affected by many other situational manipulations, such as feeling prepared or not (Carroll et al., 2020).

A final example of a situational variable that can affect confidence comes from recent work on gratitude. Expressing gratitude has been associated with feeling good and secure (Emmons & McCullough, 2003; Watkins et al., 2004). For example, previous research has shown that being grateful can increase levels of confidence and self-esteem (Gu et al., 2022). Because of the association of gratitude with pleasantness and confidence, Carroll et al. (2024) predicted and found that expressing gratitude can increase reliance on any thoughts, including thoughts irrelevant to the domain of gratitude. In one study, participants were first assigned to write positive or negative thoughts about saving energy practices. These initial thoughts were the primary cognitions to be validated. Next, as part of an apparently different project, participants wrote a letter to a friend expressing gratitude or were assigned to engage in a control task (writing about ordinary events of their day; Algoe & Zhaoyang, 2016). Finally, participants reported their attitudes about the energy saving topic for which they generated their initial thoughts. Consistent with SVT, results showed that the effect of the direction of initial thoughts on attitudes toward saving energy was significantly greater for participants assigned to complete the gratitude expression compared to controls. Gratitude led to a more positive evaluation than the control condition when it validated positive thoughts but it led to a more negative evaluation when it validated negative thoughts. As was the case for other variables like ease and power, expressing gratitude created a sense of confidence that participants misattributed to their accessible thoughts, even though those initial thoughts were unrelated to gratitude. Furthermore, thought confidence mediated the effects of the gratitude manipulation on attitudes.

This research suggests that gratitude can affect the impact of any thoughts currently in mind, regardless of the object and the valence of those thoughts. For example, if people are considering the benefits of a consumer product, or are thinking about their strengths as job candidates, then expressing gratitude would make those positive thoughts more consequential in guiding judgment and action. However, if people generate negative thoughts about a product or about themselves, then the impact of those negative thoughts would be enhanced by subsequent expressions of gratitude.

Along with these situational factors (ease, power, gratitude), there are also dispositional variables that influence perceived thought validity. For example, Santos et al. (2019) asked participants to write down either positive or negative thoughts about their unhealthy habits. These thoughts about health served as primary cognitions. Then, participants indicated their self-esteem to make it salient at that time (the validating variable) and then reported their attitudes toward changing their unhealthy habits (the dependent measure). In accord with SVT, the results revealed that the valence of the initial thoughts about unhealthy habits had a greater impact on health attitudes as

self-esteem increased. In other words, those higher in self-esteem perceived greater validity in their thoughts which increased positive attitudes (in this case, towards eating healthy food) when thoughts were positive but decreased attitudes when thoughts were negative. Thus, higher self-esteem can lead people to place greater value on the thoughts that they generated and thus use them more. This occurred even though self-esteem was unrelated to the content of the initial thoughts generated in this study.

## Feeling good about thoughts

As introduced earlier, people use their thoughts when they think they are valid to use either because they are correct (cognitive validation) but also when they feel good about them. The latter idea is called *affective validation*and has to do with using a thought regardless of whether that thought is assumed to be true or false, factually grounded, or appealing in any rational way because one feels good about the thought. In an early illustration of how someone can use a thought simply because the thought is associated with feeling good, consider work comparing the effects of happiness vs. sadness following thinking. Briñol, Petty, and Barden (2007) carried out a series of experiments in which participants first were led to generate either positive or negative thoughts about different topics (e.g., mandatory vaccination). Then, participants' emotional state was manipulated by asking them to write about personal experiences in which they felt happy or sad. This memory exercise can influence how people feel in the current moment (Schwarz & Clore, 1983). Indeed, research in positive psychology also indicates that recalling happy memories often make people feel good (Titova & Sheldon, 2022). The idea behind affective validation is that those induced feelings can be misattributed to any thought available in mind at the time, including in this case the thoughts recently generated towards vaccination. After generating positive or negative thoughts about vaccination and recalling happy or sad memories, all participants reported their attitudes towards the topic. In line with SVT, it was predicted and found that happiness (vs. sadness) increased reliance on those initial thoughts, leading to more favourable attitudes when the initial thoughts were positive and to less favourable attitudes when initial thoughts were negative. Therefore, generating a happy memory can magnify the impact of positive thinking (although in this case that effect occurred by a different process than previously postulated). Importantly, the very same exercise of recalling happy memories can also increase the impact of negative thoughts. As noted, a paradoxical SVT outcome is that feeling good about bad thoughts can make those negative thoughts more consequential.

Subsequent research on affective validation has replicated these effects by inducing happiness through the facial expressions associated with smiling

(Paredes et al., 2013), and by exposing people to jokes (Santos et al., 2018). Beyond happiness, SVT research has found similar effects using other positive emotions capable of validating thoughts like pride (Lamprinakos et al., 2022). Based on these findings, future studies examining additional positive affective states can benefit from examining affective validation hrough, for example, joy and contentment.

In sum, SVT research shows that positive emotions like happiness and pride can magnify the effects of positive thinking. Thus, feeling good after having a good idea increases the chance of acting on that idea, and feeling happy after have a positive thought will enhance the impact of that thought on evaluation and action. It is important to emphasise that the studies described in this section demonstrate that feeling good following thinking can not only increase the impact of positive thoughts, but it can also enhance the effects of *any* thought, including negative thoughts. Thus, from a SVT perspective, feeling good about a bad thought increases the chance that people act on that negative thought enhancing the potentially undesirable consequences. Described differently, when initial thoughts happen to be negative people might be better off experiencing negative (rather than positive emotions). A paradoxical outcome of SVT is that feeling bad about negative thoughts can make those negative thoughts less consequential because they are perceived as invalid to use. Thus, consideration of the direction of initial thoughts that are likely to be validated by inductions of positive emotions or invalidated by negative emotions is critical for specifying when those emotions are likely to work or to backfire.

