Title

Self-Talk and Self-Esteem: Do Non-First Person Parts of Speech Influence Affective Components of the Self-Concept?

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Do Non-First Person Parts of Speech Influence Affective Components of the Self-Concept?

By

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Abstract

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Self-distancing has been linked to reductions in negative emotional experience (i.e., lower anger and sadness) as well as changes in appraisal processes (i.e., more reconstrual/less recounting; more challenge/less threat). We examined whether self-distancing also influences the self-concept, specifically its affective component (i.e., self-esteem). In a series of four experiments (total $N = 2301$), we investigated how distanced self-talk affects self-esteem relative to immersed self-talk, which involves using non-first versus first-person pronouns, respectively, in reference to the self during introspection. Study 1 employed implicit and explicit measures to test condition differences in self-esteem. Compared with immersed participants, those who distanced demonstrated higher implicit self-esteem but did not differ in explicit measures. Study 2 aimed to replicate the effects on implicit self-esteem and discern whether positive associations with the self were increased or maintained during Study 1. This study did not replicate Study 1, as implicit self-views did not differ by self-talk condition. Studies 3 and 4 addressed limitations in Study 1 that may have contributed to null explicit self-esteem findings, but did not provide evidence that distanced self-talk influences explicit self-views. Finally, a meta-analysis (Study 5) indicated that across all our studies, relative to immersed self-talk, those who distanced did not experience significant changes in self-esteem. Together, these findings indicate that although distanced self-talk may be an effective method for engaging more adaptive evaluations of emotional experiences, this emotion regulation strategy does not influence how one affectively evaluates the self.

To my family

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Self-Talk and Self-Esteem: Do Non-First Person Parts of Speech Influence Affective Components of the Self-Concept?

Attempting to understand why one is feeling a certain way is generally thought to be a beneficial practice. Doing so provides one with the opportunity to gain valuable insights into their own thoughts, feelings, and behaviors (e.g., Carver & Scheir, 1998; Duval & Wicklund, 1972; Kross & Ayduk, 2008; Martin & Tesser, 1996). Furthermore, this act of reflection can allow one to work through negative emotions and enact coping strategies (e.g., Greenberg, 2002; Kross, Ayduk, & Mischel, 2005; Pennebaker & Graybeal, 2001; Rachman, 1981; Stanton, Kirk, Cameron, & Danoff-Burg, 2000)- processes that could hold meaningful, positive implications for the individual in the future. Despite widespread acceptance of the emotional benefits that introspective habits can incur, little is known about how various approaches to this process influence the way one thinks and feels about the self. Therefore, we address and test the hypothesis that adaptive introspective processes might not only hold benefits for emotional experience, but also extend to the affective attitudes that one holds about the self.

The Self-Reflection Paradox

When reflecting on our own experiences, we typically do so from an egocentric perspective. We see the events replay in our mind through our own eyes, and our reflections are characterized by tendencies to self-immerse and relive the emotions and experiences in the first-person. Although defaulting to a first-person perspective during reflection is very common, even habitual, it can be quite detrimental when we rely on this perspective to work through our negative emotions (Nigro & Neisser, 1983; Kross et al., 2005). More specifically, studies have demonstrated (e.g., Ayduk & Kross, 2010a; Kross & Ayduk, 2008, 2009) that taking a first-person perspective is more likely to lead people to focus on the concrete features of the event, such as *what* specifically happened. This can then lead them to recount the experiences exactly as they happened, reliving the event and by proxy, the physiological and experiential components associated with that event.

Ultimately, this maladaptive form of self-reflection leads to increases in negative arousal when attempting to work through one's negative emotions (Kross et al., 2005). Rumination may also occur, which involves repeatedly and passively fixating on one's feelings and the reasons for them (Nolen-Hoeksema, 1991). Alternatively, avoidance of one's feelings might also arise, allowing the individual to rapidly reduce their negative affect at the expense of developing emotional understanding and gaining closure (Kross & Ayduk, 2008).

Self-Distancing: Affective, Behavioral, and Physiological Effects

However, work on self-reflection also suggests that the self can be distanced when working through one's negative emotions. In this more adaptive form of reflection, people process their negative feelings and experiences from an ego-decentered, third-person perspective, which leads to more abstract reasoning regarding *why* a negative event may have occurred (Kross & Ayduk, 2008). Specifically, by engaging in self-distancing, people can change their construal of the negative event rather than simply recount what happened, which allows them to focus on their negative emotions without increasing negative arousal (Kross, Duckworth, Ayduk, Tsukayama, & Mischel, 2011).

By experimentally manipulating self-perspective, self-distancing studies to date have examined how to facilitate adaptive responding when reflecting on a variety of negative experiences, namely those related to anger and hostility (e.g., Kross et al., 2005; Mischkowski, Kross, & Bushman, 2012), sadness and depression (e.g., Kross & Ayduk, 2008; Katzir & Eyal, 2013), and interpersonal rejection (e.g., Ayduk & Kross, 2010b). Typically, participants in these studies are asked to recall an experience and then take one of two perspectives on the self during reflection: immersed or distanced. In the self-immersed condition, participants are told to replay the situation through their own eyes and imagine the event happening to them all over again from their first-person point of view. In the self-distanced condition, participants are told to replay the situation but watch the event unfold from a distance and happen again to their distant selves. As they engage in these visual exercises, participants are asked to try to understand their feelings and the reasoning for them by focusing on the underlying causes, allowing for introspection.

When used for introspection, self-distancing has been consistently linked to more positive outcomes than self-immersion. For example, studies have found that when participants break out of their egocentric stance and take a distanced point of view, they experience lower amounts of depressive symptoms and sadness (Kross & Ayduk, 2008; Kross & Ayduk, 2009; Katzir & Eyal, 2013), explicit and implicit anger and aggression (Kross et al., 2005; Katzir & Eyal, 2013; Mischkowski et al., 2012), emotional reactivity (Ayduk & Kross, 2008; Ayduk & Kross, 2010b; Kross et al., 2005; Kross & Ayduk, 2009; Kross et al., 2011), and global negative affect (Kross et al., 2005). Additionally, when the recalled event is interpersonal in nature, self-distanced participants report lower feelings of blame (Kross et al., 2011; White, Kross, & Duckworth, 2015) and display less aggressive behavior towards the other individual (Mischkowski et al., 2012). Self-distanced participants also tend to use fewer first-person pronouns when reflecting on their emotions (Kross & Ayduk, 2008; Park, Ayduk, & Kross, 2016) and demonstrate reduced cardiovascular reactivity during and after introspection (Ayduk & Kross, 2008; Ayduk & Kross, 2010b). On a neural level, self-distancing has been linked to reduced activation in regions that are typically involved in self-referential processing and emotional reactivity, such as the medial prefrontal cortex, subgenual anterior cingulate cortex, and insula (Kross, Davidson, Weber, & Ochsner, 2009; Christian, Parkinson, Macrae, Miles, & Wheatley, 2015).

Self-Talk: A Linguistic Approach to Distanced Perspectives

Most of the work to date has examined self-distancing via a visual manipulation (e.g., Ayduk & Kross, 2010a; Kross & Ayduk, 2011), where individuals are asked replay the event in their mind but take a step back mentally and watch the event unfold as if they were an observer. More recent studies have started to focus on another form of self-distancing, which utilizes a linguistic shift during introspection instead of a visual one (Kross et al., 2014). This form of self-distancing involves using non-first-person pronouns (e.g., "you", "he, "she", "[your own name]") to analyze and understand one's feelings versus first-person pronouns (e.g., "I", "me", "my"). Traditionally, we may think of someone using non-first-person pronouns to reference the self as egotistical. However, take for example this quote, from when Malala Yousafzai appeared on The Daily Show in 2015 with Jon Stewart:

> "…I used to think that the Tali would come and he would just kill me, but then I said, 'If he comes, what would *you* do, *Malala*?' Then I would reply to myself, '*Malala*, just take a shoe and hit him,' but then I said, 'If *you* hit a Tali with *your* shoe, then there would be no difference between *you* and the Tali. *You* must not treat others that much with cruelty and that much harshly, *you* must fight others, but through peace and through dialogue and through education.'"

Malala Yousafzai was responding to a question from Stewart regarding how she felt when she found out that the Taliban was targeting her. Her response depicts how she mentally processed her feelings and the possible actions she might take if she were to face an awful and undeniably terrifying event. She is talking to herself, and using non-first-person pronouns to do so. Therefore, this form of self-talk, when it is used for introspective purposes, might reflect more than a sign of grandiosity, and instead represent a form of self-distancing that serves an emotion regulatory function.

This form of self-talk has been applied experimentally to induce introspection on prior experiences of anger and anxiety (Kross et al., 2014) as well as future stressors such as giving a speech (Kross et al. 2014; Streamer, Seery, Kondrak, Lamarche, & Saltsman, 2017), interacting with a new person (Kross et al., 2014), and evaluating a potential mentee (Leitner, Ayduk, Mendoza-Denton, Magerman, Amey, Kross, & Forbes, 2017). Like the visual form of self-distancing, participants are typically asked to understand their emotions in one of two ways. In the first-person condition (i.e., immersed), participants are asked to try to understand why they felt the way they did when reflecting on the event using the pronouns "I" and "my" as much as possible. For example, they are instructed to ask themselves, "Why did I feel this way? What were the underlying causes and reasons for my feelings?" By contrast, in the non-first-person condition, participants are asked to understand their emotions using the pronoun "you" and their own name as much as possible. For example, if the participant's name was Jane, they are instructed to ask themselves, "Why did Jane feel this way? What were the underlying causes and reasons for Jane's feelings?"

Kross et al. (2014) found that distanced forms of self-talk led to a greater sense of visual distance from an event relative to immersed forms of self-talk (also in Orvell, Kross, & Gelman, 2017). In additional studies, participants who engaged in distanced (vs. immersed) self-talk reported greater feelings of challenge (i.e., one's sense that their resources/abilities exceed the demands of the situation) relative to threat (i.e., one's sense that the demands outweigh their resources/abilities; Blascovich, Mendes, Hunter, & Salomon, 1999) in anticipation of an upcoming stressor and appeared less nervous, more confident, and performed better during the stressor. Similarly, when reflecting on their stressful experience, they reported lower anxiety, negative affect, shame, and brooding, and reconstrued their experience more and recounted it less. Other studies have demonstrated that, relative to first-person, non-first-person forms of self-talk lead to cardiovascular responses consistent with challenge physiology (i.e., lower total peripheral resistance and greater cardiac output; Streamer et al., 2017) and reduced activation of neural regions involved in self-referential processing (Leitner et al., 2017; Moser et al., 2017).

Mechanisms of Distance: Examining the Role of Construal

The host of positive outcomes associated with distancing, via visual or verbal forms, begs the question of why this shift in self-perspective leads to such subjective, behavioral, and physiological benefits. In line with answering this question, one primary factor has been consistently identified: changes in construals. When self-distancing, participants engage in fewer concrete construals (i.e., recounting exactly what happened) and relatively more abstract construals (i.e., reconstruing the event and gaining new insight) compared to their self-immersed peers (Ayduk & Kross, 2010b; Kross et al., 2005; Kross & Ayduk, 2008; Kross & Ayduk, 2009; Kross et al., 2011; Kross, Gard, Deldin, Clifton, & Ayduk, 2012). Furthermore, changes in the way participants construe their emotional event mediate the relationship between self-distancing and negative affect (Ayduk & Kross, 2010b; Kross et al., 2005; Kross & Ayduk, 2008; Kross et al., 2011).

This evidence is in line with the reasoning proposed by psychological distancing (Liberman, Trope, & Stephen, 2007), which is the subjective experience that something is close or far away from the self, and assumes that one always begins from an egocentric perspective.

When one increases distance along different dimensions of psychological distance, they tend to retain the central features of the event (e.g., meaning of the event) while allowing other details of the event to fade (e.g., their current emotional reaction or what specifically happened). Furthermore, various dimensions of psychological distance have been linked to improvements in self-control (e.g., Frederick, Loewenstein, & O'Donoghue, 2003; Metcalfe & Mischel, 1999), reappraisals of the event (e.g., focusing on the cause vs. the consequence; Rim, Hanson, & Trope, 2013), and reductions in negative emotion (for a review, see Liberman et al., 2007).

Self-Concept: Accessibility and Malleability

Although the above findings apply clearly to the adaptive construal and emotion processes that arise when one self-distances from their emotional experience, the implications that distancing has for how one feels about the self (vs. an event) are less apparent. That is, self-distancing has been shown to be an efficacious method by which one can change how they conceptualize and interpret an emotional experience, and as a by-product, decrease how negatively they feel about it. The question remains, however, as to how self-distancing influences affective processes related to the self (i.e., self-esteem). This is an important question, as self-esteem holds broader implications for well-being, such as one's level of anxiety and depression (for a review, see Leary, 2007).

For example, distancing's effect on negative emotion may simply promote less negative evaluations of the self via changes in the working self-concept. That is, the knowledge that composes our self-concept is theoretically unlimited in capacity and scope. However, its vast nature permits that only certain components are attended to at any given moment (Markus & Nurius, 1986; Markus & Wurf, 1987; Swann & Bosson, 2010). These active components are relevant to the current context, which may be positive or negative or global or specific in nature (to name a few distinctions), and together they form our working self-concept. In other words, the way in which individuals construe the self is not static, and may fluctuate in response to contextual and situational demands (see DeSteno & Salovey, 1997). For example, accessibility of the self-concept fluctuates in response to socioemotional cues (e.g., Ayduk, Gyurak, & Luerssen, 2009; Lavallee & Campbell, 1995; Markus & Kunda, 1986), evaluations of the self are negatively impacted by negative feedback (e.g., Crocker, Karpinski, Quinn, & Chase, 2003, Grumm, Nestler, & von Collani, 2009; Leary, 2006; Leary, Tambor, Terdal, & Downs, 1995), and although distinct, self-esteem has been shown to be strongly coupled with changes in mood (e.g., Brockner, 1983; McFarland & Ross, 1982). More broadly, changes in mood have been shown to affect cognitive processes such as memory by semantically priming mood congruent information (i.e., associative network model; Bower, 1981, 1991) and are reasoned to influence self-evaluations via similar mechanisms (for a review, see Sedikides & Green, 2001). Therefore, distancing may influence affective components of the self-concept via its effects on emotional processes, making positive components of self-knowledge top of mind and lowering accessibility of more negative components in the moment.

In addition, distancing may influence self-evaluations via changes in appraisals. That is, beliefs about one's ability to overcome difficult situations plays a critical role in how one evaluates the self (Judge, Locke, & Durham, 1997; Tafarodi & Swann, 2001) and are consistently assessed in measures of self-esteem (Heatherton & Polivy, 1991) and self-efficacy (Sherer et al., 1982). Additionally, prior research has demonstrated that appraisals of situational resources are higher amongst those with high global self-esteem (Juth, Smyth, & Santuzzi, 2008). This indicates that knowledge about one's resources or the ability to cope with the demands of a specific negative event (i.e., greater challenge vs. threat appraisals) are directly linked to other positive aspects of the self-concept, and are likely to increase positive self-evaluations if activated. Alternatively, if one is to judge that their abilities and available coping resources are outweighed by the demands of the situation, they are likely to feel that they have less agency during the event, and thus lower feelings of self-efficacy and self-esteem in the moment (e.g., "inner self-esteem", Franks & Marolla, 1976). Therefore, distancing may influence affective components of the self-concept via its effects on appraisal processes, bringing to mind the individual's ability to cope with a stressor and effectively overcome a challenging situation.

Self-Perspective: Potential Implications for the Self-Concept

When engaging in introspection and reflecting on negative experiences, we may typically do so from an egocentric perspective, which is characterized by a first-person viewpoint and concrete construals. Therefore, in consideration of our discussion on the importance of context and situational factors, we can assume that if people default to this immersed perspective when experiencing or analyzing negative experiences, negative evaluations of the self may also increase.

We hypothesize that this effect might be mitigated if one takes a distanced perspective during introspection. For example, if the self is construed at a high (abstract) level, negative events may be less likely to influence and undermine positive self-views (Updegraff, Emanuel, Suh, & Gallagher, 2010). This argument is supported by prior empirical work that has demonstrated the effect of distancing on one's appraisal processes. More specifically, distanced (vs. immersed) self-talk has been linked to increases in challenge versus threat appraisals in anticipation of a future stressor, and those who distanced were also more confident and less nervous when performing a challenging task (Kross et al., 2014). Beyond verbal forms of distancing, temporal distancing, which involves mentally envisioning negative experiences from a broader, future time perspective, has been linked to less reactivity to stressful situations and greater appraisals of capability when it comes to coping with the demands of a stressor (Bruehlman-Senecal, Ayduk, & John, 2016). That is, when distancing, people tend to evaluate their abilities more positively relative to when they immerse. Therefore, these findings suggest that taking a distanced perspective on one's emotions while engaging in introspection might not only allow for adaptive emotion processing, but also protect or even promote positive evaluations of the self.

Overview of the Current Research

The present set of studies aimed to investigate these claims by examining if and how engaging in distanced relative to immersed forms of self-talk leads to shifts in the affective components of the self-concept, operationalized by measures of self-esteem. Based on the findings reviewed above, our overarching hypothesis was that, in addition to adaptive effects on emotion and appraisal processes, distancing (vs. immersing) might lead one to evaluate the self more positively and demonstrate higher self-esteem.

Across four experiments, we investigated how distanced self-talk affects implicit and explicit indices of self-esteem relative to immersed self-talk. Study 1 employed both implicit and explicit measures of self-esteem as an initial test of self-talk driven differences in self-views. Study 2 employed a more stringent paradigm that included measures of implicit self-esteem directly before and after the self-talk manipulation. Study 3 and 4 focused on distancing's effects on explicit self-esteem using between- (Study 3) and within-subject (Study 4) methodologies. In addition to our implicit and explicit measures of self-esteem, all studies included measures of challenge-threat appraisals as an indicator of situation specific self-views and measures of affect before and after the self-talk manipulation. In each study, we then evaluated whether self-talk induced changes in emotion or appraisals explained subsequent effects on self-esteem. Last, a meta-analysis (Study 5) examined the effect of distanced, relative to immersed, self-talk on our self-focused outcomes across all four studies.

Study 1

Study 1 examined how engaging in distanced versus immersed self-talk affected implicit and explicit feelings about the self. To test this, participants thought about an anxiety-provoking experience that they worry about happening in the future and then were asked to write about their thoughts regarding this event using either first or non-first-person pronouns. These written reflections were then coded for demand and resource expectations to measure challenge and threat appraisals. To assess self-views, we employed implicit and explicit measures: a modified version of the self-esteem IAT (Greenwald & Farnham, 2000) was used to test implicit attitudes towards the self, whereas more global, trait measures of self-esteem were used to capture explicit attitudes towards the self. These two constructs are indeed distinct (Greenwald & Banaji, 1995), with implicit attitudes towards the self being driven by more automatic processes relative to the more controlled, deliberate processes that influence explicit self-views. As a result, shifts in these attitudes may occur independent of one another (for review, see Grumm, Nestler, & von Collani, 2009). Thus, although we did not make a priori predictions regarding divergent self-talk related outcomes between these measures, we felt it was important to assess shifts in both the automatic and deliberate forms of self-esteem.

In consideration of prior work (e.g., Kross et al., 2014; Updegraff et al., 2010; Vess, Arndt, & Schlegel, 2011), we hypothesized that those who engaged distanced self-talk would display higher levels of self-esteem relative to those who engaged in immersed self-talk. Given the bidirectional nature of the relationship between global self-views like self-esteem and more domain-specific self-views, we reasoned that one's sense of their resources and ability to cope with the demands of their stressor might be a situationally-specific process that underlies their global self-views. Thus, as a potential mechanism, we examined the degree to which participants engaged in challenge relative to threat appraisals of their future stressor. We expected that those who engage in distanced self-talk would demonstrate greater challenge (relative to threat) appraisals of their stressors, which will help explain condition related increases in self-esteem.

Method

Participants

Participants were drawn from 2 samples. For Sample 1a, participants were recruited through Amazon Mechanical Turk in return for monetary compensation (n = 102, MTurk; M_{age} = 33.58 years, SD_{age} = 10.22; 49.02% female; 84.31% White/European American, 5.88% Asian/Asian American, 4.9% Black/African American, 3.92% Latino/Hispanic, and 0.98% Native American/Alaska Native). Sample 1b consisted of undergraduate students (n = 163) who completed the study in the lab in exchange for course credit (M_{age} = 20.52 years, SD_{age} = 1.8; 80.98% female; 46.63% Asian/Asian American, 22.09% White/European American, 11.66% Latino/Hispanic, 2.45% Middle Eastern, 1.23% Black/African American, 11.04% identified with multiple ethnicities, 4.29% identified with other ethnicities, and 0.61% declined to state).

Procedure and Materials.

Procedures and materials were identical across the 2 samples unless noted otherwise below. All zero-order correlations between variables can be found in the supplemental materials (Table S1).

Baseline Affect and Explicit Trait Self-Esteem.

After providing informed consent, all participants rated how they felt at that moment, from unhappy (1) to happy (9), using the Self-Assessment Manikin valence scale (Bradley & Lang, 1994). Participants also completed the Rosenberg Self-Esteem Scale (Rosenberg, 1965), indicating how strongly they agreed or disagreed with the items, from strongly disagree (1) to strongly agree (5). These baseline measures differed significantly by sample (affect: $F(1, 263) = 4.1$, $p = .04$; self-esteem: $F(1, 263) = 5.8$, $p = .02$) such that participants in Sample 1a reported more positive affect ($M = 6.5$, $SD = 1.53$) and higher baseline self-esteem ($M = 3.82$, $SD = 0.99$, $\alpha = .96$) than participants in Sample 1b (affect: $M = 6.12$, $SD = 1.48$; self-esteem: $M = 3.57$, $SD = 0.7$, $\alpha = .90$).

Future Anxiety-Provoking Experience and Self-Talk Task.

Next, participants were asked to think about an anxiety-provoking experience:

No matter how satisfied people are with their lives, there are times that they worry and experience anxiety about things that may go wrong in the future. Take a few moments right now to think about a specific future experience that you worry about happening to you from time to time. This could be as minor as worrying about failing an exam or more serious as having a terminal illness. Although it may be difficult, most people can usually come up with at least one potential future event that they worry about. Take your time as you try to do this.

Participants were then randomized into one of two conditions, immersed or distanced, and asked to understand why they felt the way they did while envisioning their future stressor using either first or non-first-person pronouns, respectively.

Participants in the immersed condition were told:

One of the things we're interested in in this study is the language people use to understand their feelings. Some people try to understand their feelings by thinking about themselves using first-person pronouns, so this is what we would like you to do. Please try to understand why you felt the way you did while envisioning your future stressor using the pronouns "I" and "my" as much as possible. In other words, ask yourself, "Why did I feel this way? What were the underlying causes and reasons for my feelings?"

Participants in the distanced condition were told:

One of the things we're interested in in this study is the language people use to understand their feelings. Some people try to understand their feelings by thinking about themselves using their own name and other non-first-person pronouns, so this is what we would like you to do. Please try to understand why you felt the way you did while envisioning your future stressor using the pronoun "you" and "[your own name]" as much as possible. In other words, if your name was Jane or Joe, you would ask yourself, "Why did Jane/Joe feel this way? What were the underlying causes and reasons for Jane's/Joe's feelings?"

Participants were given as much time as they needed to write down their reflections and were allowed to write as much or as little as they wished. The amount of time spent writing was automatically recorded by the survey software (Qualtrics, Provo, UT; Sample 1a: $M_{min} = 1.9$,

SD_{min} = 1.54; Sample 1b: M_{min} = 2.86, SD_{min} = 1.66). In addition, number of words written in each essay was calculated using Excel software (Sample 1a: M_{words} = 59.09, SD_{words} = 35.19; Sample 1b: M_{words} = 90.64, SD_{words} = 56.04). Tests of sample differences revealed that participants in Sample 1a wrote for less time ($F(1, 263) = 22.21$ $p < .0001$) and wrote fewer words ($F(1, 263) = 25.92$ $p < .0001$) than those in Sample 1b.

Implicit Self-Esteem.

The implicit association task was completed immediately after the self-talk task, and was adapted from the self-esteem IAT (Greenwald & Farnham, 2000). Participants were told to categorize self (e.g., “I”, “me”, “my”), other (e.g., “they”, “them”, “their”), positive (e.g., “loved”, “warmth”, “respected”), and negative words (e.g., “hated”, “lonely”, “stupid”) as quickly and as accurately as possible. The full word stimuli list can be found in the supplemental materials (Table S2). The task was comprised of 7 blocks: Block 1 contained practice trials consisting only of self and other words, while Block 2 contained practice trials consisting only of positive and negative words. Blocks 3 and 4 contained practice and test trials consisting of combined categories (20 practice and 40 test trials each). Block 5 contained an additional set of practice trials consisting of only self and other words, which presented these items in locations opposite to those in Block 1. Blocks 6 and 7 contained a second set of practice and test trials consisting of combined categories. Trials which contained combined categories required participants to either press one key for self and positive words and another key for other and negative words (i.e., compatible trials) or press one key for self and negative words and another key for other and positive words (i.e., incompatible trials). IAT effects were calculated using the improved scoring algorithm, which utilizes reaction time data from both practice and test trials (*D* scores; Greenwald, Nosek, & Banaji, 2003). Higher D scores represent stronger IAT effects, which indicate higher implicit self-esteem in our study.

In addition to response latencies, error rates were analyzed using the quadruple process model (quad model; Conrey, Sherman, Gawronski, Hugenberg, & Groom, 2005). The quad model is a multinomial model that uses the frequency of correct and incorrect responses on IAT trials to estimate the rate at which implicit associations are activated by IAT stimuli, as well as the rate at which activated associations are overcome by deliberate, controlled responses. This model does so by calculating probabilities for four distinct yet related processes: association activation, discriminability, overcoming bias, and guessing. Association activation (AC) reflects likelihood that IAT responses are driven by an association automatically activated by the stimulus, such as an association between the self and “good” items, whereas discriminability (D) is a more controlled process that reflects the probability of correct or incorrect response being detected. In cases where an automatic association and correct response conflict, the process of overcoming bias (OB) reflects the probability that the correct response will be made and that the automatic response will be overridden. Finally, the process of guessing (G) allows us to determine whether or not a response bias exists in the absence of automatic associations or correct response detection (e.g., right-handed participants pressing the right-sided key more quickly). Therefore, this process model can be used to discern whether response latencies on certain trial types (e.g., associating the self with negative stimuli and the other with positive stimuli) are indeed longer because the participant is taking more time and attempting to respond more accurately or, alternatively, because the more automatic association between the self and positive stimuli is active and driving responses.

Post-Manipulation Explicit Self-Esteem and Affect.

The Single-Item Self-Esteem Scale (Robins, Hendin, & Trzesniewski, 2001) was completed after the IAT and was used as a measure of post-manipulation explicit self-esteem. Participants responded to the item, "*I have high self-esteem*," with responses ranging from not very true of them (1) to very true of them (7). Subsequently, participants once again rated how they felt at the moment using the Self-Assessment Manikin valence scale (Bradley & Lang, 1994). Post-manipulation self-esteem ($F(1, 263) < 0.01$, $p = .99$; Sample 1a: $M = 4.69$, $SD = 1.84$; Sample 1b: $M = 4.69$, $SD = 1.61$) and affect ($F(1, 263) = 0.13$, $p = .72$; Sample 1a: $M = 6.04$, $SD = 1.78$; Sample 1b: $M = 5.96$, $SD = 1.61$) did not differ by sample.

Challenge-Threat Appraisals.

A single coder first revised all participants' written reflections so that they contained only first-person pronouns. Then, using a (1) not at all to (5) very much scale, five additional condition blind coders rated the participant reflections for resource (e.g., "Calm down, I have dealt with this before…") and demand statements (e.g., "I don't think I am prepared enough…"). In order to prevent confounding resource and demand construals with positive and negative affect statements respectively, coders were instructed to code for participants' thoughts about the situation, and not for their expressions of emotion (e.g., "I feel terrified…"). They were told that resource appraisals may include statements describing skills or information, such as knowledge or familiarity regarding how to deal with the stressor, and may also take the form of appraisals in which the participant gives advice (e.g., "just relax") or encouragement (e.g., "I can do it") to themselves. Alternatively, coders were told that demand appraisals may include statements that describe low levels of skill or information, such as a lack of knowledge or familiarity regarding how to deal with the stressor, and may also take the form of appraisals in which participant says they are unable to cope with or overcome the stressor (e.g., "I don't know how" or "I can't do this").

Interrater reliability was high for resource (Sample 1a: $\alpha = .91$, $M = 1.47$, $SD = 0.77$; Sample 1b: $\alpha = .92$, $M = 1.39$, $SD = 0.75$) and demand (Sample 1a: $\alpha = .73$, $M = 2.26$, $SD = 0.68$; Sample 1b: $\alpha = .75$, $M = 2.58$, $SD = 0.75$) statements. These statements were negatively correlated in both samples, although significant only in Sample 1b ($r = -.25$, $p = .01$; Sample 1a: $r = -.09$, $p = .39$). This suggests that these resource and demand expectations are relatively orthogonal. Following previous research (Blascovich & Tomaka, 1996; Kross et al., 2014), we created a challenge-to-threat ratio by dividing coded resource statements by coded demand statements; thus, higher scores on this index indicate greater challenge relative to threat appraisals. This ratio differed marginally by sample ($F(1, 263) = 3.03$, $p = .08$), such that participants in Sample 1a ($M = 0.74$, $SD = 0.57$) demonstrated greater challenge relative to threat appraisals to those in Sample 1b ($M = 0.62$, $SD = 0.53$).

Attention Checks and Data Quality Assurance.

We employed three attention checks throughout the task to ensure that participants were reading instructions and paying attention to the task (e.g., "I often think about following directions and will select slightly agree here" and "slightly agree" was presented as one of the answer options). Additionally, at the end of the study, participants were asked to disclose information about their participation by responding how much they agreed or disagreed with the following statements: "I was serious about this work while participating," "I dedicated my full attention to this work while participating," and "I answered all questions honestly." All participants were encouraged to respond honestly to these questions and were ensured that they would still be compensated regardless of their answers.

Results

Analytic Strategy.

Since the samples collected for Study 1 differed in terms of population characteristics (undergraduates vs. Mturkers), baseline measures of affect and self-esteem, self-talk essay lengths, and were run independently at different time points, we treated each sample as a separate study. Therefore, we first analyzed the data separately within each sample using one-way ANOVAs for each dependent variable, where self-talk condition (2: immersed vs. distanced self-talk) was included as the predictor.

Subsequently, estimates for condition effects from the within-sample analyses were used to conduct meta-analyses to summarize all of the data. We used a fixed-effects-model and followed the meta-analytic approach described by Harrer, Cuijpers, Furukawa, and Ebert (2019) using RStudio (RStudio Team, 2019). The immersed condition served as the reference group in all meta-analyses. With the exception of quad model analyses, all results are presented with descriptive and inferential statistics for each dependent variable by sample as well as meta-analytically.

Preliminary Analyses.

Exclusions.

In total, 44 participants (Sample 1a: $n_{\text{excluded}} = 6$, 5.88%; Sample 1b: $n_{\text{excluded}} = 38$, 23.3%) were excluded on a priori grounds because they either failed the attention checks or did not follow the writing prompt instructions correctly. This exclusion rate was similar to prior self-talk studies using manipulation checks (Kross et al., 2014). This left 96 participants in Sample 1a ($n_{\text{immersed}} = 50$; $n_{\text{distanced}} = 46$) and 125 in Sample 3b ($n_{\text{immersed}} = 69$; $n_{\text{distanced}} = 56$). Exclusion rates were higher in the distanced condition in Sample 1a ($\chi^2(1) = 4.22$, $p = .03$) but did not differ by condition in Sample 1b ($\chi^2(1) = 2.29$, $p = .13$).

Baseline Measures.

Participants did not differ by condition on baseline affect or trait explicit self-esteem (see Table 1). Meta-analyses revealed that the overall effect of condition on both baseline measures was small and non-significant.

Self-Talk Essay Time and Length.

Participants in Sample 1a differed by condition on the amount of time spent writing and the amount of text written during the self-talk task, such that participants in the distanced condition wrote more and for longer than those in the immersed condition (see Table 1). These effects were non-significant in Sample 1b. Meta-analyses revealed that the overall effect of condition on time spent writing, but not amount of text written, was significant. These analyses suggest that, across all participants, those in the distanced condition spent more time writing but did not write more text than those in the immersed condition.

Table 1

Study 1 Means, SDs, and Inferential Tests By Condition and Sample for Baseline Measures and Self-Talk Essays

	Self-Talk Condition		
Baseline Affect			
	Immersed	Distanced	Inferential Statistics
Sample 1a	6.56 (1.73)	6.43 (1.34)	$F(1, 94) = 0.16$, $p = .69$
Sample 1b	6.17 (1.59)	6.30 (1.22)	$F(1, 123) = 0.25$, $p = .62$
Weighted average	6.34 (0.19)	6.36 (0.07)	$h = .02$, 95% CI = [-0.25, 0.28], $z = 0.12$, $p = .91$
Baseline Explicit Trait Self-Esteem			
	Immersed	Distanced	Inferential Statistics
Sample 1a	3.81 (1.01)	3.88 (0.97)	$F(1, 94) = 0.11$, $p = .74$
Sample 1b	3.60 (0.67)	3.60 (0.72)	$F(1,123) < 0.01$, $p = .99$
Weighted average	3.69 (0.11)	3.73 (0.14)	$h = .03$, 95% CI = [-0.23, 0.29], $z = 0.22$, $p = .82$
Time Spent Writing			
	Immersed	Distanced	Inferential Statistics
Sample 1a	1.45 (1.26)	2.52 (1.68)	$F(1, 94) = 12.65$, $p = .0006$
Sample 1b	3.02 (1.76)	3.25 (1.63)	$F(1,123) = 0.59$, $p = .44$
Weighted average	2.36 (0.77)	2.92 (0.36)	$h = .38$, 95% CI = [0.11, 0.65], $z = 2.80$, $p = .005$
Number of Words Written			
	Immersed	Distanced	Inferential Statistics
Sample 1a	52.24 (32.80)	69.93 (36.16)	$F(1, 94) = 0.32$, $p = .01$
Sample 1b	99.91 (64.28)	94.91 (49.56)	$F(1,123) = 0.23$, $p = .63$
Weighted average	79.88 (23.53)	83.65 (12.43)	$h = .17$, 95% CI = [-0.10, 0.44], $z = 1.25$, $p = .21$

Note. Values given are means with standard deviations in parentheses and F-test results. Meta-analytic effect sizes were calculated using a fixed-effects-model and followed the meta-analytic approach described by Harrer and colleagues (2019) using RStudio (RStudio Team, 2019).

Main Analyses.

Post-Manipulation Implicit Self-Esteem.