## Relying on thoughts because they are perceived to be correct or because of they feel good

Taken together the two previous sections make clear that people can use their thoughts because they perceive that thought is likely to be correct (cognitive validation) or because they feel good about the thought (affective validation). Beyond identifying these two forms of validation, SVT proposes a *differential appraisals notion* according to which certain emotions should be capable of inducing either more or less thought use depending on which these two appraisals (certainty or pleasantness) is dominant.

An initial set of studies tested whether emotions that differed in their certainty and pleasantness appraisals could differentially validate or invalidate thoughts depending on which appraisal was made salient within each emotion. Four emotions were examined. In one study, after having participants list either positive or negative thoughts about different topics (including theself), Briñol, Petty, Stavraki et al. (2018) used inductions of awe and surprise (pleasant emotions associated with uncertainty) in comparison to anger and disgust (unpleasant emotions associated with certainty). This

research showed that when individuals experiencing awe and surprise were induced to focus on the pleasantness appraisal of those emotions (e.g., by responding to questions about their current feelings of pleasantness), the positive feelings from the emotions led to affective thought validation (I feel good about my thoughts so I will use them) relative to anger and disgust. When, however, awed and surprised individuals were focused instead on the certainty appraisal of those same emotions (e.g., by responding to questions about their feelings of certainty), they felt less certain about their thoughts and relied on them less (I feel uncertain my thoughts are correct so I won't use them) relative to anger and disgust (see also, Stavraki et al., 2021, for a replication).

Similar results have been obtained for hope (pleasant but uncertain) and for hopelessness (unpleasant but certain). Consistent with SVT predictions illustrated in Figure 2, Requero, Briñol and Petty (2021a) showed that hope increased thought use when the pleasantness appraisal was salient because hope is associated positive feelings (affective validation). However, when the certainty appraisal was made salient, hope decreased thought because hope is associated with uncertainty (cognitive invalidation).

Like awe, surprise, and hope, curiosity is another emotion that is associated with both pleasantness and uncertainty (Kang et al., 2009). Consistent with the differential appraisal predictions depicted in Figure 2 (top panel), Stavraki et al. (2024) found that curiosity can validate previously generated thoughts when the pleasantness appraisal is made salient but it can invalidate those thoughts when the uncertainty appraisal dominates within that emotion. Also consistent with the predictions illustrated in Figure 2 (top panel), Lamprinakos, Santos, et al. (2024) revealed that inductions of admiration (pleasant but uncertain emotion) can increase the use of previously generated thoughts when the pleasantness appraisaldominates but decreases thought reliance when the uncertainty appraisal dominates within that emotion. Differential appraisals can make predictions for other pleasant but uncertain emotions (e.g., elevation). Similar predictions would apply to wishful thinking (fantasies) vs. realistic pessimism (secrets), because appraisals are also plausibly dissociated in these states.

We close this section by highlighting that the SVT studies have made an important contribution to the literature one motional appraisals as no prior research had shown that the same emotion can have different (even opposite) effects on judgement depending on the emotional appraisal invoked. In addition to comparing different emotions under the same appraisal as previous research guided by the Appraisal Tendency Framework (ATF, Lerner & Keltner, 2000) has done, SVT research has uniquely compared the same emotion under different appraisals thereby testing the prediction that the validating effects invoked by appraisals can be relevant even when varied within the same emotion. Therefore, SVT extends the contribution of