D Scores. Participants in Sample 1a differed by condition on implicit self-esteem scores, such that participants in the distanced condition demonstrated significantly higher implicit self-esteem scores than those in the immersed condition (see Table 2). These effects remained significant ($F(1, 92) = 4.96$, $p = .03$) when controlling for baseline trait explicit self-esteem and time spent writing during the self-talk exercise, which were significantly related to implicit self-esteem (explicit self-esteem: $\beta = 0.13$, $t(94) = 2.72$, $p = .008$; time spent writing: $\beta = 0.14$, $t(94) = 2.86$, $p = .005$). However, although directionally consistent with Sample 1a, there was no significant effect of condition in Sample 1b. Nevertheless, meta-analyses revealed that the overall effect of condition on implicit self-esteem was significant. These analyses suggest that, across all participants, those in the distanced condition demonstrated higher implicit self-esteem during the implicit association task than those in the immersed condition.

Table 2

Study 1 Means, SDs, and Inferential Tests By Condition and Sample For Implicit Self-Esteem

	Implicit Self-Esteem (D scores)		
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 1a	0.42 (0.47)	0.63 (0.50)	$F(1, 94) = 4.49$, $p = .04$
Sample 1b	0.62 (0.44)	0.69 (0.39)	$F(1, 123) = 0.92$, $p = .34$
Weighted average	0.53 (0.10)	0.66 (0.03)	$h = .28$, 95% CI = [0.02, 0.55], $z = 2.08$, $p = .03$

Note. Values given are means with standard deviations in parentheses and F-test results. Meta-analytic effect sizes were calculated with the immersed group serving as the reference group.

Error Rates. The overall error rate for the IAT was 9.04%, which did not differ by sample ($F(1, 219) = .28$, $p = .59$; Sample 1a: 8.8%; Sample 1b: 9.2%) or condition in Sample 1a ($F(1, 94) < .01$, $p = .99$; immersed: 8.8%; distanced: 8.8%) or Sample 1b ($F(1, 123) = .05$, $p = .83$; immersed: 9.1%; distanced: 9.3%). In line with our above analyses, quad model analyses assessing condition differences were fit for each sample individually. Following the logic laid out by Clerkin, Fisher, Sherman, & Teachman (2014), we compared immersed versus distanced participants by first fitting a base model to the error rates observed for each group. In the base model, all parameters ($AC_{self\text{-}good}$, $AC_{other\text{-}bad}$, D, OB, and G) were allowed to vary, and fit was assessed by comparing each group's observed error rate against the expected error rate predicted by the quad model. Two measures were used to assess model fit for each group: 1) the chi-square goodness of fit test (χ^2) and, 2) the effect size Cohen's w. The chi-square goodness of fit test compares the observed correct and incorrect response frequencies to the expected response frequencies predicted by the model (p > .05 represents an acceptable fit). However, since chi-square is sensitive to sample size, proportionally small differences in frequencies can result in statistically significant chi square values in large samples (Field, Miles, & Field, 2012). This issue is especially applicable our aggregated data, which contains a large number of responses since each participant experienced 120 IAT trials. Because of this, it is generally recommended to use a second index to assess model fit, such as Cohen's w ($w \leq .05$ represents an acceptable fit), which takes into account higher response numbers.

The base model for Sample 1a suggested that the quad model fit the data well for the distanced ($\chi^2(1) = 7.47$, $p = .006$, $w = .04$) and immersed groups ($\chi^2(1) = 3.7$, $p = .05$, $w = .02$), as indicated by Cohen's w. In contrast, similar analyses in Sample 1b indicated that the quad model fit the data well for the distanced ($\chi^2(1) = 2.65$, $p = .10$, $w = .02$) but not immersed group ($\chi^2(1) = 41.05$, $p < .0001$, $w = .07$). However, because model fit was acceptable for all groups except the immersed group in Sample 1b, we proceeded with conducting parameter comparisons in both samples.

Estimates were generated for all parameters in these base models using maximum-likelihood estimation (MLE), such that the final estimates produced represent the relative amount that each process influenced participant responses throughout the self-esteem IAT (see Table 3 for best fitting parameter estimates). Next, to test whether self-talk condition drove differences in these processes, we constrained the model parameters of interest to be equal to each other (e.g., immersed $AC_{self\text{-}good}$ parameter set equal to distanced $AC_{self\text{-}good}$ parameter). Significant condition differences were identified when the constrained model fit the data less well relative to the base model (see Table 3 for changes in chi-square).

Tests comparing the quad model parameters between conditions within each sample revealed that association activation processes differed significantly by condition (see Table 1c for changes in chi-square). In both samples, responses made by participants in the distanced self-talk group were driven more strongly by the activation of automatic associations than those responses made by participants in the immersed self-talk group, as demonstrated by higher parameter estimates. This suggests that engaging in distanced self-talk elicited stronger associations between the self and positive stimuli and others and negative stimuli than did immersed self-talk, which underlies the observed condition differences in implicit self-esteem. Additionally, the parameter estimates for $AC_{self\text{-}good}$ and $AC_{other\text{-}bad}$ were similar in size, indicating that although automatic associations related to the self can be independent from those related to others, these two processes influenced responding similarly and likely reflect expected IAT effects (i.e., an automatic tendency to evaluate the self more positively than others).

Second, although conditions also significantly differed by discriminability processes in both samples, they did not consistently differ by overcoming bias processes. These results indicate that while participants in the distanced condition were able to detect the correct response more often than those in the immersed condition in Samples 1a and 1b, their responses to IAT stimuli were not driven by an effort to override any potential biases to respond positively about the self, as evidenced by lower overcoming-bias parameter estimates. For example, slower responses made by distanced participants when responding to incompatible trials (e.g., "self" and "bad" stimuli), and which could lead to stronger IAT effects and higher implicit self-esteem scores, were not driven by an effort to respond more accurately. Additionally, condition differences were marginal in both samples, but in opposite directions: that is, responses made by immersed participants in Sample 1a but distanced participants in Sample 1b may have been marginally driven by a bias towards a specific response key.

Post-Manipulation Explicit Self-Esteem.

Participants did not differ by condition on post-manipulation self-esteem (see Table 4) when controlling for baseline self-esteem, which significantly predicted post-manipulation self-esteem (Sample 1a: $\beta = 1.61$, $t(90) = 15.23$, $p < .0001$; Sample 1b: $\beta = 1.23$, $t(123) = 12.62$, $p < .0001$). Meta-analyses revealed that the overall effect of condition on post-manipulation self-esteem was small and non-significant. Together, these analyses suggest that participants who used distanced self-talk did not experience boosts in global self-esteem on an explicit level.

Table 3
Study 1 Implicit Self-Esteem Quadruple Process Model Parameter Estimates and Change in Chi-Square

Parameter	Comparison	Estimate		Change in Chi-Square
		Immersed	Distanced	
Sample 1a				
Association	Self-good	0.03	0.11	$\chi^2(1) = 15.26, p < .0001$
activation	Other-bad	0.06	0.13	$\chi^2(1) = 12.71, p < .0001$
Discriminability		0.84	0.88	$\chi^2(1) = 9.23, p = .002$
Overcoming bias		1.00	0.99	$\chi^2(1) = 0.02, p = .88$
Guessing		0.58	0.50	$\chi^2(1) = 3.80, p = .05$
Sample 1b				
Association	Self-good	0.07	0.13	$\chi^2(1) = 11.15, p = .0008$
activation	Other-bad	0.05	0.12	$\chi^2(1) = 15.02, p = .0001$
Discriminability		0.84	0.88	$\chi^2(1) = 9.67, p = .002$
Overcoming bias		1.00	0.87	$\chi^2(1) = 3.35, p = .07$
Guessing		0.52	0.58	$\chi^2(1) = 3.31, p = .07$

Note. Overall goodness of model fit: Sample 1a: $\chi^2(2) = 11.17$, $p = .004$, $w = .03$; Sample 1b: $\chi^2(2) = 43.70$, $p < .0001$, $w = .05$).

Post-Manipulation Affect.

In Sample 1a, participants' post-manipulation affect was higher and thus more positive in the immersed than in the distanced condition (see Table 4), controlling for baseline affect ($\beta = 0.83$, $t(90) = 14.28$, $p < .0001$). In contrast, this pattern was reversed in Sample 1b such that affect was more positive in the distanced than in the immersed group but this difference was not statistically significant (baseline affect: $\beta = 0.80$, $t(123) = 14.55$, $p < .0001$). Meta-analytically, the overall effect of condition on post-manipulation affect was small and non-significant. Together, these analyses suggest that distanced (vs. immersed) self-talk did not lead to reliable differences in the valence of participants' overall affect post-manipulation.

Coded Challenge-Threat Appraisals.

Participants differed marginally by condition on coder-rated challenge-threat appraisals in both samples (see Table 4). Meta-analyses revealed that the overall effect of condition on challenge-threat appraisals was significant. These analyses suggest that, across all participants, those in the distanced condition appraised their future stressor in more challenging relative to threatening[1] terms than those in the immersed condition.

[1] Resource and demand statements were also analyzed separately, which indicated that distanced participants wrote about their stressors with significantly more resource statements than those in the immersed condition (Sample 1a: $F(1, 94) = 7.25$, $p = .008$; immersed: $M = 1.25$, $SD = 0.46$; distanced: $M = 1.62$, $SD = 0.83$; Sample 1b: $F(1, 123) = 3.32$, $p = .07$; immersed: $M = 1.29$, $SD = 0.56$; distanced: $M = 1.54$, $SD = 0.99$; $h = .42$, 95% CI = [0.15, 0.69], $z = 3.08$, p = .002). Condition differences were not significant for demand statements (Sample 1a: $F(1, 94) = 1.14$, $p =$

Table 4

Study 1 Means, SDs, and Inferential Tests By Condition and Sample for Post-Manipulation Measures and Challenge-Threat Appraisals

	Post-Manipulation Explicit Trait Self-Esteem		
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 1a	4.64 (1.81)	4.8 (1.91)	$F(1, 89) = 0.61$, $p = .44$
Sample 1b	4.74 (1.50)	4.61 (1.81)	$F(1, 122) = 0.45$, $p = .50$
Weighted average	4.69 (0.05)	4.69 (0.10)	$h = -.01$, 95% CI = [-0.28, 0.26], $z = -0.07$, $p = .95$
	Post-Manipulation Affect		
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 1a	6.30 (1.85)	5.80 (1.69)	$F(1, 94) = 5.93$, $p = .02$
Sample 1b	5.88 (1.68)	6.11 (1.36)	$F(1, 123) = 1.74$, $p = .19$
Weighted average	3.69 (.11)	3.73 (0.14)	$h = -.04$, 95% CI = [-0.30, 0.23], $z = -0.26$, $p = .79$
	Coded Challenge-Threat Appraisals		
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 1a	0.62 (0.25)	0.79 (0.65)	$F(1, 94) = 2.84$, $p = .10$
Sample 1b	0.52 (0.33)	0.71 (1.63)	$F(1, 123) = 4.03$, $p = .05$
Weighted average	0.56 (0.05)	0.74 (0.04)	$h = .35$, 95% CI = [0.08, 0.62], $z = 2.58$, $p = .01$

Note. Values given are means with standard deviations in parentheses and F-test results. Meta-analytic effect sizes were calculated with the immersed group serving as the reference group. Higher numbers on post-manipulation affect indicate more positive and less negative affect.

Indirect Effect Analyses.

We next examined if challenge-threat appraisals explained significant variance in the effect of condition on implicit and explicit self-esteem, even though the latter effect was not significant. However, Rucker and colleagues (2011) suggest that in the absence of a significant total effect (*c* path; i.e., IV predicting DV), researchers are still permitted to assess mediation in the presence of significant *a* (i.e., IV predicting mediator) and *b* paths (i.e., mediator predicting DV when controlling for IV). Therefore, for each set of analyses, we tested the *b* paths (i.e., challenge-threat predicting implicit self-esteem and explicit self-esteem when controlling for condition). These analyses revealed that the effect of challenge-threat appraisals on implicit self-esteem (Sample 1a: $\beta = -0.07$, $t(93) = -1.33$, $p = .19$; Sample 1b: $\beta = 0.06$, $t(123) = 1.55$, $p = .13$) and explicit self-esteem (Sample 1a: $\beta = 0.03$, $t(88) = 0.31$, $p = .76$; Sample 1b: $\beta = -0.16$, $t(121) = -1.6$, $p = .11$) were non-significant in both samples. Therefore, due to non-significant *b* paths in both models, we did not proceed with mediation analyses.

Following similar logic, we next examined if changes in affect explained significant variance in the effect of condition on implicit and explicit self-esteem. In the case of explicit self-esteem, neither the *c* path (i.e., distanced self-talk predicting differences in explicit self-esteem) nor *a* path (i.e., meta-analyses indicate that distanced self-talk did not predict consistent differences in post-manipulation affect) were significant, so indirect effect analyses were not conducted. In the case of implicit self-esteem, we proceed with tests of the *b* path (i.e., post-manipulation affect predicting implicit self-esteem when controlling for condition as well as baseline affect and self-esteem). These analyses revealed that the effect of post-manipulation affect on implicit self-esteem was non-significant in both samples (Sample 1a: $\beta = 0.08$, $t(87) = 1.47$, $p = .15$; Sample 1b: $\beta = 0.08$, $t(120) = 1.33$, $p = .19$), and so indirect effect analyses were not conducted.

Discussion

In Study 1, we examined if and how distanced self-talk affects self-esteem. We predicted that those who engaged in distanced self-talk would display higher self-esteem than those who engaged in immersed self-talk. These predictions were supported by meta-analyses of our implicit data, an effect that was driven by activation of more automatic tendencies to evaluate the self more positively among participants who used distanced (vs. immersed) self-talk. We also predicted that those who engaged in distanced self-talk would appraise their stressors in more challenging, less threatening terms, which was supported by the meta-analytic findings. Unfortunately, this condition difference in appraisal processes did not explain the subsequent differences observed in implicit self-views. Additionally, condition did not predict differences in affect after the manipulation, and likewise, affect did not significantly predict changes in implicit self-esteem above and beyond condition and baseline measures.

Although we found support for self-talk related changes in implicit self-views, these findings were not corroborated by our explicit measures. Several explanations could explain this pattern of findings, the simplest of which being an ordering effect. Participants completed the implicit self-esteem IAT immediately after completing the self-talk exercise, where as the explicit self-esteem scale (Single-Item Self-Esteem Scale; Robins et al., 2001) was completed after the IAT. Therefore, it is plausible that the IAT itself served as a mild negative mood induction, by requesting that participants associate negative stimuli with the self on certain blocks. This is supported by our post-manipulation measures of affect, which were less positive than baseline affect measures and, overall, did not differ between conditions.

Additionally, Study 1 included a single-item to assess post-manipulation explicit self-esteem. Although the Single-Item Self-Esteem Scale has previously demonstrated high test-retest reliability and validity with other measures of trait self-esteem (Robins et al., 2001), internal consistency of a single-item measure cannot be calculated (e.g., coefficient alpha; Cronbach, 1951), and therefore, multi-item measures are generally preferred. Study 3 aims to address these limitations by using the present study's self-talk exercise and pre/post multi-item measures of explicit self-esteem, which are completed immediately before and after the exercise.

A third explanation for the present study's findings pertains to the distinct, yet related processes that underlie implicit and explicit attitudes. Grumm, Nestler, and von Collani (2009) suggest that implicit self-esteem relies on a more automatic processing system, drawing on activated associations in memory. This is in contrast to explicit self-esteem, which relies on a more controlled system and rational processing of self-relevant information. Thus, changes to associative knowledge in memory may affect implicit, but not explicit, self-esteem. With this in mind, it is possible that our distanced participants experienced a shift in the self-oriented associations that were active in recent memory when writing about their stressor. This is supported by our quad model analyses, which indicated that condition differences in implicit effects were driven by the activation of more automatic associations between the self and positive items over negative items. However, when answering the explicit and global measures of self-esteem, participants may have overridden these activated automatic associations. This possibility is supported by the high parameter estimates for overcoming bias observed during the implicit association task. Although this process did not drive the condition differences observed during the implicit task, the high estimates across all subjects indicate that attempts to overcome biases, which may include responding positively about the self, were highly active for the entire sample. Therefore, when given the time to respond more explicitly about the self, these more controlled processes may have driven participants' responses.

Replicating prior work by Kross and colleagues (2014), we demonstrated that distanced self-talk led individuals to appraise their stressors in more challenging relative to threatening terms compared to those who engaged in immersed self-talk. However, this change in appraisals did not mediate the observed condition effects on implicit self-esteem. Although this finding was not in line with our predictions, it is possible that these changes co-occurred independent of one another: for example, engaging in distanced self-talk may have led to broader changes in construal levels, which then lead to subsequent downstream changes in the way one thought and felt about the self.

Additionally, when we ran secondary analyses separately on resource and demand expectations (see Footnote 1), we found that the significant change we observed in the challenge-threat appraisal index was driven specifically by condition differences in resource statements. That is, those in the distanced (vs. immersed) condition perceived themselves to have greater ability to cope with their stressor but both groups perceived the stress to be equally demanding (see Bruehlman-Senecal et al., 2016 for a similar finding).

That distanced self-talk increased focus on one's resources is noteworthy because resource appraisals can be thought of as proxies for situation-specific (e.g., state) self-esteem. Expectations and beliefs about one's competence (i.e., ability to master new or overcome difficult situations) play an important role in evaluations of the self (Judge, Locke, & Durham, 1997; Tafarodi & Swann, 2001) and are routinely assessed in measures of self-esteem (Heatherton & Polivy, 1991) and self-efficacy (Sherer et al., 1982). Furthermore, prior research has demonstrated that appraisals of situational resources are higher amongst those with high global self-esteem (Juth, Smyth, & Santuzzi, 2008).

Although self-esteem can be broadly construed as a system of stable self-referent appraisals (McCrae & Costa, 1988), self-views may also fluctuate with one's appraisals of their own ability in a specific context (Gecas & Schwalbe, 1983; Heatherton & Polivy, 1991). That is, if one is to judge that their abilities and resources available to cope outweigh the demands of the situation, they are likely to feel that they have more agency and will be able to successfully navigate the stressful situation, leading to greater feelings of self-efficacy and self-esteem in the moment (Franks & Marolla, 1976). Therefore, increased appraisals of one's available resources such as coping ability may represent an alternative explicit measure of self-esteem that is more flexible, like implicit and state measures, than traditional global trait measures. In light of this point, significant differences in resource statements suggest distancing lead to higher levels of state self-esteem via measures that were more sensitive to self-talk than our global measure of trait self-esteem (i.e., the Single-Item Self-Esteem Scale; Robins et al., 2001).

In the present study, we did not assess implicit self-esteem at baseline, which presents a limitation to this design. Because we lacked a baseline measure, we cannot determine whether condition differences in the D score were the result of increases in self-esteem in distanced (vs. immersed) participants or, alternatively, decreases in self-esteem in participants who used immersed (vs. distanced) self-talk. More specifically, prior work has suggested that abstract construals are linked with more stable self-esteem and may protect the self in the face of negative feedback (Vess, Arndt, & Schlegel, 2011; Updegraff, Emanuel, Suh, & Gallagher, 2010). Therefore, it is possible that our distanced self-talk participants did not experience an increase in implicit self-esteem; instead, their self-esteem levels were buffered by taking a more abstract, distanced perspective while thinking about a negative, anxiety-provoking event. This buffering effect did not extend to our immersed participants, who maintained more concrete construals when thinking about their stressor. Nevertheless, we were unable to empirically differentiate between these two possibilities (i.e., self-esteem enhancing or buffering effects of distancing). Study 2 aimed to address these limitations by employing self-esteem IAT measures before and after the self-talk task.

Study 2

As previously stated, it is possible a buffering effect occurred in Study 1, whereby distanced self-talk protected against reductions in implicit self-esteem that ensue when thinking about the anxiety provoking event using immersed self-talk. Specifically, our distanced self-talk participants may not have experienced an increase in implicit self-esteem but were instead buffered against a reduction by taking a more distanced perspective while thinking about their anxiety-provoking event. Therefore, in Study 2, we aimed to capture implicit and explicit self-esteem prior to the completion of the self-talk task.

We used the IAT to measure self-esteem both pre- and post-manipulation because one, different measures of implicit self-esteem, such as the name-letter task and self-esteem IAT are not substantively correlated with each other (r = .08; Buhrmester, Blanton, & Swann, 2011), and two, the self-esteem IAT has good test-retest reliability (r = .69, Bosson, Swann, & Pennebaker, 2000; r = .52, Greenwald & Banaji, 2000). Finally, prior work investigating the impact of manipulations (e.g., therapeutic interventions) has successfully implemented the IAT task before and after the intervention to measure changes in implicit attitudes (see Clerkin et al., 2014).

In addition to the above measures of implicit self-esteem, we also employed four additional measures in order to gain insight into the potential mechanisms that might underlie any potential implicit self-esteem differences. More specifically, we examined the degree to which individuals recounted the details of the event relative to reconstrued them. Additionally, in Study 1, we coded for resource and demand expectations in participants essays but did not have relevant self-report items. Due to the labor-intensive nature of such coding and to explore if the findings replicate with self-report measures, in Study 2, we included questionnaire items on resource and demand expectations. Finally, in Study 1, we measured post-manipulation affect by a single item, which may not have high reliability. Additionally, this general affect measure did not directly assess the changes in negative emotion towards one's stressful event that are typically observed when self-distancing (e.g., Ayduk & Kross, 2008; Ayduk & Kross, 2010b). Therefore, in Study 2, we included multiple items to measure post-manipulation emotional reactivity and anxiety about participants' future stressor.

Method

Participants.

Participants were drawn from two samples. For Sample 2a, participants were recruited through Amazon Mechanical Turk in return for monetary compensation (*n* = 532, MTurk; M_{age} = 36.11 years, SD_{age} = 10.63; 45.3% female; 66.2% White/European American, 16.9% Black/African American, 8.5% Latino/Hispanic, 5.6% Asian/Asian American, 1.5 % American Indian/Alaska Native, 0.4% Middle Eastern, 0.2% Native Hawaiian/Pacific Islander, 0.4% identified with other ethnicities, and 0.4% declined to state their ethnicity). Sample 2b consisted of undergraduate students (*n* = 341) who completed the study online in exchange for course credit (M_{age} = 20.83 years, SD_{age} = 6.29; 80.1% female; 56.6% Asian/Asian American, 23.2% White/European American, 9.7% Latino/Hispanic, 1.76% Black/African American, 3.7% Middle Eastern, 0.6% Native Hawaiian/Pacific Islander, 0.3% American Indian/Alaska Native, 2.6% identified with other ethnicities, and 1.5% declined to state their ethnicity).

Procedure and Materials.

Procedures and materials were identical across the 2 samples unless noted otherwise below. All zero-order correlations between variables can be found in the supplemental materials (Table S3).

Baseline Affect and Explicit Trait Self-Esteem.

After providing informed consent, all participants rated how they felt at that moment, from unhappy (1) to happy (9), using the Self-Assessment Manikin valence scale (Bradley & Lang, 1994). Participants also completed the Rosenberg Self-Esteem Scale (Rosenberg, 1965), indicating how strongly they agreed or disagreed with the items, from strongly disagree (1) to strongly agree (7). These baseline measures differed significantly by sample (affect: $F(1, 865) = 23.23$, $p < .0001$; self-esteem: $F(1, 871) = 6.68$, $p = .01$) such that participants in Sample 2a reported more positive affect ($M = 6.97$, $SD = 1.69$) and higher baseline self-esteem ($M = 5.12$, $SD = 1.4$, $\alpha = .93$) than participants in Sample 2b (affect: $M = 6.42$, $SD = 1.55$; self-esteem: *M* = $M = 4.89$, $SD = 1.01$, $\alpha = .90$).

Future Anxiety-Provoking Experience and Self-Talk Task.

As described in Study 1, all participants were asked to think about an anxiety-provoking event, after which they were randomized into the first- or distanced conditions. Once again, participants were given as much time as they needed to write down their reflections and were allowed to write as much or as little as they wished. The amount of time spent writing was automatically recorded by the survey software (Qualtrics, Provo, UT; Sample 2a: M_{min} = 2.23, SD_{min} = 2.41; Sample 2b: M_{min} = 2.05, SD_{min} = 2.05). In addition, number of words written in each essay was calculated using Excel software (Sample 2a: M_{words} = 53.36, SD_{words} = 37.82; Sample 2b: M_{words} = 60.25, SD_{words} = 46.25). Tests of sample differences revealed that participants in Sample 2a wrote fewer words than those in Sample 2b ($F(1, 871) = 5.58$, $p = .02$); there were no significant differences in amount of time spent writing ($F(1, 871) = 1.37$, $p = .24$).

Pre- and Post-Manipulation Implicit Self-Esteem.

The self-esteem IAT (described in Study 1) was completed immediately before and after the self-talk task. The order of blocks containing compatible and incompatible trials was counterbalanced across participants, and to minimize practice effects, block order was also counterbalanced within-participants. As in Study 1, IAT effects were calculated using *D* scores

(Greenwald et al., 2003) and error rates were analyzed using the quadruple process model (Conrey et al., 2005).

Post-Manipulation Measures

Next, participants provided self-reports of their emotions, via measures of SAM-affect valence, emotional reactivity and anticipated anxiety as well as appraisal processes via measures of recounting and reconstrual and challenge and threat.

Emotion Measures.

Post-Manipulation Affect. After the second IAT, participants once again rated how they felt at the moment using the Self-Assessment Manikin valence scale with higher scores indicating more positive affect (Bradley & Lang, 1994). This measure differed significantly by sample ($F(1, 867) = 18.86$, $p < .0001$), such that participants in Sample 2a reported more positive affect ($M = 6.07$, $SD = 2$) than those in Sample 2b ($M = 5.51$, $SD = 1.63$) after the self-talk exercise.

Emotional Reactivity. In order to assess current emotional reactivity to the anxiety provoking event, participants responded to the following two statements on a scale from strongly disagree (1) to strongly agree (7): 1) “Thinking about the event in this study made me feel negatively (e.g., anxious, nervous, apprehensive)” and 2) “As I thought about the event, my emotions and physical reactions to these future concern(s) were intense.” Ratings on these items were averaged to index emotional reactivity (Sample 2a: $r = .61$, $p < .0001$; Sample 2b: $r = .59$, $p < .0001$), which did not differ significantly by sample ($F(1, 871) = 1.80$, $p = .18$; Sample 2a: $M = 5.04$, $SD = 1.49$; Sample 2b: $M = 4.91$, $SD = 1.33$).

Anticipated Anxiety. Participants were also asked to answer questions assessing anticipated anxiety: “If you were to face this stressor tomorrow, how stressed or anxious would you feel about it?” Responses were made on a scale from (1) not very stressed/anxious to (7) extremely stressed/anxious, which did not differ significantly by sample ($F(1, 866) = 0.77$, $p = .38$; Sample 2a: $M = 4.65$, $SD = 1.29$; Sample 2b: $M = 4.73$, $SD = 1.14$).

Appraisal Measures.

Recounting versus Reconstrual. To operationalize recounting, participants responded to the following item: “My thoughts focused on the specific chain of events (e.g., sequence of events that would unfold; what can really happen; what I would say, feel or do) as I thought about the experience in this study.” To assess reconstrual, participants responded to the following three items: “As I imagined and thought about this future experience during the study I had a realization that led me to experience a sense of closure about my fears and concerns about this event,” “As I imagined and thought about this future experience during the study, I had a realization that caused me to think differently about it,” and “Thinking about the future event during the study led me to have a clearer and more coherent understanding of my emotions surrounding the possibility of this event.” Ratings on these items were averaged to index reconstrual (Sample 2a: $\alpha = .83$; Sample 2b: $\alpha = .83$). All responses were made on a scale from strongly disagree (1) to strongly agree (7). We then created a difference score by subtracting reconstruing from recounting, with higher scores indicating greater recounting relative to reconstrual. This index differed marginally by sample ($F(1, 868) = 2.85$, $p = .09$), such that those in Sample 2a reported greater recounting relative to reconstrual ($M = 1.33$, $SD = 1.69$) relative to those in Sample 2b ($M = 1.14$, $SD = 1.63$).

Challenge-Threat Appraisals. Participants were asked to imagine facing their stressor tomorrow and answer the following questions to assess resources and demands, respectively: “How well do you think you will be able to cope with this stressor?” and, “How demanding do you expect that this stressor will be?" Responses were made on a scale from 1 to 7, with higher scores indicating more resources or more demands. These ratings were negatively correlated in both samples (Sample 2a: $r = -.51$, $p < .0001$; Sample 2b: $r = -.38$, $p < .0001$). Following previous research (Blascovich & Tomaka, 1996; Kross et al., 2014), we created a challenge-to-threat ratio by dividing resource ratings by demand ratings; thus, higher scores on this index indicate greater challenge relative to threat appraisals. Scores on this index differed significantly by sample $F(1, 860) = 6.6$, $p = .01$), such that participants in Sample 2a reported higher challenge relative to threat appraisals ($M = 0.82$, $SD = 0.81$) than participants in the Sample 2b ($M = 0.69$, $SD = .63$).

Attention Checks and Data Quality Assurance.

Similar to Study 1, each sample included two attention checks throughout the task and three quality assurance questions at the end of the study.

Results

Analytic Strategy.

Due to similar sample differences observed in Study 1, we once again treated each sample as a separate study and then conducted meta-analyses to summarize all of the data. With the exception of quad model analyses, all results are presented with descriptive and inferential statistics for each dependent variable by sample as well as meta-analytically.

Preliminary Analyses.

Exclusions.

In total, 172 participants (Sample 2a: $n_{\text{excluded}} = 112$, 21.05%; Sample 2b: $n_{\text{excluded}} = 60$, 17.59%) were excluded on a priori grounds because they either failed the attention checks or did not follow the writing prompt instructions correctly. This left 420 participants in Sample 2a ($n_{\text{immersed}} = 208$; $n_{\text{distanced}} = 212$) and 281 in Sample 2b ($n_{\text{immersed}} = 148$; $n_{\text{distanced}} = 133$). Exclusion rates did not differ between immersed and distanced conditions in either sample (Sample 2a: $\chi^2(1) = 0.22$, $p = .63$; Sample 2b: $\chi^2(1) = 0.03$, $p = .85$).

Self-Talk Essay Time and Length.

Participants in Sample 2a differed by condition on the amount of time spent writing but not the amount of text written during the self-talk task, such that participants in the distanced condition wrote for longer than those in the immersed condition (see Table 5). These effects were non-significant in Sample 2b. Consistent with Study 1, meta-analyses revealed that the overall effect of condition on time spent writing, but not amount of text written, was significant. These analyses suggest that, across all participants, those in the distanced condition spent more time writing but did not write more text than those in the immersed condition.

Baseline Measures.

Baseline Affect and Explicit Trait Self-Esteem. Participants did not differ by condition on baseline affect but did differ by baseline explicit self-esteem (see Table 5). Meta-analyses revealed that the overall effect of condition on baseline measures of affect was small and non-significant, but the effect of condition on self- esteem was significant, such that participants in the distanced condition reported overall higher baseline explicit self-esteem than those in the immersed condition.

Table 5

Study 2 Means, SDs, and Inferential Tests By Condition and Sample for Baseline Measures and Self-Talk Essays

	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Time Spent Writing			
Sample 2a	2.22 (2.79)	2.64 (2.26)	$F(1, 418) = 2.84$, $p = .09$
Sample 2b	1.93 (1.29)	2.21 (1.89)	$F(1, 279) = 2.11$, $p = .15$
Weighted average	2.10 (0.14)	2.47 (0.21)	$h = .17$, 95% CI = [0.02, 0.32], $z = 2.22$, $p = .02$
Number of Words Written			
Sample 2a	61.63 (33.15)	63.16 (37.64)	$F(1, 418) = 0.19$, $p = .66$
Sample 2b	65.33 (40.51)	59.90 (33.90)	$F(1,279) = 1.47$, $p = .23$
Weighted average	63.17 (1.82)	61.90 (1.58)	$h = -.03$, 95% CI = [-0.18, 0.12], $z = -0.42$, $p = .67$
Baseline Affect			
Sample 2a	6.38 (1.67)	6.91 (1.65)	$F(1, 418) = 0.37$, $p = .54$
Sample 2b	6.36 (1.50)	6.57 (1.52)	$F(1, 279) = 1.40$, $p = .24$
Weighted average	6.62 (0.22)	6.78 (0.16)	$h = .09$, 95% CI = [-0.06, 0.24], $z = 1.21$, $p = .23$
Baseline Explicit Trait Self-Esteem			
Sample 2a	5.17 (1.40)	5.36 (1.51)	$F(1, 418) = 1.81$, $p = .18$
Sample 2b	4.83 (1.01)	5.11 (1.00)	$F(1, 279) = 5.34$, $p = .02$
Weighted average	5.03 (0.18)	5.26 (0.12)	$h = .19$, 95% CI = [0.04, 0.34], $z = 2.49$, $p = .01$
Baseline Implicit Self-Esteem (D scores)			
Sample 2a	0.49 (0.46)	0.56 (0.48)	$F(1, 373) = 2.06$, $p = .15$
Sample 2b	0.66 (0.43)	0.66 (0.43)	$F(1, 272) < 0.01$, $p = .97$
Weighted average	0.56 (0.08)	0.60 (0.05)	$h = .09$, 95% CI = [-0.07, 0.24], $z = 1.12$, $p = .26$

Note. Values given are means with standard deviations in parentheses and F-test results. Meta-analytic effect sizes were calculated with the immersed group serving as the reference group.

Baseline Implicit Self-Esteem.

D Scores. Participants did not differ by condition on baseline implicit self-esteem as measured by D scores (see Table 5). Meta-analyses revealed that the overall effect of condition on implicit self-esteem was small and non-significant.

Error Rates. The overall error rate for the baseline IAT was 9.13%, which differed by sample ($F(1, 647) = 28.2$, $p < .0001$; Sample 2a: 7.9%; Sample 2b: 10.8%), such that those in Sample 2a made fewer errors, but not by condition in Sample 2a ($F(1, 373) = 0.48$, $p = .49$; immersed: 8.1%; distanced: 7.6%) or Sample 2b ($F(1, 272) = 0.20$, $p = .66$; immersed: 11%; distanced: 10.6%). In line with our above analyses, quad model analyses assessing baseline condition differences were fit for each sample individually. As described in Study 1, we compared immersed versus distanced participants by first fitting a base model, all parameters ($AC_{self\text{-}good}$, $AC_{other\text{-}bad}$, D, OB, and G) were allowed to vary, to the error rates observed for each group. The base models for Sample 2a (immersed: $\chi^2(1) = 1.32$, $p = .25$, $w = .01$; distanced: $\chi^2(1) = 3.28$, $p = .07$, $w = .01$) and Sample 2b (immersed: $\chi^2(1) = 20.71$, $p < .0001$, $w = .03$; distanced: $\chi^2(1) = 16.97$, $p < .0001$, $w = .03$) suggest that the base model fit the data well, as indicated by Cohen's w ($\leq .05$).