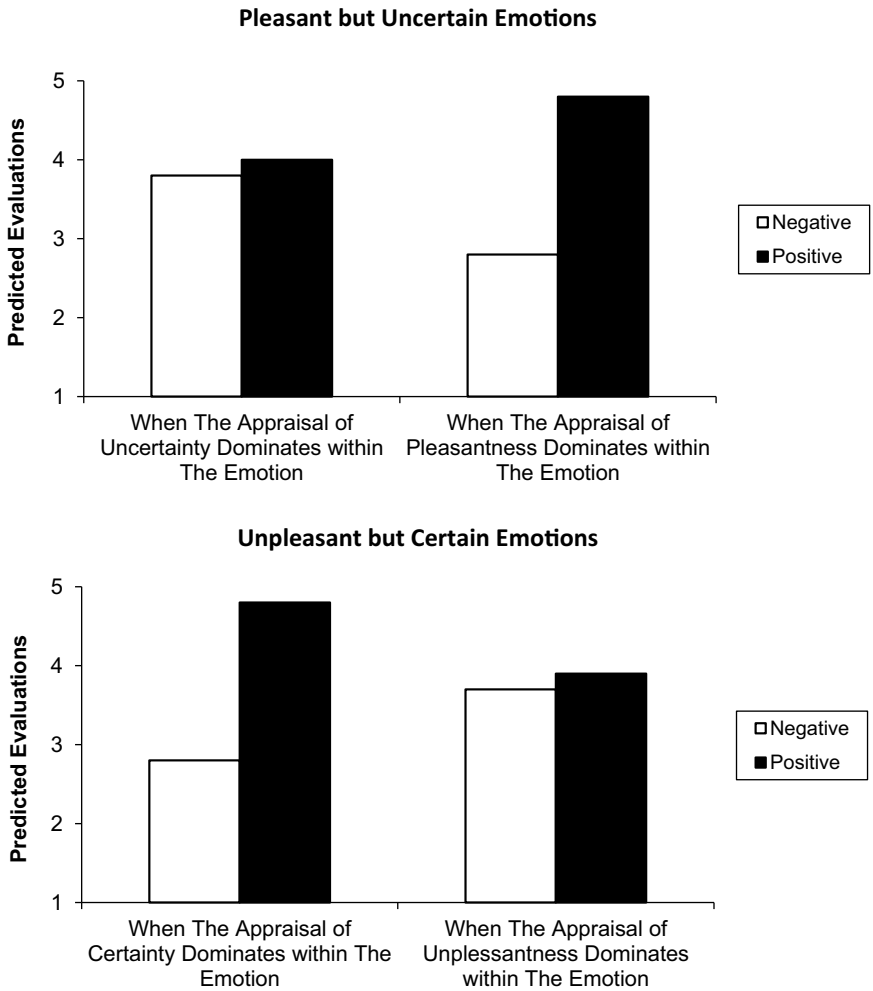


**Figure 2.** Conceptual figures illustrating the predicted pattern of results for the SVT differential appraisal hypothesis. Specifically, pleasant but uncertain emotions (e.g., hope, awe, admiration, curiosity, fantasies, etc.) can increase the use of salient mental content (whether positive or negative) when the pleasantness appraisal dominates, but decrease use when the uncertainty appraisal dominates (top panel). For unpleasant but certain emotions (e.g., helplessness, anger, disgust, disdain, boredom, secrets, etc.) the use of any mental content is increased when the certainty appraisal is made salient but decreased when the unpleasantness appraisal is made salient (bottom panel).

appraisal theories of emotion to implications for the same emotion, and expands from treating appraisals as antecedents to considering them also as consequences.

In conclusion, along with positive actions, positive emotions (happiness, pride, awe) can also lead to opposite outcomes depending on thought

direction, and depending also on what appraisal dominates for the emotion. That is, positive but uncertain emotions like hope, curiosity, and admiration can validate thoughts (both positive and negative) when their pleasantness appraisal dominates within the emotion but invalidate thoughts when the uncertainty appraisal is more salient. Paradoxically, these positive emotions can end upmaking people feel bad when the uncertainty associated with them is misattributed to ongoing thoughts, and those thoughts happen to be negative.

## Invalidation: getting rid of unwanted thoughts

SVT postulates that thoughts that are perceived as relatively invalid are mentally discarded which can attenuate, eliminate, or even reverse the normal impact of one's thoughts (see Briñol & Petty, 2025). Both doubt in the correctness of thoughts (cognitive invalidation) as well as feeling bad about them (affective invalidation) can lead people to discard their thoughts.

As an initial example of invalidation, recall the study described earlier in which doubt induced via head shaking attenuated thought usage relative to head nodding (Briñol & Petty, 2003). This research found that merely having participants shaking their head was sufficient for them to think that there was something wrong with their thoughts, thus undermining the impact of those thoughts in forming judgements compared to nodding one's head. As a result, shaking (vs. nodding) invalidated positive thoughts (leading to relatively more negative outcomes) but also invalidated negative thoughts (making people feel relatively better).

Sometimes the attenuation is sufficient to completely eliminate the reliance on one's thoughts. For example, in one study by Gascó et al. (2018), after being assigned to generate either positive or negative thoughts their bodies, participants were led to believe either that their thoughts originated externally (i.e., they arose from societal views) or internally (i.e., they arose from the self). Thoughts about the body served as the initial cognition in this paradigm, the perceived origin of thoughts was the validating variable, and body satisfaction was assessed as the dependent measure. The results revealed that the valence of the initial thought participants generated only impacted their reported body satisfaction when their origin was perceived to be the self. When the perceived origin was external to the self, and the thoughts therefore seemed less valid, the valence of the thoughts did not matter.

Third, invalidation can not only reduce or eliminate but also reverse the impact of initial thoughts. In one study showing reverse effects, Briñol et al. (2013) asked participants to write down either positive or negative thoughts

about a healthy diet on a piece of paper. Then, participants were randomly assigned to either: (a) take the paper on which they had written their ideas and place it in a trash can (invalidation), (b) take the paper and keep it in a safe place such as their pocket or purse (validation), or (c) merely fold the corners of the paper and leave it on the table (control). After performing one of these actions, participants rated their attitudes towards the diet. As expected, attitudes reflected the valence of participants' thoughts in the control condition. However, participants in the validation condition showed a more pronounced effect of thought valence on attitudes than in the control condition. In contrast, the effect of thought valence on attitudes was reversed for those in the invalidation condition. Participants asked to generate positive thoughts showed significantly less favourable attitudes than those asked to generate negative thoughts, the opposite pattern of results obtained in the control, and validation conditions.

Before closing this section, it is important to mention a fourth possible outcome emerging from invalidation. Instead of the effects just reviewed, invalidation might sometimes *enhance* thought use relative to a control. Some prior research suggests that this effect is most likely to occur when the prospect of invalidation is highly threatening. For example, Moreno et al. (2023) asked participants to think about their own best or worst qualities. Following this initial induction, and as part of an ostensibly unrelated control study, participants reported how threatened they felt by the COVID-19 pandemic. Finally, self-esteem was measured as the dependent variable. It was predicted and found that the impact of initially induced thought valence on self-esteem was greater for individuals perceiving COVID-19 as relatively more threatening.

This series of studies revealed that when experiencing threatening uncertainty, individuals can be motivated to behave in ways that restore their sense of confidence (to mitigate the threat) such as by adopting more extreme attitudes (*compensatory conviction*; McGregor et al., 2001; Siev et al., 2023). Under these conditions, inductions of doubt can result in an increased (rather decreased) impact of mental contents. This fourth possibility is consistent with research within positive psychology showing that an excessive promotion of positive thinking can lead people to feel threatened by their negative emotional states, which might in turn backfire by making those negative states more consequential (e.g., Bastian et al., 2012; Humphrey et al., 2022).