Next, we assessed condition differences by constraining model parameters of interest to be equal to each other (see Table 6 for best fitting parameter estimates and changes in chi-square). These test revealed that, at baseline, discriminability and overcoming bias processes differed significantly by condition in the Sample 2a, such that baseline IAT responses in the distanced (vs. immersed) self-talk group were driven by more controlled processes and attempts to choose the correct response, whereas the IAT responses in the immersed self-talk group were likely driven by attempts to overcome bias and respond correctly. Due to these condition and sample differences during the baseline IAT, post-self-talk IAT scores were analyzed and reported separately for each sample.

Table 6

Study 2 Baseline Implicit Self-Esteem Quadruple Process Model Parameter Estimates and Change in Chi-Square

Parameter	Comparison	Estimate		Change in Chi-Square
		Immersed	Distanced	
Sample 2a				
Association	Self-good	0.07	0.06	$\chi^2(1) = 1.30$, $p = .25$
activation	Other-bad	0.07	0.07	$\chi^2(1) = 0.09$, $p = .77$
Discriminability		0.87	0.88	$\chi^2(1) = 8.82$, $p = .003$
Overcoming bias		1.00	0.69	$\chi^2(1) = 13.69$, $p = .0002$
Guessing		0.54	0.57	$\chi^2(1) = 1.79$, $p = .18$
Sample 2b				
Association	Self-good	0.10	0.10	$\chi^2(1) = 0.01$, $p = .92$
activation	Other-bad	0.09	0.09	$\chi^2(1) = 0.05$, $p = .82$
Discriminability		0.82	0.83	$\chi^2(1) = 1.55$, $p = .21$
Overcoming bias		1.00	0.93	$\chi^2(1) = 0.67$, $p = .41$
Guessing		0.52	0.53	$\chi^2(1) = 0.09$, $p = .76$

Note. Overall goodness of model fit: Sample 2a: $\chi^2(2) = 4.61$, $p = .10$, $w = .01$; Sample 2b: $\chi^2(2) = 37.73$, $p < .0001$, $w = .03$).

Main Analyses.

Post-Manipulation Implicit Self-Esteem.

D Scores. To test our buffering hypothesis, which suggests that distanced self-talk protects against reductions in implicit self-esteem that ensue when thinking about an anxiety provoking event using immersed self-talk, we calculated implicit self-esteem change scores for each participant by subtracting baseline implicit self-esteem from post-manipulation self-esteem scores. Thus, more positive scores on this index indicated greater increases in implicit self-esteem post-self-talk relative to baseline.

Participants did not differ by condition on implicit self-esteem change scores in either sample (see Table 7). Meta-analyses revealed that the overall effect of condition on changes in implicit self-esteem was small and non-significant, suggesting that, relative to immersed self-talk, those who distanced did not change their implicit self-views in meaningful ways.

Table 7

Study 2 Changes in Implicit Self-Esteem (D scores)

	Post-Manipulation Implicit Self-Esteem (D scores)		
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 1a	-0.04 (0.52)	-0.08 (0.50)	$F(1, 368) = 0.70$, $p = .40$
Sample 1b	-0.14 (0.35)	-0.11 (0.47)	$F(1, 265) = 0.20$, $p = .65$
Weighted average	-0.08 (0.05)	-0.10 (0.01)	$h = -.03$, 95% CI = [-0.18, 0.13], $z = -0.35$, $p = .73$

Note. Values given are means with standard deviations in parentheses and F-test results. Meta-analytic effect sizes were calculated with the immersed group serving as the reference group.

Error Rates. The overall error rate for the post-manipulation IAT was 10.4%, which differed by sample ($F(1, 637) = 26.69$, $p < .0001$; Sample 2a: 9.1%; Sample 2b: 12.1%), such that, similar to the baseline IAT, those in Sample 2a made fewer errors. This effect remained significant when controlling for error rates during the baseline IAT ($p = .007$). Error rates did not differ by condition in Sample 2a ($F(1, 370) = 1.62$, $p = .20$; immersed: 9.6%; distanced: 8.6%) or Sample 2b ($F(1, 265) = 0.04$, $p = .85$; immersed: 12%; distanced: 12%), and these effects remained non-significant when controlling for baseline IAT error rates (Sample 2a: $p = .30$; Sample 2b: $p = .89$).

Since our main analyses of interest aimed to test changes in implicit associations between pre- and post-manipulation measures of self-esteem, we conducted error analyses by comparing error rates within condition for each sample. We chose to do this for 2 reasons: first, the quad model relies on frequency rates for judgments made during the IAT, which are calculated by summing the total number of trials for each category (i.e., self, other, positive, negative) where correct or incorrect judgments were made. However, since participants were generally less accurate on the post-manipulation IAT, the total number of correct trials for each category was lower than the corresponding values obtained in the baseline IAT. This suggested that calculating change scores for error rates would not be suitable, as negative values cannot be used to calculate quad model parameters. Second, the quad model cannot compare more than 2 parameters simultaneously[2], which prohibits us from comparing changes in error rates between conditions. Therefore, quad model analyses were fit for each sample individually within condition.

To assess changes in the automatic and controlled processes that drive IAT responses, we first fitted a base model to the error rates observed for each group's baseline and post-manipulation IAT. Effect size indices for the base model for Sample 2a suggested that the quad model fit the data well for both IATs in the immersed (baseline: $\chi^2(1) = 1.32$, $p = .25$, $w = .01$; post-manipulation: $\chi^2(1) = 8.06$, $p = .004$, $w = .02$) and distanced groups (baseline: $\chi^2(1) = 3.28$, $p = .07$, $w = .01$; post-manipulation: $\chi^2(1) = 6.6$, $p = .01$, $w = .02$). Similarly, the base model for Sample 2b suggested that the quad model fit the data well for both IATs in the immersed (baseline: $\chi^2(1) = 20.76$, $p < .0001$, $w = .03$; post-manipulation: $\chi^2(1) = 28.07$, $p < .0001$, $w = .04$) and distanced groups (baseline: $\chi^2(1) = 16.97$, $p < .0001$, $w = .03$; post-manipulation: $\chi^2(1) = 6.24$, $p = .01$, $w = .02$).

Next, we assessed changes in IAT processes by constraining model parameters of interest to be equal to each other (see Table 8 for best fitting parameter estimates and changes in chi-square). These test revealed that, for both distanced and immersed participants in Samples 2a and 2b, changes in IAT responses were largely driven by decreases in discriminability processes. Representing a controlled process, decreases in discriminability have been experimentally linked to increases in task difficulty (e.g., stimuli appearing for less time on a screen) and are theoretically driven by differences in participant motivation and ability to attend to the task (see Conrey et al., 2005). That is, if participants are more distracted or are lower in cognitive capacity due to fatigue, they will likely have lower discriminability scores. Therefore, it's possible that our participants, who demonstrated decreased accuracy on the post-manipulation IAT relative to baseline, either found the second IAT to be more challenging (due to the counterbalancing of trial order within-subject) or were fatigued while completing the IAT for a second time after thinking about their future stressor.

Although no changes in the activation of automatic associations between self and positive items occurred for distanced or immersed participants in Sample 2a, those in Sample 2b experienced changes in this process. Specifically, relative to the baseline IAT, responses during the post-manipulation IAT were driven less strongly by the activation of automatic associations between self and positive items in both conditions, although this effect was particularly strong amongst those in the distanced condition. Taken together with our above findings on implicit self-esteem scores, this pattern of results suggests that overall, distanced participants did not experience direct changes to their self-esteem levels or buffering of their self-esteem relative to immersed participants.

Post-Manipulation Measures.

Emotion Measures.

Post-Manipulation Affect. Participants did not differ by condition on post-manipulation affect (see Table 9). These effects remained non-significant when controlling for baseline affect (Sample 2a: $p = .77$; Sample 2b: $p = .26$), which significantly predicted post-manipulation affect (Sample 2a: $\beta = 1.25$, $t(418) = 17.66$, $p < .0001$; Sample 2b: $\beta = 1.08$, $t(279) = 14.7$, $p < .0001$). Meta-analyses revealed that the overall effect of condition on post-manipulation affect was small and non-significant.

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[2] Quad model analyses were conducted using the Excel spreadsheet template created by Conrey et al. (2005).

Table 8

Study 2 Changes in IAT Quadruple Process Model Parameter Estimates

Parameter	Comparison	Estimate		Change in Chi-Square
		Baseline	Post-Manipulation	
Sample 2a, *Immersed*				
Association	Self-good	0.07	0.06	2.16
activation	Other-bad	0.07	0.08	2.08
Discriminability		0.87	0.84	19.02 ***
Overcoming bias		1.00	0.88	2.16
Guessing		0.54	0.51	2.20
Sample 2a, *Distanced*				
Association	Self-good	0.06	0.05	0.54
activation	Other-bad	0.07	0.07	0.72
Discriminability		0.88	0.86	14.76 ***
Overcoming bias		0.69	0.81	1.35
Guessing		0.57	0.55	0.98
Sample 2b, *Immersed*				
Association	Self-good	0.10	0.08	3.71 †
activation	Other-bad	0.09	0.08	0.52
Discriminability		0.82	0.79	17.84 ***
Overcoming bias		1.00	1.00	0.00
Guessing		0.52	0.53	0.07
Sample 2b, *Distanced*				
Association	Self-good	0.10	0.06	12.05 ***
activation	Other-bad	0.09	0.09	0.10
Discriminability		0.83	0.79	20.69 ***
Overcoming bias		0.93	1.00	0.34
Guessing		0.53	0.51	0.94

Note. Overall goodness of model fit: Sample 2a, immersed: $\chi^2(2) = 9.38$, $p = .009$, $w = .01$; Sample 2a, distanced: $\chi^2(2) = 9.88$, $p = .007$, $w = .01$; Sample 2b, immersed: $\chi^2(2) = 48.82$, $p < .0001$, $w = .04$); Sample 2b, distanced: $\chi^2(2) = 23.21$, $p < .0001$, $w = .03$).

† $p < 0.10$, *** $p \leq 0.001$.

Emotional Reactivity. Participants did not differ by condition on post-manipulation measures of emotional reactivity in either sample (see Table 9), and meta-analyses revealed that, although the effect was in the theoretically expected direction (lower reactivity amongst distanced vs. immersed participants), the overall effect of condition on these outcomes was small and non-significant.

Anticipated Anxiety. Participants did not differ by condition on post-manipulation measures of anticipated anxiety in either sample (see Table 9), and meta-analyses revealed that the overall effect of condition on anxiety was small and non-significant.

Appraisal Measures.

Recounting versus Reconstrual. Participants differed by condition on post-manipulation measures of recounting versus reconstrual in Sample 2a (see Table 9), such that those who used distanced self-talk reported greater reconstrual relative to recounting when compared to their immersed peers. These effects were not significant in Sample 2b. Meta-analyses revealed that although the overall effect of condition on recounting versus reconstrual was small and non-significant, the effect was in the theoretically expected direction, such that distanced participants reported less recounting relative to reconstrual than their immersed peers.

Table 9
Study 2 Means, SDs, and Inferential Tests By Condition and Sample for Outcome Measures

	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Post-Manipulation Affect			
Sample 2a	5.78 (1.92)	5.82 (1.90)	$F(1, 418) = 0.03, p = .86$
Sample 2b	5.36 (1.58)	5.68 (1.70)	$F(1, 279) = 2.66, p = .10$
Weighted average	5.61 (0.21)	5.77 (0.07)	$h = .09$, 95% CI = [-0.06, 0.24], $z = 1.16, p = .24$
Emotional Reactivity			
Sample 2a	5.06 (1.44)	4.87 (1.55)	$F(1, 418) = 1.61, p = .21$
Sample 2b	4.95 (1.37)	4.88 (1.33)	$F(1, 279) = 0.18, p = .67$
Weighted average	5.01 (0.05)	4.88 (0.01)	$h = -.09$, 95% CI = [-0.24, 0.05], $z = -1.25, p = .21$
Anticipated Anxiety			
Sample 2a	4.57 (1.29)	4.76 (1.30)	$F(1, 417) = 2.59, p = .11$
Sample 2b	4.76 (1.15)	4.81 (1.06)	$F(1, 276) = 0.12, p = .73$
Weighted average	4.65 (0.10)	4.78 (0.02)	$h = .11$, 95% CI = [-0.04, 0.26], $z = 1.42, p = .16$
Recounting vs. Reconstrual			
Sample 2a	1.73 (1.71)	1.38 (1.67)	$F(1, 418) = 4.50, p = .03$
Sample 2b	1.25 (1.66)	1.31 (1.68)	$F(1, 278) = 0.08, p = .78$
Weighted average	1.55 (0.24)	1.35 (0.04)	$h = -.11$, 95% CI = [-0.26, 0.04], $z = -1.46, p = .15$
Challenge-Threat Appraisals			
Sample 2a	0.77 (0.83)	0.76 (0.90)	$F(1, 418) = 0.02, p = .89$
Sample 2b	0.64 (0.54)	0.63 (0.57)	$F(1, 276) < 0.01, p = .95$
Weighted average	0.72 (0.07)	0.71 (0.06)	$h = -.01$, 95% CI = [-0.16, 0.14], $z = -0.14, p = .89$

Note. Values given are means with standard deviations in parentheses and F-test results. Meta-analytic effect sizes were calculated with the immersed group serving as the reference group.

Anticipated Anxiety. Participants did not differ by condition on post-manipulation measures of anticipated anxiety in either sample (see Table 9), and meta-analyses revealed that the overall effect of condition on anxiety was small and non-significant.

Appraisal Measures.

Recounting versus Reconstrual. Participants differed by condition on post-manipulation measures of recounting versus reconstrual in Sample 2a (see Table 9), such that those who used distanced self-talk reported greater reconstrual relative to recounting when compared to their immersed peers. These effects were not significant in Sample 2b. Meta-analyses revealed that although the overall effect of condition on recounting versus reconstrual was small and non-significant, the effect was in the theoretically expected direction, such that distanced participants reported less recounting relative to reconstrual than their immersed peers.

Challenge-Threat Appraisals. Participants did not differ by condition on post-manipulation measures of challenge-threat appraisals[3] in either sample (see Table 9), and meta-analyses revealed that the overall effect of condition on this outcome was small and non-significant.

Indirect Effect Analyses.

Since estimates for the *c* path (i.e., distanced self-talk predicting differences in explicit self-esteem) and *a* path (i.e., distanced self-talk predicting differences in appraisal or emotion processes) were non-significant, indirect effect analyses were not conducted.

Discussion

In Study 2, we attempted to replicate implicit self-esteem effects observed in Study 1 as well as address limitations that prohibited a clear understanding of distancing's effect on implicit self-esteem. To accomplish this, we included the same self-esteem implicit association test before and after a self-talk manipulation. However, despite this adjustment, the present study did not replicate Study 1's findings and no differences in implicit self-esteem were observed between those who used immersed or distanced self-talk.

Several explanations for this pattern of findings are plausible. First, it is possible that the design of our task challenged participants in unanticipated ways, obscuring any small but present effects of self-talk on implicit self-esteem. Since both IATs were completed within the same experimental session, we aimed to reduce the influence of practice effects by counterbalancing the order of compatible and incompatible IAT trials within-participants between baseline and post-manipulation measures. However, error rate analyses revealed that this methodology not only prohibited practice effects from forming, but also may have hindered performance on the second IAT. This was evidenced by higher error rates and lower discriminability scores on post-manipulation measures of implicit self-esteem in both conditions and samples. Therefore, we recommend that future studies keep the order of IAT trials consistent for all participants before and after manipulations in order to more clearly discern IAT effects.

Second, it is also possible that distancing influences implicit self-esteem via mechanisms

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[3] Resource and demand ratings were also analyzed separately, which indicated that distanced participants did not differ from immersed participants on resource (Sample 2a: $F(1, 415) = 0.02$, $p = .90$; immersed: $M = 2.98$, $SD = 1.63$; distanced: $M = 3.00$, $SD = 1.60$; Sample 2b: $F(1, 278) = 0.05$, $p = .82$; immersed: $M = 2.57$, $SD = 1.37$; distanced: $M = 2.60$, $SD = 1.40$; $h = .02$, 95% CI = [-0.13, 0.18], $z = 0.24$, p = .81) or demand ratings (Sample 2a: $F(1, 418) = 1.07$, $p = .30$; immersed: $M = 4.86$, $SD = 1.22$; distanced: $M = 4.98$, $SD = 1.18$; Sample 2b: $F(1, 278) = 0.17$, $p = .68$; immersed: $M = 4.78$, $SD = 1.16$; distanced: $M = 4.83$, $SD = 1.09$; $h = .08$, 95% CI = [-0.07, 0.23], $z = 1.06$, p = .29).

that were untested in the present study. For example, a self-distanced perspective on one's emotions has consistently been shown to lead one to recount the details of the emotional event less and reconstrue them more, increase appraisals of challenge relative to threat, and ultimately feel less emotionally reactive and anxious about the event (e.g., Ayduk & Kross, 2010a; Kross et al., 2005; Kross & Ayduk, 2008; Kross & Ayduk, 2009; Kross et al., 2011; Kross et al., 2012; Kross et al. 2014). However, in the present study, participants who self-distanced did not report differences in appraisal or emotion processes relative to those who took an immersed perspective while thinking about their future stressor. Therefore, our findings did not meet the criteria necessary for testing indirect effects on implicit self-esteem via changes in appraisal or emotion processes.

Third, it is plausible that distanced self-talk does not influence implicit self-views. Although the pattern of condition effects in Study 1 was consistent across samples and significant at the meta-analytic level, the overall effects on implicit self-esteem were small. Additionally, Study 1 did not include baseline measures of implicit self-esteem, which made it difficult to determine the nature or stability of the observed changes in self-views. To account for this, Study 2 recruited a larger sample size and included measures of implicit self-esteem directly before and after the self-talk task, which allowed for a more stringent test of our hypotheses.