In sum, although speculative, this research suggests that induction of doubt or unpleasantness can lead to an attenuated impact of thoughts on judgement (e.g., when informative of low validity), to null effects (e.g., when doubt is higher), to reversed effects (e.g., when the induction is extreme or people are engaged in categorical thinking), or even to compensatory effects (e.g., when the doubt is threatening and certainty is desired). These

hypotheses about the specific conditions in which each of those outcomes is more likely to appear remain to be fully tested in future research.

## Distinguishing between having and using thought validity

In addition to proposing perceived thought validity (stemming from thought confidence and/or thought liking) as a general mediator of the impact of diverse variables on judgement and behaviour, SVT also points to unique moderators. There are both individual and situational moderators of the operation of validation processes. As described in this section, SVT proposes that forming and using metacognitive assessments of thought validity is more likely when thinking is relatively high. Validation processes require more thinking than the operation of primary cognition processes alone because not only must people have some thoughts to validate, they also need some motivation and ability to care about the perceived validity of their thoughts.

In a relevant example, individual differences in need for cognition (NC; Cacioppo & Petty, 1982) were found to moderate affective validation. In one study described earlier (Briñol, Petty & Barden, 2007) participants relatively high in NC were more likely to use the perceived validity of their thoughts (emerging from positive emotions like happiness) in forming attitudes than those lower in NC. It is important to note that happiness affected the confidence that both high and low thinking participants had in their thoughts. What was different was that those naturally motivated to think relied on that confidence in forming their judgements whereas those low in thinking did not. Thus, SVT also empirically distinguishes between simply having assessments about thoughts and subsequently relying on those meta-cognitive judgements.

A recent SVT study was designed to examine the ability of elaboration to distinguish more precisely between generating meta-cognitive judgements and subsequently using those meta-cognitive judgements. Across several paradigms relevant to acts of kindness, Moreno and colleagues (2024) tested this novel SVT proposition that elaboration could improve the ability of attitude certainty to moderate attitude-behaviour correspondence (ABC). As noted, being nice to others can not only benefit the recipient of the help, but it can also make the agents of the kind act feel better (Aknin et al., 2015). In one study, participants began by reporting their attitudes towards Ukrainian refugees. Then, attitude certainty was manipulated by asking participants to recall episodes of confidence or doubt. After measuring attitudes and manipulating confidence, elaboration was also made to vary experimentally. An innovative feature of this study is that instead of manipulating elaboration at the beginning of the study as in most prior attitude research, elaboration was manipulated just before the behavioural decision (and after measuring

attitudes, and attitude confidence) to isolate its impact at the time of the action. Attitudes, attitude certainty, and elaboration served as predictors of different prosocial behavioural outcomes such as with actual enrolment in a mentoring program to help Ukrainian refugees. First, as expected, attitudes predicted behaviour. Furthermore, the greater the certainty in one´s attitudes the greater relationship was found between attitudes and helping behaviours. Most uniquely, this research showed for the first time that the effects of attitude certainty in moderating ABC was more likely to occur under high (vs. low) elaboration.

Although enhanced elaboration facilitates both the generation and use of metacognition, this new research is unique in isolating the effects of elaboration exclusively on metacognitive usage rather than on metacognitive formation. Unlike most prior SVT research (e.g., Briñol et al., 2007) which focused on the role of elaboration when induced before generating confidence, this work by Moreno and colleagues (2024) focused for the first time on the role of elaboration when induced after generating meta-cognitive judgements (see Moreno et al., in press; for an additional example of this role of elaboration). In sum, this work revealed that not only does greater elaboration lead people to assess the perceived validity of their initial evaluations but also indicated that the greater the elaboration, the more likely people are to take that previously formed validity into consideration for judgement and behaviour.

## It is all about what is in mind at the time: moderators of validation outcomes

Whereas some variables, such as the extent of thinking, can determine how likely validation processes are to occur or be used, other factors matter because they can influence what mental content is salient to validate. As noted, various studies have used inductions of whether the thoughts salient at the time of validation are largely positive or negative (e.g., by asking people to focus either on their strengths or weaknesses). Another variable that can determine which thoughts are salient is the timing of the validation induction. SVT research has tested cases in which thoughts precede and follow validation variables as well as those in which they occur concurrently.

For example, in a series of studies (Briñol, Petty, Gallardo, et al., 2007), individuals received a self-affirmation induction (i.e., thinking about their important core values) just before or just after they received a persuasive message containing strong or weak arguments. Writing to express one's important values has been associated with multiple positive outcomes (Ferrer & Cohen, 2018). Taking a SVT approach we found that self-affirmation through expressing values can lead to either positive or negative evaluations depending on the direction of thoughts and the timing of the

inductions. When the affirmation induction followed the message, it impacted the use of the thoughts that participants had generated to the message. Specifically, the affirmation induction enhanced the perceived validity of thoughts already generated to the message and thus participants relied on their positive or negative thoughts more in forming attitudes than did control individuals. As a result, the impact of thought direction (affected by argument quality) on attitudes was greater in the affirmation (validation) than the non-affirmation conditions. However, when the affirmation induction came prior to the message, it did not serve to validate thoughts to the message as people had not yet generated their thoughts. In this case, self-affirmation affected the perceived validity of the position participants already held prior to message processing and thus influenced the extent to which people processed the message. Specifically, affirmed participants thought about the message less than non-affirmed individuals. This is because when affirmed before processing, people feel confident in their existing views and have little need to think about new information. As a result, the impact of argument quality on attitudes was reduced in the affirmation compared to the non-affirmation condition (see Huntsinger, 2013, for a conceptually similar outcome).

In sum, the research described in this section reveals that timing is important because it can affect the primary cognition that is likely to be accessible (and therefore available to be validated). It is even possible for the same variable to serve as the initial cognition to be validated or as the metacognitive validating variable depending on its placement. For example, if people were thinking about their negative self-esteem and then felt powerless, the feeling of being powerless would likely invalidate the negative self-esteem thoughts people had and they would come to have higher self-esteem than if feeling powerful. Alternatively, if people were thinking about how powerless they were and then reflected on their low self-esteem, the unpleasantness from low self-esteem could invalidate the thoughts about being powerless and people would feel more powerful than if they had reflected on the pleasantness from high self-esteem.

## Meaning matters

Another SVT principle is that the meaning of validation variables is flexible and thought use is only enhanced when a variable is interpreted as an indicator of validity. SVT specifies that it is not the particular variable (e.g., happiness, power, gratitude) per se that provides validation, but how that variable is *interpreted* by the person. Most experiences that people have (e.g., happiness) and external stimuli they encounter (e.g., loved figures) have a common meaning by default (e.g., happiness is pleasant; loved figures are assumed to provide security and support). However, if the meaning

associated with variable changes from the default, the effect of that variable on subsequent judgements or behaviours is also likely to vary. Put simply, the meaning of the variable will moderate the impact of that variable on the outcome of interest.

First, consider variables that have by default high validity meanings associated. For example, head nodding is associated with agreement (Wells & Petty, 1980), smiling is a positive emotional sign associated with pleasantness (Paredes et al., 2013), feeling powerful is often experienced as a desirable state (Briñol et al., 2017), and expressing gratitude is seen as a sign of courage and security (Emmons & McCullough, 2003). Because the default meaning of these variables is typically positive and associated either with correctness or pleasantness, they typically lead to thought validation. However, the meaning of these variables can vary across individuals and situations.

As a concrete illustration of this, consider the case of ease of thought retrieval or generation that is a variable relevant to positive psychology for a number of reasons, including its association with flow (Yan & Donaldson, 2022). Ease of thought generation has been associated with greater thought use than difficulty because people generally perceive ease as something good (e.g., reflecting certainty; Tormala et al., 2007; or beauty; Schwarz et al., 2020). However, if people's naïve theories regarding the meaning of ease were changed, then different judgements should arise. In an early SVT study investigating this possibility, Briñol et al. (2006) asked participants to write their thoughts using an easy-to-read font (black over white) or a difficult one (pink over yellow). In addition, the perceived meaning of ease versus difficulty was manipulated. Half of the participants were provided with a negative meaning for ease so that it would be different from the default positive meaning. They were told that the experience of ease in generating thoughts generally meant that the thoughts were low in complexity and that intelligent people, who have more complex thoughts, typically experienced more difficulty in generating thoughts than unintelligent people. The remaining participants received the opposite and traditional positive meaning of ease. Results indicated that the standard ease of retrieval effect (using thoughts more when easy than difficult) emerged only among participants who received the "ease is good" instructions. Among participants receiving the "ease is bad" instructions, the opposite occurred.

Second, although ease and other variables like happiness, power, or gratitude typically have a default positive meaning, for other variables, the default is negative. For example, the meaning of cleansing actions (e.g., washing one's hands) is often associated with removing dirt. People would presumably only remove something that is bad (much like putting something in the trash), thus cleansing would likely by default be seen as removing

something bad, an action associated with invalidation. In accord with the SVT view of cleansing as a general invalidating action (associated with removing something) cleaning actions following thinking have been found to reduce the impact of both negative thoughts and positive thoughts (see Lee & Schwarz, 2020; Lee et al., 2024, for recent reviews). More relevant to the SVT meaning postulate, recent research has shown that if the meaning of the action of cleansing was reversed from removal of something bad (dirt) to adding something good (purity), the results in terms of thought reliance can be reversed (Kim et al., 2019). Taken together, these examples illustrate that changing the meaning of a variable (from high to low validity, or vice versa) can change the effect of that variable on thought usage.

A third body of research reveals that meaning can change the effect of neutral actions as well. For example, when a neutral action (e.g., merely placing thoughts into a box) was associated with a high validity meaning (keeping thoughts safe) then this action led to an increase in the use of thoughts. In contrast, when the meaning of the very same action was associated with a low validity meaning (trashing the thoughts), then it decreased thought use (Kim et al., 2021).

In sum, in addition to providing a new and more integrative explanation for some prior findings (e.g., ease, cleansing), SVT has also been useful in accommodating apparently contradictory sets of results across domains. For example, a recent study by Paredes et al. (2024) has shown that the meaning of the same action of revealing secrets to others can be associated both with either low validity (e.g., revealing as moving secrets away from the self) or high validity (e.g., revealing as making secrets real) meanings affecting the impact of that action on subsequent wellbeing.

As a final example of the ability of SVT to reconcile previous findings, consider the case of feelings of power. We already described SVT research showing that feelings of power can lead to positive or negative outcomes depending on the thoughts validated (Briñol et al., 2017). Furthermore, feelings of power are capable of both increasing and decreasing pro-social behaviour (DeMarree et al., 2012) and anti-social behaviour (Lamprinakos et al., 2024), depending on the salient thoughts when feeling powerful.

## Implications for replication

The ability of SVT to reconcile what otherwise might look like contradictory results is also relevant for understanding replication issues. For example, without taking thought-direction into consideration, many of our own SVT studies would look like a failure to replicate some prior embodiment effects. That is because SVT predictions go in opposite directions depending on what kind of thoughts the positive physical action validates. As noted, something as simple as smiling or nodding

can both increase and decrease wellbeing as a function of whether the initial thoughts are positive or negative.