Taken together with the present study's findings, it is plausible that although taking a distanced self-view may influence appraisal and emotion processes in other paradigms, this practice generally does not influence the way one automatically evaluates the self. To discern whether this pattern of findings extends to more deliberate evaluations of the self, and also address measurement limitations previously identified in Study 1, the remaining studies focus exclusively on explicit self-esteem using between- and within-subject methodologies.

Study 3

Study 3 aimed to address the observed discrepancy between explicit and implicit self-esteem findings in Study 1. In Study 1, no explicit self-esteem differences were observed between immersed and distanced participants. However, explicit self-esteem was measured following the IAT task, raising the possibility that this null effect could be due to the order in which implicit and explicit measures were administered. Additionally, Study 1 only captured a single-item to assess post-manipulation explicit self-esteem. Although the Single-Item Self-Esteem Scale has previously demonstrated high test-retest reliability and validity with other measures of trait self-esteem (Robins et al., 2001), internal consistency of a single-item measure cannot be calculated (e.g., coefficient alpha; Cronbach, 1951), and therefore, multi-item measures are generally preferred. Thus, in Study 3, we incorporated several measures of explicit self-esteem right after the self-talk exercise in three separate samples to assess whether distancing impacts explicit self-esteem in the theoretically expected manner when it is assessed immediately following the manipulation. As in Studies 1 and 2, trait explicit self-esteem measures were also included before the self-talk manipulation to be able to discern changes in self-esteem as a function of distancing manipulations.

In addition to the above measures of explicit self-esteem, we also employed the same four additional emotion and appraisal measures used in Study 2 in order to gain insight into the potential mechanisms that might underlie any potential explicit self-esteem differences.

Method

Participants

Participants were drawn from three samples. For Sample 3a, participants were recruited through Amazon Mechanical Turk in return for monetary compensation (n = 224, MTurk; M_{age} = 34.63 years, SD_{age} = 10.66; 46.43% female; 73.21% White/European American, 12.95% Asian/Asian American, 6.25% Latino/Hispanic, 5.36% Black/African American, 1.79% Native American/Alaska Native, and .45% identified with other ethnicities). The remaining two samples were composed of undergraduates who received course credit for their participation. Sample 3b consisted of undergraduate students (n = 270) who completed the study online as part of a larger department-wide prescreening survey (M_{age} = 18.68 years, SD_{age} = 1; 69.26% female; 53.70% Asian/Asian American, 22.59% White/European American, 14.44% Latino/Hispanic, 4.07% Middle Eastern, 1.11% Black/African American, 0.37% Native American/Alaska Native, 1.11% identified with multiple ethnicities, and 2.59% identified with other ethnicities). Sample 3c (n = 270) also included undergraduates (from a different semester than those in Sample 3b) who completed the study online outside of the prescreening survey (M_{age} = 20.76 years, SD_{age} = 2.23; 71.11% female; 57.04% Asian/Asian American, 19.63% White/European American, 14.07% Latino/Hispanic, 5.19% Middle Eastern, .37% Black/African American, 1.48% identified with multiple ethnicities, .37% identified with other ethnicities, and 1.85% declined to state their ethnicity).

Procedure and Materials.

Procedures and materials were identical across the 3 samples unless noted otherwise below. All zero-order correlations between variables can be found in the supplemental materials (Table S4).

Baseline Affect and Explicit Trait Self-Esteem.

After providing informed consent, all participants rated how they felt at that moment, from unhappy (1) to happy (9), using the Self-Assessment Manikin valence scale (Bradley & Lang, 1994), which did not significantly differ by sample ($F(2, 761) = 1.6$, $p = .20$; Sample 3a: $M = 6.33$, $SD = 1.51$; Sample 3b: $M = 6.17$, $SD = 1.63$; Sample 3c: $M = 6.08$, $SD = 1.56$).

Participants also completed the Rosenberg Self-Esteem Scale (Rosenberg, 1965) on a 5-point scale (1 = strongly disagree, 5 = strongly agree) in Samples 3a and 3b and on a 7-point scale (1 = strongly disagree, 7 = strongly agree) in Sample 3c. To allow comparisons across samples and with other measures, ratings on the 5-point scale were transformed into ratings on a 7-point scale. Self-esteem differed significantly by sample ($F(2, 760) = 4.62$, $p = .01$) such that participants in Sample 3a reported higher baseline self-esteem ($M = 5.03$, $SD = 1.12$, $\alpha = .94$) than participants in Sample 3b ($M = 4.82$, $SD = .89$, $\alpha = .91$) and Sample 3c ($M = 4.73$, $SD = 1.00$, $\alpha = .90$). Post hoc contrast tests of sample differences can be found in the supplemental materials (Table S6).

Future Anxiety-Provoking Experience Task and Self-Talk Task.

As described in Study 1, all participants were asked to think about an anxiety-provoking event, after which they were randomized into the immersed or distanced conditions. The amount of time spent writing was automatically recorded by the survey software (Qualtrics, Provo, UT), which differed significantly by sample ($F(2, 761) = 5.41$, $p = .005$; Sample 3a: $M_{min} = 2.36$, $SD_{min} = 3.48$; Sample 3b: $M_{min} = 3.78$, $SD_{min} = 7.16$; Sample 3c: $M_{min} = 2.73$, $SD_{min} = 3.37$). In addition, number of words written in each essay was calculated using Excel software, which differed significantly by sample ($F(2, 761) = 3.04$, $p = .05$; Sample 3a: $M_{words} = 59.28$, $SD_{words} = 39.53$; Sample 3b: $M_{words} = 67.49$, $SD_{words} = 61.74$; Sample 3c: $M_{words} = 58.03$, $SD_{words} = 37.27$). Post hoc contrasts of sample differences in the amount of time spent writing and words written are provided in the supplemental materials (Table S6).

Post-Manipulation State Explicit Self-Esteem.

Post-manipulation explicit self-esteem items differed by sample, but all samples included a subset of items from the Heatherton State Self-Esteem Scale (Heatheron & Polivy, 1991). Similar to baseline explicit trait self-esteem, state self-esteem items were completed on a 5-point scale (1 = strongly disagree, 5 = strongly agree) in Samples 3a and 3b and on a 7-point scale (1 = strongly disagree, 7 = strongly agree) in Sample 3c. To allow comparisons across samples and with other measures, ratings on the 5-point scale were transformed into ratings on a 7-point scale. Samples 3a and 3b also included the Single-Item Self-Esteem Scale, where responses ranged from not very true of me (1) to very true of me (7) (Robins, Hendin, & Trzesniewski, 2001). All explicit self-esteem items were administered directly after participants completed the self-talk task. To make use of all available data, all explicit self-esteem items within each sample were averaged to create a composite score of state self-esteem, which differed significantly by sample ($F(2, 761) = 29.34$, $p < .0001$). All post-manipulation self-esteem items by sample (Table S5) along with post hoc contrast tests of sample differences in post-manipulation explicit self-esteem can be found in the supplemental materials (Table S6).

Sample 3a. A subset of 14 items from the Heatherton State Self-Esteem Scale as well as the Single-Item Self-Esteem Scale were included. All 15 items were averaged to create a single measure of post-manipulation self-esteem ($M = 4.95$, $SD = 1.25$, $\alpha = .93$).

Sample 3b. Responses to a subset of 7 items from the Heatherton State Self-Esteem Scale as well as the Single-Item Self-Esteem Scale were averaged to index self-esteem ($M = 4.29$, $SD = 1.28$, $\alpha = .90$).

Sample 3c. A subset of 4 items from the Heatherton State Self-Esteem Scale ($M = 4.1$, $SD = 1.31$, $\alpha = .86$) were administered to assess explicit self-esteem. This sample did not include the Single-Item Self-Esteem Scale.

Post-Manipulation Measures.

Next, participants provided self-reports of their emotions, via measures of emotional reactivity and anticipated anxiety, as well as appraisal processes, via measures of recounting and reconstrual and challenge and threat. All contrast tests of sample differences for these items are provided in the supplemental materials (Table S6).

Emotion Measures.

Emotional Reactivity. To operationalize emotional reactivity, participants responded to the same 2 items described in Study 2 using the same 7-point scale, which differed significantly by sample ($F(2, 760) = 11.29$, $p < .0001$; Sample 3a: $M = 4.42$, $SD = 1.7$, $r = .64$, $p < .0001$; Sample 3b: $M = 4.34$, $SD = 1.42$, $r = .58$, $p < .0001$; Sample 3c: $M = 4.88$, $SD = 1.15$, $r = .38$, $p < .0001$).

Anticipated Anxiety. To operationalize anticipated anxiety, participants responded to the same item described in Study 2 using the same 7-point scale, which differed significantly by sample ($F(2, 758) = 4.72$, $p = .009$; Sample 3a: $M = 5.74$, $SD = 1.41$; Sample 3b: $M = 5.53$, $SD = 1.5$; Sample 3c: $M = 5.89$, $SD = 1.26$).

Appraisal Measures.

Recounting versus. Reconstrual. To operationalize appraisals during the self-talk task, participants in all samples responded to the same 3 items to assess reconstrual and a single item to assess recounting (see Study 2 for item descriptions) using the same 7-point scale. Ratings on reconstrual items were again averaged to index reconstrual (Sample 3a: $\alpha = .82$; Sample 3b: $\alpha = .84$; Sample 3c: $\alpha = .81$), and a difference score was created by subtracting reconstruing from recounting, with higher scores indicating greater recounting relative to reconstrual. This difference score differ significantly by sample ($F(2, 653) = 3.87$, $p = .02$; Sample 3a: $M = 1.62$, $SD = 1.94$; Sample 3b: $M = 1.06$, $SD = 1.87$; Sample 3c: $M = 1.28$, $SD = 1.76$).

Challenge-Threat Appraisals. To operationalize challenge and threat appraisals, participants responded to the same items described in Study 2 using the same 7-point scale. These ratings were negatively correlated in all three samples (Sample 3a: $r = -.35$, $p < .0001$; Sample 3b: $r = -.59$, $p < .0001$; Sample 3c: $r = -.54$, $p < .0001$), suggesting that higher ratings of resources predicted relatively lower ratings of demands. Challenge-to-threat ratios were created by dividing resource ratings by demand ratings; thus, higher scores on this index indicate greater challenge relative to threat appraisals, which differed marginally by sample ($F(2, 759) = 3.00$, $p = .05$; Sample 3a: $M = .82$, $SD = 1.03$; Sample 3b: $M = .66$, $SD = 1.10$; Sample 3c: $M = .84$, $SD = .66$).

Attention Checks and Data Quality Assurance.

Similar to Study 2, each sample included two attention checks throughout the task and three quality assurance questions at the end of the study.

Results

Analytic Strategy.

Due to similar sample differences observed in Study 1 and 2, we once again treated each sample as a separate study and then conducted meta-analyses to summarize all of the data. All results are presented with descriptive and inferential statistics for each dependent variable by sample as well as meta-analytically.

Preliminary Analyses.

Exclusions.

In total, 161 participants (Sample 3a: $n_{\text{excluded}} = 20$, 8.9%; Sample 3b: $n_{\text{excluded}} = 64$, 23.7%; Sample 3c: $n_{\text{excluded}} = 77$, 28.5%) were excluded on a priori grounds because they either failed the attention checks or did not follow the writing prompt instructions correctly. This left 204 participants in Sample 3a ($n_{\text{immersed}} = 94$; $n_{\text{distanced}} = 110$), 206 in Sample 3b ($n_{\text{immersed}} = 109$; $n_{\text{distanced}} = 97$), and 193 sample 3c ($n_{\text{immersed}} = 98$; $n_{\text{distanced}} = 95$). Exclusion rates did not differ by condition in any of our samples (Sample 3a: $\chi^2(1) = 0.51$, $p = .47$; Sample 3b: $\chi^2(1) = 0.85$, $p = .36$; Sample 3c: $\chi^2(1) = 0.18$, $p = .67$).

Baseline Affect and Explicit Trait Self-Esteem.

Participants did not differ by condition on baseline affect or explicit trait self-esteem (see Table 10). Meta-analyses revealed that the overall effect of condition on baseline measures of affect and self-esteem was small and non-significant.

Self-Talk Essay Time and Length.

Participants in Sample 3a differed by condition on the amount of time spent writing but not the amount of text written during the self-talk task, such that participants in the distanced condition wrote for longer than those in the immersed condition (see Table 10). These effects

Table 10
Study 3 Means, SDs, and Inferential Tests By Condition and Sample for Baseline Measures and Self-Talk Essays

			Baseline Affect
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 3a	6.38 (1.55)	6.24 (1.49)	$F(1, 202) = 0.47$, $p = .49$
Sample 3b	6.17 (1.68)	6.16 (9.26)	$F(1, 204) < .01$, $p = .97$
Sample 3c	6.11 (1.43)	6.03 (1.56)	$F(1, 191) = 0.14$, $p = .71$
Weighted average	6.22 (0.11)	6.15 (0.08)	$h = -.05$, 95% CI = [-0.21, 0.11], $z = -0.63$, $p = .53$
			Baseline Explicit Trait Self-Esteem
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 3a	5.09 (1.37)	5.00 (1.39)	$F(1, 202) = 0.21$, $p = .65$
Sample 3b	4.85 (1.13)	4.80 (0.98)	$F(1, 204) = 0.12$, $p = .73$
Sample 3c	4.80 (1.13)	4.78 (1.15)	$F(1, 191) = 0.01$, $p = .91$
Weighted average	4.91 (0.12)	4.87 (0.10)	$h = -.04$, 95% CI = [-0.20, 0.12], $z = -0.53$, p = .60
			Time Spent Writing
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 3a	1.77 (1.20)	2.97 (4.70)	$F(1, 202) = 5.81$, $p = .02$
Sample 3b	3.18 (4.48)	3.78 (5.76)	$F(1, 204) = 0.71$, $p = .40$
Sample 3c	2.77 (3.93)	2.79 (2.73)	$F(1, 191) < 0.01$, $p = .96$
Weighted average	2.60 (0.59)	3.17 (0.42)	$h = .16$, 95% CI = [-0.005, 0.32], $z = 1.90$, $p = .06$
			Number of Words Written
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 3a	64.69 (37.92)	61.17 (40.36)	$F(1, 202) = 0.41$, $p = .52$
Sample 3b	74.70 (57.50)	64.90 (54.72)	$F(1, 204) = 1.56$, $p = .21$
Sample 3c	58.32 (33.29)	61.14 (34.99)	$F(1, 191) = 0.33$, $p = .57$
Weighted average	66.24 (6.86)	62.36 (1.75)	$h = -.06$, 95% CI = [-0.22, 0.10], $z = -0.77$, $p = .44$

Note. Values given are means with standard deviations in parentheses and F-test results. Meta-analytic effect sizes were calculated with the immersed group serving as the reference group.

were non-significant in Samples 3b and 3c. Consistent with Study 1 and 2, meta-analyses revealed that the overall effect of condition on time spent writing, but not amount of text written, was significant. These analyses suggest that, across all participants, those in the distanced condition spent more time writing but did not write more text than those in the immersed condition. Overall, this pattern is consistent with the idea that it took people longer to write essays in the distanced (vs. immersed) condition due to the unfamiliarity of the instructions but they did not necessarily engage less or more with the task.

Nevertheless, we ran two types of analyses to rule out the possibility that condition differences in time spent writing might explain condition effects on any of our outcomes of interest. First, time spent writing was uncorrelated with post-manipulation statement self-esteem (p's > .30), recounting versus reconstrual (p's > .65), emotional reactivity (p's > .58), anticipated anxiety (p's > .31), or challenge-threat appraisals (p's > .25) in any sample. Second, controlling for time spent in the main analyses reported below did not change the significance of any of the results. We did not run parallel analyses on the number of words written since there were no condition differences in any sample. Therefore, these variables are not discussed further.

Main Analyses.

Post-Manipulation Explicit Self-Esteem.

Participants did not differ by condition on post-manipulation self-esteem (see Table 11) when controlling for baseline self-esteem, which significantly predicted post-manipulation self-esteem (Sample 3a: $\beta = 0.89$, $t(202) = 14.06$, $p < .0001$; Sample 3b: $\beta = 0.84$, $t(204) = 12.06$, $p < .0001$; Sample 3c: $\beta = 0.94$, $t(191) = 12.74$, $p < .0001$). Meta-analyses revealed that the overall effect of condition on post-manipulation self-esteem was small and non-significant. Together, these analyses suggest that participants who used distanced self-talk did not experience boosts in global self-esteem on an explicit level.

Post-Manipulation Measures.

Emotion Measures.

Emotional Reactivity. Participants did not differ by condition on post-manipulation measures of emotional reactivity (see Table 11) when controlling for baseline affect, which was significantly related to emotional reactivity in all 3 samples (Sample 3a: $\beta = -0.40$, $t(201) = -3.41$, $p = .0008$; Sample 3b: $\beta = -0.30$, $t(204) = -3.02$, $p = .003$; Sample 3c: $\beta = -0.17$, $t(191) = -2.13$, $p = .03$). Meta-analyses revealed that the overall effect of condition on emotional reactivity was small and non-significant. Together, these analyses suggest that participants who used distanced self-talk did not experience changes in emotional reactivity to their stressor relative to those who used immersed self-talk.

Anticipated Anxiety. Participants did not differ by condition on post-manipulation measures of anticipated anxiety (see Table 11) when controlling for baseline affect, which was significantly related to anxiety in all 3 samples (Sample 3a: $\beta = -0.34$, $t(201) = -3.62$, $p = .0004$; Sample 3b: $\beta = -0.22$, $t(204) = -2.20$, $p = .03$; Sample 3c: $\beta = -0.23$, $t(191) = -2.76$, $p = .006$). Meta-analyses revealed that the overall effect of condition on anticipated anxiety was small and non-significant. Together, these analyses suggest that participants who used distanced self-talk did not experience changes in anxiety about their stressor relative to those who used immersed self-talk.