It can also be challenging when the same bodily action (e.g., smiling, making an expansive posture) can increase but also decrease thought usage, leading to different evaluations depending on meaning (meanings associated with high vs. low validity). However, evaluating these effects within the framework of SVT helps to explain this complexity. According to SVT, positive actions like smiling or nodding are expected and found to improve evaluation when associated with high validity meanings and when validating positive thoughts but to decrease evaluation when validating negative thoughts. That is, the effects of these and other positive actions (such as expressing gratitude, and being kind) depend on whether they validate positive or negative thoughts. When initial thoughts are positive then engaging in validating actions increases their benefits. Therefore, validating bodily actions can magnify the impact of positive thoughts. However, those very same validating positive actions can backfire when negative thoughts are salient. Without separating thought direction from thought validity, many positive embodiment inductions would look like they did not work, failing to replicate past findings in this domain (since the prediction goes in opposite directions depending on what thoughts the physical action validates). Thus, SVT presents a guide to understand whether, when, and why embodiment (and other) effects are likely to appear, when they are not, and what direction of effect is most likely.

In sum, we argue that bodily responses can have an effect under theoretically specified conditions, and that such an effect can be the intended one or it can be the opposite depending on the conditions specified by our process approach. In closing this section, we note that not only can a bodily action produce opposite effects depending on variables like thought-direction, but they also can fail to produce any effects at all in some other cases (e.g., Credé & Phillips, 2017; see; Elkjær et al., 2022; Körner et al., 2022; for a discussion). From the present perspective, examples of other situations in which bodily actions might not produce significant results and therefore fail to produce an effect include when the action validates mixed or ambivalent thoughts (e.g., Durso et al., 2016), when people correct for the unwanted effects of validation inductions (McCaslin et al., 2010), and when the action has no meaning (Briñol et al., 2018).

## Generalization: wellbeing and healthy lifestyles for the self and others

The SVT research reviewed shows that validation processes are applicable to many different types of mental contents including thoughts, beliefs, attitudes, motives, and beyond. Regardless of how these thoughts are activated (naturally, with instructions, primed, in response to interventions, etc.), the thoughts subjected to validation processes have been applied to promoting

personal acceptance and wellbeing (e.g., Briñol et al., 2013) and to facilitating the wellbeing of others by engagement in prosocial actions (e.g., helping, donating, mentoring; Moreno et al., 2021, 2023).

In another recent application of SVT, Requero et al. (2021) provided a tutorial for promoting healthy habits and facilitating physical exercise in the self and in others. The reviewed studies included several illustrations of SVT campaigns promoting positive evaluations toward healthy eating (e.g., eating vegetables and fruits), and decreasing the intake of unhealthy food (e.g., taxing foods with high levels of saturated fat). The value of SVT has also has been illustrated in a tutorial for amplifying the placebo component of therapeutic treatments by validating placebo expectations and by invalidating nocebo expectations (Geers et al., 2019).

The key idea behind these examples of generalisation is that SVT can be useful for making people feel good, increasing personal and societal wellbeing, and reducing suffering in the self and others. An advantage of employing SVT is that it can provide scholars and practitioners with a novel framework to examine many other phenomena, ranging from leisure activities to psychological richness (e.g., Oishi & Westgate, 2022).

## Improving predictive validity: being sure that you can

Consistent with the SVT notion that *any* mental content can become the object of validation, a growing body of research has shown that the predictive utility of positive individual differences inventories can be improved by taking confidence in to inventories into consideration. Next, we describe few illustrative examples of validating self-efficacy beliefs, compassion, and holistic thinking.

In a first line of research relevant to improving the predictive validity of self-efficacy (SE), Horcajo et al. (2022) began by asking CrossFit athletes at the gym to complete SE scales. Individual differences in SE (Bandura, 1977) served as the initial cognitions to be validated in this research conducted in a real-world setting. Then, confidence was either measured or manipulated (by asking participants to recall past episodes of confidence vs. doubt, Petty et al., 2002), depending on the study. The dependent variables included outcomes such as the number of pull-ups that athletes were able to complete and height achieved in a vertical jump test. Consistent with SVT, confidence was found to moderate the effect of SE on physical performance as indicated by the number of pull-ups completed and the height that athletes were able to jump. Furthermore, this work revealed that natural variations in confidence associated in SE beliefs can moderate not only physical but also academic performance (e.g., measuring SE and confidence, and predicting student's grades on final exams).

Following this initial research, Moreno et al. (2022) conducted another study asking participants to complete the general SE scale. Next, participants reported the perceived validity of their responses to that scale. Finally, students were asked to complete a battery of tasks relevant to intellectual performance which included a geometric-shapes task, syllogism problems, and a knowledge test. In accord with SVT, results again showed that enhanced confidence in responses to the SE scale moderated the impact of SE on performance, magnifying the impact of the scale scores on intellectual performance. SE beliefs were more associated with performance as confidence in those initial beliefs increased, conceptually replicating Horcajo et al. (2022). Taking together, this body of work reveals that being sure that "*you can*" increases the chances that you actually "*can*," translating self-efficacy beliefs into action; and making people more likely to perform better physically and intellectually.

In a final example, Moreno and colleagues (2024) examined whether confidence could improve the ability of individual differences in self-compassion to potentiate its beneficial consequences. Participants in the first study of this series started by completing the Self-Compassion Short Scale (Raes et al., 2011), and then rated the certainty in their responses to that inventory. After responding to these two measures, they then rated how they felt. Higher self-compassion was found to be associated with more positive affect and less negative affect, replicating previous research in this domain (Koch, 2020). Most relevant, the greater the certainty in the responses to the self-compassion scale, the stronger that the link was.