Table 11

Study 3 Means, SDs, and Inferential Tests By Condition and Sample for Outcome Measures

	Post-Manipulation Explicit Self-Esteem		
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 3a	4.94 (1.23)	4.96 (1.30)	$F(1, 201) = 0.01$, $p = .92$
Sample 3b	4.26 (1.30)	4.21 (1.30)	$F(1, 203) = 0.13$, $p = .72$
Sample 3c	4.18 (1.52)	4.02 (1.25)	$F(1, 190) = 1.18$, $p = .28$
Weighted average	4.45 (0.34)	4.42 (0.41)	$h = -.02$, 95% CI = [-0.18, 0.14], $z = -0.27$, $p = .78$
	Emotional Reactivity		
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 3a	4.48 (1.68)	4.49 (1.70)	$F(1, 201) < 0.01$, $p = .99$
Sample 3b	4.28 (1.49)	4.55 (1.40)	$F(1, 203) = 1.88$, $p = .17$
Sample 3c	5.00 (1.08)	4.89 (1.19)	$F(1, 190) = 0.47$, $p = .49$
Weighted average	4.58 (0.31)	4.63 (0.18)	$h = .03$, 95% CI = [-0.14, 0.21], $z = 0.36$, $p = .72$
	Anticipated Anxiety		
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 3a	5.75 (1.30)	5.89 (1.40)	$F(1, 201) = 0.51$, $p = .48$
Sample 3b	5.58 (1.39)	5.74 (1.50)	$F(1, 203) = 0.68$, $p = .41$
Sample 3c	6.06 (1.22)	6.04 (1.09)	$F(1, 190) = 0.01$, $p = .91$
Weighted average	5.79 (0.20)	5.89 (0.12)	$h = .04$, 95% CI = [-0.12, 0.20], $z = 0.51$, $p = .61$
	Recounting vs. Reconstrual		
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 3a	1.64 (2.07)	1.76 (1.88)	$F(1, 105) = 0.09$, $p = .76$
Sample 3b	0.97 (2.02)	1.33 (1.75)	$F(1, 203) = 2.01$, $p = .16$
Sample 3c	1.44 (1.87)	1.49 (1.81)	$F(1, 190) = 0.03$, $p = .86$
Weighted average	1.27 (0.28)	1.50 (0.17)	$h = .10$, 95% CI = [-0.08, 0.27], $z = 1.10$, $p = .27$
	Challenge-Threat Appraisals		
	Self-Talk Condition		
	Immersed	Distanced	Inferential Statistics
Sample 3a	0.76 (0.79)	0.76 (0.95)	$F(1, 201) < 0.01$, $p = .99$
Sample 3b	0.84 (1.00)	0.73 (1.01)	$F(1, 203) = 0.62$, $p = .43$
Sample 3c	0.60 (0.59)	0.59 (0.46)	$F(1, 190) = 0.04$, $p = .83$
Weighted average	0.74 (0.10)	0.69 (0.07)	$h = -.04$, 95% CI = [-0.20, 0.12], $z = -0.45$, $p = .65$

Note. Values given are means with standard deviations in parentheses and F-test results, controlling for baseline explicit self-esteem or affect. Meta-analytic effect sizes were calculated with the immersed group serving as the reference group.

Appraisal Measures.

Recounting versus Reconstrual. Participants did not differ by condition on post-manipulation measures of recounting versus reconstrual (see Table 11) when controlling for baseline affect which was significantly related to these processes in the Sample 3b (Sample 3a: β = -0.19, $t(106) = -1.00$, $p = .32$; Sample 3b: $\beta = -0.50$, $t(204) = -3.92$, $p = .0001$; Sample 3c: β = -0.18, $t(191) = -1.39$, $p = .17$). Meta-analyses revealed that the overall effect of condition on recounting versus reconstrual was small and non-significant. Together, these analyses suggest that participants who used distanced self-talk did not experience changes in recounting versus reconstrual processing relative to those who used immersed self-talk.

Challenge-Threat Appraisals. Participants did not differ by condition on post-manipulation measures of challenge-threat appraisals[4] (see Table 11) when controlling for baseline affect, which was significantly related to appraisals in all 3 samples (Sample 3a: β = 0.18, $t(201) = 3.01$, $p = .003$; Sample 3b: $\beta = 0.13$, $t(204) = 1.93$, $p = .05$; Sample 3c: $\beta = 0.12$, $t(191) = 3.31$, $p = .001$). Meta-analyses revealed that the overall effect of condition on challenge-threat appraisals was small and non-significant. Together, these analyses suggest that participants who used distanced self-talk did not experience changes in challenge-threat appraisals about their stressor relative to those who used immersed self-talk.

Indirect Effect Analyses.

Since estimates for the *c* path (i.e., distanced self-talk predicting differences in explicit self-esteem) and *a* path (i.e., distanced self-talk predicting differences in appraisal or emotion processes) were non-significant, indirect effect analyses were not conducted.

Discussion

In Study 3, we addressed limitations in Study 1 that prohibited a clear understanding of the relationship between self-distancing and explicit self-views. To address the argument that an ordering effect resulted in Study 1's null findings, explicit self-esteem items were included directly after the self-talk manipulation. However, despite this adjustment, the present study did not yield significant differences in explicit self-esteem between those who used immersed or distanced self-talk.

Furthermore, Study 3 did not replicate prior work with regards to emotion and appraisal processes. More specifically, it has been demonstrated in several published studies (Ayduk & Kross, 2010b; Kross et al., 2005; Kross & Ayduk, 2008; Kross & Ayduk, 2009; Kross et al., 2011; Kross et al., 2012) that a self-distanced perspective on one's emotions leads one to recount the details of the emotional event less and reconstrue them more and in turn feel less emotional reactive and anxious about the event. However, in the current set of studies, only findings from Sample 2a were consistent with this pattern. Additionally, distanced self-talk has previously been

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[4] Resource and demand ratings were also analyzed separately, which indicated that distanced participants rated their resources marginally lower than those in the immersed condition (Sample 3a: $F(1, 200) = 0.85$, $p = .36$; immersed: $M = 3.77$, $SD = 1.92$; distanced: $M = 3.53$, $SD = 1.82$; Sample 3b: $F(1, 203) = 1.61$, $p = .21$; immersed: $M = 3.50$, $SD = 1.72$; distanced: $M = 3.20$, $SD = 1.73$; Sample 3c: $F(1, 190) = 0.02$, $p = .88$; immersed: $M = 3.02$, $SD = 1.54$; distanced: $M = 3.05$, $SD = 1.59$; $h = -.15$, 95% CI = [-0.31, 0.01], $z = -1.87$, p = .06). Participants did not differ by condition on demand ratings (Sample 3a: $F(1, 200) = 0.06$, $p = .80$; immersed: $M = 5.91$, $SD = 1.24$; distanced: $M = 5.96$, $SD = 1.54$; Sample 3b: $F(1, 203) = 1.60$, $p = .21$; immersed: $M = 5.58$, $SD = 1.50$; distanced: $M = 5.84$, $SD = 1.41$; Sample 3c: $F(1, 190) = 0.13$, $p = .72$; immersed: $M = 6.02$, $SD = 1.31$; distanced: $M = 5.96$, $SD = 1.18$; $h = .05$, 95% CI = [-0.11, 0.21], $z = 0.56$, p = .57).

demonstrated to increase self-reported appraisals of challenge relative to threat when thinking about a future stressor (Kross et al. 2014), which was replicated in our Study 1. However, this finding failed to replicate in Study 3, as well as in Study 2.

There are two major limitations of Study 3 that should be addressed. First, although each individual sample utilized multiple items of explicit self-esteem, only two scale items of post-manipulation self-esteem items were used consistently in all 3 samples. This made comparisons across samples less straightforward and decreased the clarity by which we could judge distancing's effect on explicit self-esteem. Second, although the overall sample size was initially large, after exclusions, the individual samples consisted of approximately 100 participants per condition. Given that we expected smaller effects regarding changes in explicit self-esteem, our between-subjects design may simply have lacked sufficient power to detect changes in explicit outcomes. Therefore, if distanced self-talk does indeed positively influence explicit self-views relative to immersed self-talk, this effect should be easier to detect in a within-subject design, which maximizes statistical power.

Study 4

Study 4 aimed to address the limitations pertaining to study design and sample size that may have influenced explicit self-esteem, appraisal, and emotion outcomes in Study 3. To do this, we generated a within-subjects self-talk paradigm, which was adapted from a self-talk procedure previously employed by Moser and colleagues (2017). In our paradigm, participants first recalled and visualized upsetting personal experiences, which were then randomly paired with immersed and distanced self-talk trials as well as a control trial, which included no specific instructions to engage in self-talk or introspection. Immediately after completing each trial, participants provided ratings on the same explicit self-esteem, appraisal, and emotion outcomes throughout the study.

Study 4's design diverges from our previous studies in two ways that were meant to yield more robust and stringent tests of our hypotheses. First, all previous studies employed global trait self-esteem measures (Rosenberg, 1965) before self-talk manipulations. This baseline measure was then used to assess changes in self-esteem as a function of immersed versus distanced instructions. However, because these were all trait measures that asked participants how they generally evaluated themselves, they may not have completely captured how participants felt about themselves specifically at the start of each study. In contrast, Study 4 measured state self-esteem levels right after control trials. In this sense, our baseline measure of self-esteem served as a more stringent as well as a sensitive baseline measure by which to compare distanced versus immersed self-talk effects on self-esteem.

Second, unlike previous studies that relied on between-subjects designs, Study 4 utilized a within-subjects design to manipulate self-talk (i.e., participants visualized one of their upsetting experiences in each trial). Within-subjects designs are particularly useful in experimental paradigms because participants serve as their own controls. Therefore, Study 4's design provided us with more statistical power to detect the potential impact of distanced versus immersed self-talk on explicit self-esteem.

Method

Participants

Participants ($N = 399$) were undergraduate students who completed the study online as part of a larger survey on individual differences in emotion regulation. All participants received course credit for their participation (M_{age} = 18.99 years, SD_{age} = 4.48; 71.93% female; 55.39% Asian/Asian American, 21.55% White/European American, 9.77% Latino/Hispanic, 5.51% Middle Eastern, 1.75% Black/African American, 0.75% Native American/Alaska Native, 2.76% identified with other ethnicities, and 1.25% declined to state their ethnicity).

Procedure and Materials.

All zero-order correlations between variables can be found in the supplemental materials (Table S7).

Baseline Affect.

After providing informed consent, participants rated how they felt at the present moment using the Positive and Negative Affect Scale (PANAS; Watson et al., 1988). Participants provided ratings on 10 emotion items using a 5-point likert scale, from (1) very slightly or not at all to (5) extremely. Items of negative valence (α = 0.90, M = 1.73, SD = .73) were subsequently averaged to create indices of baseline negative affect.

Emotion Memory Recall and Cue Generation.

Participants then recalled three different upsetting experiences that they had personally faced in the past that continued to bother them today. To aide their recall, participants were supplied with example experiences such as feeling betrayed, frustrated, or rejected by someone. Participants were encouraged to take as long as they needed to come up with 3 experiences, and the time spent was recorded automatically on the survey software (M_{min} = 1.45, SD_{min} = 4.49; Qualtrics, Provo, UT).

Before proceeding to the self-talk task, participants generated a unique 1-3 word phrase that would serve as a memory cue for each of their experiences. Additionally, they were also asked to indicate if their experience matched any of the example experiences they were provided with. The most common type of experience recalled was feeling abandoned (23.31%), followed by feeling betrayed (22.06%), and then disrespected (13.53%) or rejected (12.53%) by someone.

Self-Talk Task.

Participants' experiences were then randomly assigned to one of three within-subjects trials: control (no self-talk), immersed self-talk, or distanced self-talk. The type of experience (e.g., feeling abandoned vs. feeling disrespected) did not vary significantly by trial ($\chi^2(14)$ = 13.56, p = .48). In all trials, participants were first shown a cue that they had created for one of their experiences and were prompted to visualize their experience with the following instructions:

> *"Now, please take some time to visualize the experience associated with these words: [word cue phrase]. Please allow yourself to reflect on this experience, letting your deepest thoughts and feelings run through your mind for a few moments."*

Participants envisioned the upsetting experience for 30 seconds. To assess potential differences in each upsetting experience prior to the manipulations, they then provided two ratings to operationalize experience impact: 1) how intense their negative emotions were while visualizing the experience from (1) not at all to (9) extremely, and 2) how often they thought about their experience in the last 6 months from (1) never to (9) all the time.

Preliminary analyses showed that intensity of negative emotional reactions declined significantly after the first visualization period (F(2, 775) = 4.33, p = .01), such that the first visualization period (M = 5.98, SD = 1.85) was significantly more intense than the second (M =

5.72, *SD* = 2.05; *t*(775) = 2.19, *p* = .07) or third visualization period (*M* = 5.66, *SD* = 2.01; *t*(775) = 2.8, *p* = .01). The second and third visualization periods did not differ from one another (*t*(775) = 0.62, *p* = .81). The frequency with which participants thought about their experience did not significantly vary by visualization period (*F*(2, 705) = 0.94, *p* = .39; *M* = 4.72, *SD* = 2.36).

All participants encountered the control trial first, which did not include a writing prompt. Thus, participants proceeded to self-report items that assessed outcome variables immediately after the visualization period. For the remaining 2 experiences, the order of the immersed and distanced self-talk trials was counterbalanced across participants. In each self-talk trial, participants received instructions to think about their experience using an immersed or distanced perspective, and then wrote about why they felt the way they did while envisioning their experience (see Study 1 for instructions). Participants were given as much time as they needed to write down their reflections and were allowed to write as much or as little as they wished.

Once finished writing, they proceeded to the outcome variables, which were completed in the following fixed order: self-esteem, recounting-reconstrual, emotional reactivity, challenge-threat appraisals, and anticipated anxiety. The same items were used to assess each outcome following each trial (i.e., for a total of 3 times) unless noted below.

State Explicit Self-Esteem.

Participants rated their explicit state self-esteem by responding to the item, "*I feel good about myself*" from the Heatherton State Self-Esteem Scale (Heatheron & Polivy, 1991), from (1) strongly disagree to (7) strongly agree (*M* = 4.29, *SD* = 1.71).

Post-Manipulation Measures.

Emotion Measures.

Emotional Reactivity. Participants responded to the same 2 items described in Study 2 using the same 7-point scale (control: *r* = .70, *p* < .0001; immersed: *r* = .77, *p* < .0001; distanced: *r* = .76, *p* < .0001; *M* = 4.41, *SD* = 1.57).

Anticipated Anxiety. Participants responded to the same item described in Study 2 using the same 7-point scale (*M* = 4.59, *SD* = 1.7).

Appraisal Measures.

Recounting versus Reconstrual. Participants responded to the same 3 items to assess reconstrual and a single item to assess recounting on a 7-point scale as described in Study 2. Ratings on reconstrual items were again averaged to index reconstrual (control: α = .82; immersed: α = .85; distanced: α = .86), and a difference score was created by subtracting reconstruing from recounting, with higher scores indicating greater recounting relative to reconstrual (*M* = 1.23, *SD* = 2.1).

Challenge-Threat Appraisals. Participants responded to the same items described in Study 2 using the same 7-point scale. These ratings were negatively correlated in all three trials (control: *r* = -.60, *p* < .0001; immersed: *r* = -.55, *p* < .0001; distanced: *r* = -.55, *p* < .0001). Challenge-to-threat ratios were created by dividing resource ratings by demand ratings; thus, higher scores on this index indicated greater challenge relative to threat appraisals (*M* = 1.29, *SD* = 1.28).

Attention Checks.

This study included four attention checks, which were evenly distributed throughout the study.

Results

Preliminary Analyses.

Exclusions.

In total, 68 participants (17%) were excluded on a priori grounds because they either failed the attention checks or did not follow the writing prompt instructions correctly. This left 331 participants. Exclusions due to writing prompt failures differed by trial ($\chi^2(1) = 24.15$, $p < .0001$), such that more participants failed to correctly follow the writing prompt during the distanced ($n_{\text{excluded}} = 37$) versus immersed ($n_{\text{excluded}} = 5$) trial.

Self-Talk Essay Time and Length.

The amount of time participants spent writing about their experience in the distanced and immersed self-talk trials was automatically recorded by the survey software (Qualtrics, Provo, UT) which, although directionally consistent with our previous studies, did not differ by trial within-subject ($F(1, 330) = 2.38$, $p = .12$; immersed: $M_{\text{min}} = 2.20$, $SD_{\text{min}} = 3.15$; distanced: $M_{\text{min}} = 2.74$, $SD_{\text{min}} = 6.48$). In addition, the number of words written for each essay was calculated using Excel software, which also did not differ by trial ($F(1, 330) = 0.28$, $p = .60$; immersed: $M_{\text{words}} = 55.2$, $SD_{\text{words}} = 70.41$; distanced: $M_{\text{words}} = 53.8$, $SD_{\text{words}} = 50.55$). Because there were no trial differences, we did not run analyses on how these variables related to our outcomes of interest and they are not discussed further.

Analytic Strategy.