Just as people vary in how compassionate they are to themselves, there are individual differences in compassion towards others. Thus, another recent series of studies by Moreno and colleagues (2024) showed that certainty associated with the responses to compassion for others inventories was also capable of moderating the compassion-empathy link previously established by prior research (e.g., Sassenrath et al., 2022). One of the studies in this series manipulated (rather than measured) confidence revealing that being sure about compassion can not only increase empathy but also increase prosocial behaviour (e.g., helping intentions) and reduce anti-social behaviour (e.g., aggression). These actions were consequential not only for those receiving the help but also for participants themselves who reported feeling better after expressing their intentions to help others (Archer et al., 2024; Titova & Sheldon, 2022). So, it is good to be good to others, especially when being sure that is the way to go.

Although we focused only on self-efficacy and compassion, the same SVT framework also has been used for improving the predictive validity of many other standardised inventories relevant to positive psychology. For example, in one study, Santos et al. (in press) showed that considering certainty can improve the predictive validity of individual differences in

holistic thinking. Holistic thinking involves seeing things from multiple perspectives and is important because it has been found to be associated with personal balance and wellbeing (e.g., Nisbett et al., 2001). Across several studies, participants first completed standardised measures of holistic-analytic thinking (e.g., Choi et al., 2007). Then, they rated how certain they were in their responses to the holism scales or were induced to feel high or low certainty, depending on the study. Finally, participants were exposed to materials designed to produce psychological conflict (counter-attitudinal change, ambivalence, two-sided messages, etc.). Results revealed that participants with higher certainty in their holistic thinking were less bothered by the discrepancies embedded in these paradigms. Other SVT research has extended these findings to individual differences in honesty-humility (Santos et al., 2024), and feelings of belongingness (Paredes et al., 2020).

## Positive thinking and positive acting can backfire

One of the most robust findings is that positive thinking can lead to positive outcomes. We have reviewed how many strategies designed to facilitate the generation of positive thoughts (e.g., such as strength-focus inductions, being grateful and compassionate) are effective in making people feel better. A first contribution of SVT that we emphasised is that the impact of those positive thoughts can be magnified even further, amplifying their benefits. That is, validating positive thoughts, even through unintentional, incidental variables, can increase their benefits. But, positive thoughts are not always consequential. As described, people do not use their positive thoughts when they are doubted or are associated with feeling bad. Therefore, SVT specifies when and why positive thoughts are more or less likely to produce the desired effects.

Just as positive thoughts can vary in their impact, positive actions (such as smiling, expressing gratitude, and being kind) can also be associated with different (even opposite) consequences. As described, the effects of these positive actions depend on whether they validate positive or negative salient thoughts. When initial thoughts are positive, then engaging in validating actions (from smiling, expressing gratitude, being kind, etc.) increases their benefits. Therefore, validating variables can magnify the impact of positive thoughts. However, the induction of those very same validating variables can backfire when negative thoughts are salient. As described throughout this article, being sure of the validity of negative thoughts makes those thoughts more consequential, magnifying their negative impact. Although we have focused more on why, when, and for whom positive thinking and positive bodily inductions can work or backfire, it is important to note that the same action might not work at all in some cases (see section on replications).

Along with positive actions (nodding, being kind) and positive feelings (happiness), we also described cases showing that self-affirmation can produce a positive evaluation in some cases (e.g., when validating positive thoughts) but a negative evaluation in others (when validating negative thoughts; Briñol, et al., 2007). As shown, self-affirmation can polarise judgements when it follows thinking, thereby magnifying the impact of whatever dominant thought is accessible at the time (e.g., Vohs et al., 2013). For example, Wood et al. (2009) revealed that having participants express self-affirmations (e.g., "yes, I can," "I am stronger everyday") led to benefits for those with positive thoughts (individuals high in self-esteem), but to negative outcomes for those with negative thoughts (for those with low self-esteem; Brummelman et al., 2014). Thus, affirmations can increase or decrease evaluations depending on thought direction, with paradoxical consequences when validating variables apply to negative thoughts.

This research is consistent with other work showing that variables associated with positive thinking can work or backfire depending on the circumstances (e.g., Humphrey et al., 2022; McGuirk et al., 2018). For example, Oettingen et al. (2016) showed that when fantasies (a positive thought about a desired future) are seen as unrealistic (invalid), thinking about them does not help. However, if fantasies are realistic (when they are accompanied by a clear sense of reality), then thinking about them can be beneficial. Therefore, the impact of fantasies is moderated by how likely people think the fantasy is to be achieved. SVT concurs with this distinction and also adds that when people are confident that the fantasy is realistic this would further contribute to success (presumably because then they can prepare for it) but when they are confident the fantasy is not realistic, this would make success less likely (presumably because then they do not prepare for it, as noted by Oettingen and colleagues). Consistent with this interpretation, SVT research reveals that feeling unprepared is associated with doubt and less thought usage (Carroll et al., 2020).

There are several ways in which SVT can serve to reinterpret prior work on fantasies. For example, although speculative, unrealistic fantasies can be conceptualised as positive thoughts that are associated with low perceived validity. From this view, fantasies do not help guide behaviour presumably because the doubt in the correctness of these positive thoughts leads people to discard their thoughts through cognitive invalidation. Importantly, as noted with respect to invalidation processes, discarded thoughts through invalidation can not only attenuate or eliminate the impact of those positive thoughts about the future but it can still influence judgements and behaviour (negatively) at least in four different ways: 1) by having a reversal effect due to compensation when the associated doubts are perceived as too unpleasant or threatening (e.g., Humphrey et al., 2022; Moreno et al., 2023); 2) by enhancing perceived difficulty due to their role as unrequested negative

thoughts (e.g., Tormala et al., 2007); 3) by introducing either explicit or implicit ambivalence with other positive thoughts associated with confidence rather than doubt (DeMarree et al., 2015; see also Lomas & Ivtzan, 2016); or 4) by creating an unrealistic, unachievable expectations against which to compare subsequent experiences (DeMarree et al., 2014; Tamir et al., 2017).

Importantly, SVT also argues that any variable (in this case, fantasies) can serve not only as primary cognition but also as a secondary cognition. Therefore, in addition to serving as initial mental content associated with doubts, we speculate that fantasies can also serve in a meta-cognitive role. In this later case, the effects of fantasies would potentially depend on the SVT differential appraisal notion (Briñol et al., 2018). From this notion, fantasies can be understood as a case of wishful thinking. That is, fantasies are a pleasant but uncertain state. As illustrated in Figure 2 (top panel), for other states for which pleasantness and certainty are dissociated (e.g., hope, surprise, awe, curiosity) this unpleasant but certain state can either validate or invalidate other thoughts depending on which appraisal dominates. Positive but uncertain states like fantasies can be expected to validate thoughts (both positive and negative) when their pleasantness appraisal dominates but invalidate thoughts when the uncertainty appraisal is salient. Paradoxically, according to SVT, the very same fantasies can end up making people feel bad when the doubts associated with them are misattributed to negative thoughts.

## Limitations and future avenues

It is now clear from this article that positive thoughts, emotions, actions, and mindsets can all produce different (even opposite) effects on wellbeing and other evaluations depending on the circumstances specified by SVT. The idea is that any given phenomenon can produce multiple effects (positive and negative) by operating through thought validation, a meta-cognitive process that requires specific conditions that facilitate thinking about thinking (e.g., high elaboration). Furthermore, we have argued that analysing many different paradigms from the point of view of SVT can help to explain complex outcomes while inspiring avenues for research, including future work on joy, contentment, leisure, flourishing, and growth mindsets.

By distinguishing between initial cognition and the perceived validity of those thoughts, SVT has shown its potential to make many novel predictions for other relatively unexplored variables (e.g., elevation, forgiveness), for phenomenon like wishful thinking (e.g., fantasies) and realistic pessimism (e.g., secrets), and even for clinical applications (e.g., self-care). Beyond validating positive thoughts, future SVT research can also benefit from examination of invalidation of negative thoughts such as those emerging from stereotype threat (e.g., Clark et al., 2015).

In addition to those already mentioned, there are some additional areas for future research as well as some limitations to the current research. For example, more systematic evidence is needed for specifying when invalidation leads to each of the possible outcomes associated with discarding thoughts (e.g., attenuation, elimination, reversals, and even compensatory effects). An additional area that can benefit from more scrutiny has to do with the potential challenges that users and practitioners might face when aiming to intentionally use meta-cognitive processes for deliberative self-change. That is, a practical matter is the question of whether positive interventions can be used deliberately to produce changes in one's own psychological processes. For example, can people purposely use physical actions such as nodding to positive thoughts or expressing gratitude, and mental activities such as thinking about one's values or positive memories, to improve their lives? The response is two-fold.

On the one hand, many positive psychology initiatives that involve deliberative self-change have proven to be useful in getting people to feel good (Carr et al., 2024). Also, people can deliberately choose to experience a given emotion when they think that those emotions can help them to achieve a desired goal (Meyers & Tamir, in press). Furthermore, people can deliberatively adjust their judgements to reduce or enhance the effect of any variable in the desired direction (McCaslin et al., 2010). Taken together, these examples suggest that people can deliberately use some psychological strategies designed to improve their wellbeing and other desired outcomes.

On the other hand, a different set of research paradigms suggests that the effects of many positive interventions (e.g., retrieving past memories of happiness) can be reduced or even eliminated when people become aware of their incidental nature (Schwarz & Clore, 1983). Also, deliberately thinking about emotional states can reduce their intensity and subsequent usage by undermining mystery (Wilson et al., 2005) and by increasing rumination (Lyubomirsky et al. 2006). Therefore, it is not clear whether people can use their memories and actions to intentionally influence their wellbeing, at least in all cases. Just as it is difficult to be happy when intentionally trying (Ford et al., 2014; Mauss et al., 2011), so too is it difficult to initiate and maintain enjoyable thoughts intentionally (Wilson et al., 2019). Furthermore, it is difficult to intentionally generate and express good memories while deliberately avoiding bad ones (T. Lomas & Ivtzan, 2016; Tormala et al., 2007). Finally, placebo expectations are less impactful when deliberately choosing to use them to improve evaluations and well-being (e.g., Geers et al., 2019). This second block of examples suggests that the strategic use of psychological strategies to promote self-improvement can be more challenging than anticipated. Although speculative at this point, we argue that the distinction between genuine (content-dependent) vs. incidental (misattribution) inductions can be potentially relevant to specifying when people can and cannot deliberately use validation strategies.

Beyond these cases in which intentionally using meta-cognitive processes for deliberative self-change might or might not work as desired, there are other areas in which our process approach can be further developed and potentially disconfirmed. For example, if the impact of initial thoughts was reduced (rather than increased) by a variable that was associated with confidence and pleasantness, that was introduced after generating initial thoughts under high thinking conditions (and the person does not see that variable as an unwanted influence for judgement), that would represent a potential challenge to the current version of the model. Further attention should also be paid to the possibility of future studies showing results opposite to current SVT moderating predictions throughout (e.g., more reliance on metacognitive assessments of validity under low rather than high thinking conditions). Indeed, future data will contribute to continuing to refine the identification of moderating conditions with the potential to affect what particular process is more likely to operate depending on the person and the situation, and with what consequences for positive changes in the short and long term.

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