In order to examine whether there were overall differences in self-esteem, appraisals, and reactivity throughout the self-talk task, multilevel modeling techniques were used to account for the nested structure of our data in all analyses. This approach allowed us to test for individual variation in the slopes of trial variables (control, immersed, distanced) using the “nlme” package (Pinheiro, Bates, DebRoy, Sarkar, & R Core Team, 2019) of the statistical program “R” Version 1.2.5019 (R Core Development Team, 2019). We carried out the following steps for each outcome independently: first, a base model was fit using fixed effects of trial and random intercepts for participant. Second, we included covariates that we expected might influence our outcomes; that is, fixed effects of baseline negative affect, experience intensity, and thought frequency were added to each model, which significantly improved model fit in all cases (p’s $< .0001$). Third, since experience intensity and thought frequency ratings were also nested within subject, a final model fit was assessed including random slopes for these variables, which significantly improved model fit in all models (p’s $< .03$) except those predicting recounting versus reconstrual ($p = .12$).

The specific fixed and random effects that produced optimal model fit varied by outcome, and so we chose to analyze the best fitting model for each outcome (vs. apply all model parameters uniformly across dependent variables). Each best fitting model was then run using outcome values obtained during the control trials as the reference values. Because this model only produced fixed effect estimates for distanced versus control and immersed versus control comparisons, final models were re-referenced to immersed trials and run a second time to obtain estimates for distanced versus immersed comparisons. For each outcome below, we interpret the fixed effect estimates for each trial comparison and provide estimated marginal means and errors by trial as well as preliminary statistics for included covariates.

Main Analyses.

Explicit Self-Esteem.

The main analyses on fixed effect estimates for trials (see Table 12) indicate that self-esteem levels after distancing (*M* = 4.14, *SD* = 1.7) did not significantly differ from those after immersed (*M* = 4.09, *SD* = 1.74) or control trials (*M* = 4.21, *SD* = 1.73). Self-esteem levels also did not differ between immersed self-talk and control trials. Fixed effect estimates for covariates indicate that higher levels of baseline affect, experience intensity, and thought frequency predicted significantly lower levels of self-esteem.

Emotion Measures.

Emotional Reactivity. Fixed effect estimates for trial comparisons (see Table 12) suggest that emotional reactivity was significantly higher after immersed (*M* = 4.68, *SD* = 1.63) relative to distanced (*M* = 4.50, *SD* = 1.62) or control trials (*M* = 4.39, *SD* = 1.51). Reactivity levels did not differ between distanced self-talk and control trials. Fixed effect estimates for covariates also indicate that higher levels of experience intensity and thought frequency predicted significantly higher levels of emotional reactivity.

Anticipated Anxiety. Fixed effect estimates for trial comparisons (see Table 12) suggest that participant's anticipated anxiety did not differ after distanced (*M* = 4.7, *SD* = 1.66) relative to immersed (*M* = 4.56, *SD* = 1.82) or control trials (*M* = 4.62, *SD* = 1.67). Anxiety levels also did not differ between immersed self-talk and control trials. Fixed effect estimates for covariates indicate that higher levels of experience intensity and thought frequency predicted significantly higher levels of anticipated anxiety.

Appraisal Measures.

Recounting versus Reconstrual. The fixed effect estimates for trial comparisons (see Table 12) suggest that recounting versus reconstrual processes after distancing (*M* = 1.14, *SD* = 2.15) significantly differed from those reported after control trials (*M* = 1.51, *SD* = 2.12), such that participants reported less recounting and more reconstrual after engaging in distanced self-talk. These processes did not significantly differ between distanced and immersed trials (*M* = 1.36, *SD* = 2.13) or immersed and control trials. Fixed effect estimates for covariates also indicate that higher levels of baseline affect, experience intensity, and thought frequency predicted significantly higher levels of recounting relative to reconstrual.

Challenge-Threat Appraisals. Fixed effect estimates for trials (see Table 12) suggest that challenge-threat appraisals[5] did not vary after distancing (*M* = 1.18, *SD* = 1.18) relative to immersed (*M* = 1.31, *SD* = 1.41) or control trials (*M* = 1.31, *SD* = 1.24). These appraisals also did not differ between immersed self-talk and control trials. Fixed effect estimates for covariates indicate that higher levels of experience intensity and thought frequency predicted significantly lower levels of challenge-threat appraisals.

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[5] Resource and demand ratings were also analyzed separately, which indicated that neither resource ($F(2, 568) = 0.32$, $p = .73$; distanced: *M* = 4.16, *SE* = .09; immersed: *M* = 4.22, *SE* = .09; control: *M* = 4.30, *SE* = .09) nor demand ratings differed across trials within-subject ($F(2, 563) = 0.81$, $p = .44$; distanced: *M* = 4.76, *SE* = .09; immersed: *M* = 4.68, *SE* = .09; control: *M* = 4.52, *SE* = .09).

Table 12

Study 4 Fixed Effects from Multilevel Models Predicting Self-Esteem, Appraisal, and Reactivity Outcomes

Parameter	*β*	*SE*	95% CI	*df*	*t*	*p*-value
Explicit Self-Esteem						
Intercept[a]	4.21	.09	[4.03, 4.39]	526	45.10	< .0001
Trial main effects						
Distanced vs. control[a]	-0.07	.08	[-0.24, 0.09]	526	-0.83	.40
Immersed vs. control[a]	-0.12	.08	[-0.29, 0.04]	526	-1.46	.14
Distanced vs. immersed[b]	0.05	.09	[-0.11, 0.22]	526	0.62	.54
Covariates[a]						
Baseline negative affect	-0.31	.08	[-0.47, -0.16]	323	-3.89	.0001
Experience intensity	-0.12	.05	[-0.22, -0.02]	526	-2.30	.02
Thought frequency	-0.20	.05	[-0.30, -0.09]	526	-3.73	.0002
Emotional Reactivity						
Intercept[a]	4.39	.07	[4.25, 4.53]	579	61.64	< .0001
Trial main effects						
Distanced vs. control[a]	0.10	.09	[-0.07, 0.27]	579	1.20	.23
Immersed vs. control[a]	0.29	.09	[0.12, 0.46]	579	3.41	.0007
Distanced vs. immersed[b]	-0.19	.09	[-0.36, -0.02]	579	-2.21	.03
Covariates[a]						
Baseline negative affect	0.04	.05	[-0.05, 0.13]	327	0.80	.42
Experience intensity	0.62	.05	[0.52, 0.72]	579	12.31	< .0001
Thought frequency	0.37	.05	[0.27, 0.46]	579	7.41	< .0001
Anticipated Anxiety						
Intercept[a]	4.60	.09	[4.43, 4.78]	560	52.24	< .0001
Trial main effects						
Distanced vs. control[a]	0.07	.11	[-0.15, 0.28]	560	0.61	.54
Immersed vs. control[a]	-0.04	.11	[-0.25, 0.17]	560	-0.37	.71
Distanced vs. immersed[b]	0.11	.11	[-0.11, 0.32]	560	0.97	.33
Covariates[a]						
Baseline negative affect	0.07	.06	[-0.05, 0.19]	326	1.13	.26
Experience intensity	0.34	.06	[-0.22, 0.45]	560	5.59	< .0001
Thought frequency	0.54	.06	[0.42, 0.66]	560	8.83	< .0001
Recounting vs. Reconstrual						
Intercept[a]	1.51	.12	[1.28, 1.74]	574	12.90	< .0001
Trial main effects						
Distanced vs. control[a]	-0.37	.14	[-0.65, -0.09]	574	-2.61	.009
Immersed vs. control[a]	-0.15	.14	[-0.43, 0.12]	574	-1.09	.28
Distanced vs. immersed[b]	-0.21	.14	[-0.49, 0.06]	574	-1.52	.13
Covariates[a]						
Baseline negative affect	-0.14	.09	[-0.31, 0.02]	327	-1.70	.09
Experience intensity	0.42	.07	[0.28, 0.57]	574	5.66	< .0001
Thought frequency	0.25	.07	[0.11, 0.39]	574	3.40	.0007
Challenge-Threat Appraisals						
Intercept[a]	1.31	.07	[1.17, 1.44]	554	19.42	< .0001
Trial main effects						
Distanced vs. control[a]	-0.12	.09	[-0.29, 0.04]	554	-1.44	.15
Immersed vs. control[a]	0.004	.08	[-0.16, 0.17]	554	0.05	.96
Distanced vs. immersed[b]	-0.13	.08	[-0.29, 0.04]	554	-1.49	.14
Covariates[a]						
Baseline negative affect	-0.03	.04	[-0.12, 0.05]	325	-0.84	.40
Experience intensity	-0.17	.05	[-0.26, -0.08]	554	-3.75	.0002
Thought frequency	-0.29	.05	[-0.38, -0.20]	554	-6.28	< .0001

Note. Model parameters[a]: outcome values where the no instruction trials served as the reference group. Model parameters[b]: outcome values where the immersed trials served as the reference group. *β* = standardized estimates, *SE* = standard error for unstandardized estimates, *CI* = confidence interval for unstandardized estimates.

Indirect Effect Analyses.

Following the logic laid out by Rucker et al. (2011), we proceeded with indirect effect analyses to examine if recounting versus reconstrual or emotional reactivity processes explained significant variance in the effect of trial on explicit self-esteem, even though the latter effect was not significant. More specifically, Rucker and colleagues (2011) suggest that in the absence of a significant total effect (*c* path; i.e., IV predicting DV), researchers are still permitted to assess mediation in the presence of significant *a* (i.e., IV predicting mediator) and *b* paths (i.e., mediator predicting DV when controlling for IV). Fixed effect estimates for the model predicting recounting versus reconstrual and emotional reactivity (see Table 12) indicate that the first criteria for mediation was fulfilled; that is, distanced self-talk predicted significantly less recounting and more reconstrual relative to control trials and less emotional reactivity relative to immersed trials (*a* paths).

Next, to test the *b* path, recounting versus reconstrual processes were added to the base model described above. This revealed that recounting versus reconstrual processes (β = -0.18, $t(593)$ = -3.54, p = .0004) and emotional reactivity (β = -0.39, $t(598)$ = -8.23, $p < .0001$) significantly predicted variance in self-esteem when controlling for trial, such that greater recounting versus reconstrual and higher emotional reactivity predicted lower self-esteem. Therefore, since both *a* and *b* paths were significant, we proceeded with mediation analyses.

Next, given the nature of our nested design, we followed the analytic steps for multilevel mediation analysis laid out by Vuorre and Bolger (2018). Their Bayesian approach generates posterior means and lower and upper limits of a 95% Credible Interval. Since we had 3 trials and this approach only allows for comparisons between two levels, indirect effects were tested by generating change scores[6] for both mediators and self-esteem to reflect differences between distanced self-talk and control trials (1) and immersed self-talk and control trials (0). These analyses did not produce significant estimates of indirect effects: (recounting vs. reconstrual processes: indirect effect = 0.07, 95% CI [-0.02, 0.19]; emotional reactivity: indirect effect = 0.03, 95% CI [-0.03, 0.10]).

Discussion

In Study 4, we addressed limitations in Study 3 that prohibited a clear understanding of the relationship between self-distancing and explicit self-views. More specifically, it is possible that variations in study design and insufficient sample sizes may have prevented us from detecting a small but significant effect on explicit self-esteem in Study 3. Therefore, Study 4 recruited a single large sample of participants to complete a within-subjects self-talk paradigm, where ratings of state explicit self-esteem, appraisal, and emotion were provided after each trial throughout the study. However, despite these changes, the present study did not yield significant differences in explicit self-esteem when participants thought about negative experiences using distanced self-talk relative to immersed self-talk or no self-talk at all. Together with our previous studies, these findings suggest that taking a distanced self-view on one's emotional experience does not influence the way one evaluates the self in either more automatic (implicit) or controlled (explicit) ways.

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[6] Indirect effects were also tested by fitting two models for each mediator: the first tested the indirect effect of the mediator for distanced (1) relative to control (0) trials, whereas the second model tested the effect for immersed (1) relative to control (0) trials. These analyses did not produce meaningful differences in indirect effect estimates for recounting versus reconstrual processes (distancing vs. control = 0.04, 95% CI [-0.03, 0.15]; immersed vs. control: 0.05, 95% CI [0.00, 0.14]) or emotion reactivity (distancing vs. control = -0.01, 95% CI [-0.10, 0.07]; immersed vs. control: -0.04, 95% CI [-0.12, 0.04]).

Although self-talk did not appear to influence explicit self-esteem, Study 4 diverged from Study 3 in that it replicated prior work with regards to emotion and appraisal processes (e.g., Ayduk & Kross, 2008; Ayduk & Kross, 2010b; Kross et al. 2014) and also extended beyond them by directly comparing self-talk outcomes to those obtained when no additional processing or introspection was facilitated. More specifically, in our study, participants reported recounting their emotional experiences less and reconstruing them more when using distanced self-talk relative to no self-talk at all, which did not differ from immersed self-talk. Additionally, participants also reported experiencing lower levels of emotional reactivity when distancing relative to when they used immersed self-talk, and immersing themselves while engaging in introspection resulted in significantly higher levels of reactivity relative to when they engaged in no self-talk or introspection. Together, this pattern of findings provides support that distancing is an adaptive form of self-reflection that results in changes to the way one construes their emotional experience and lower emotional reactivity. Additionally, since distancing's effects were significant for emotion but not self-esteem, we are more confident that the null effect on self-esteem we observed consistently across studies is reliable.

Study 5

To estimate the effect of self-talk condition on our outcomes of interest, we conducted a mini meta-analysis of our 4 studies to clarify the extent to which distanced self-talk influenced implicit and explicit self-esteem as well as appraisals and emotion processes.

Method

We extracted effect size estimates for the effect of condition on implicit self-esteem (IAT D scores; Study 1: controlling for baseline trait self-esteem; Study 2: controlling for baseline implicit self-esteem), explicit self-esteem (Study 1: controlling for baseline trait self-esteem; Study 3: controlling for baseline trait self-esteem; Study 4: controlling for state self-esteem obtained during control trials), recounting and reconstrual processes (Studies 2-4), emotional reactivity (Studies 2-4), anticipated anxiety (Studies 2-4), challenge-threat appraisals (Study 1: rater coded appraisals; Studies 2-4: self-reported appraisals), and resources and demands separately (Study 1: rater coded statements; Studies 2-4: self-reported ratings).

The immersed condition served as the reference group in all meta-analyses[7]. In all analyses, we used a fixed-effects-model and followed the meta-analytic approach described by Harrer et al. (2019) using RStudio (RStudio Team, 2019). Due to the fact that we generated estimates across different samples that employed modified paradigms, we also examined heterogeneity via Higgin's & Thompson's (2002) I^2. This measure represents the percentage of variability in effect sizes not caused by sampling error (25% represents low, 50% moderate, 75% high heterogeneity).

Results

All sample sizes, weighted condition means and standard deviations, and meta-analytic results can be found in Table 13.

[7] Since baseline affect related to outcomes differently across studies, we did not include this as a covariate in the meta-analyses. To account for the nature of within-subject ratings across trials in Study 4, we first calculated change scores for all outcomes, in which ratings made during control trials were subtracted from distanced and immersed trial ratings. Since event impact ratings were related to all outcomes, intensity and thought frequency were included as covariates when calculating effect size estimates for Study 4.

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Implicit and Explicit Self-Esteem.

Overall, meta-analyses revealed that the effect of condition on self-esteem was non-significant. Relative to explicit self-esteem, the effect of condition on implicit self-esteem was larger and in the theoretically expected direction, such that participants demonstrated higher implicit self-esteem when distancing relative to immersing. Additionally, heterogeneity estimates (see Figure 1, Panels A and B) suggest that between-study variability in these effects were low, as indicated by I^2's < 25%.

Emotion and Appraisals.

Overall, meta-analyses revealed that the effect of condition on these processes was non-significant, although the size of the effect varied by outcome. Specifically, the effect of condition on recounting versus reconstrual and emotional reactivity was larger and in the theoretically expected direction, such that participants reported lower recounting (relative to reconstrual) and emotional reactivity when distancing versus immersing. Heterogeneity estimates indicated that although there was low variability in the effect on emotional reactivity (see Figure 2, Panel A), there was moderate between-study variability in the effect of condition on recounting and reconstrual (see Figure 2, panel C). Inspection of this variability revealed that Samples 2a and 4 appear to be driving the overall effect of distancing on reconstrual processes.

The effect of condition on anticipated anxiety was marginally significant, but in the opposite direction than we predicted: relative to immersing, those who distanced reported marginally higher levels of anticipated anxiety about their emotional event. Heterogeneity estimates indicated that there was very low between-study variability (see Figure 2, Panel B), in the effect of condition on anxiety, suggesting that positive effect was fairly consistent across studies.

Last, the overall effect of condition on challenge-threat appraisals was small and non-significant, and this pattern remained consistent when focusing on resources and demands separately. Heterogeneity estimates indicated that although there was low variability in the effect of condition on challenge-threat ratios (see Figure 2, Panel D) and demands (see Figure 2, Panel F), there was moderate between-study variability in the effect of condition on resources (see Figure 2, Panel E). Inspection of this variability revealed that Samples 1a and 1b appear to deviate from the other samples in their effect of distancing on resources.

Discussion

Meta-analyses indicate that overall, distancing did not significantly influence implicit or explicit self-views. Additionally, distanced self-talk did not significantly influence appraisals or reactivity towards emotional events. Participants did report marginally greater anticipated anxiety towards their negative emotional events when distancing, but this effect was not consistently found on other emotion items. In three of our studies, distanced participants spent more time on the writing task than immersed participants, but did not write significantly more. Therefore, it's possible that due to the unfamiliar nature of the task, participants simply spent more time thinking about their negative emotional event in the distanced condition. However, although this effect cannot be ruled out, we feel that it is unlikely given the lack of effects on other emotion items.

Heterogeneity analyses of condition effects revealed that effect estimates were largely similar across samples. There were two notable exceptions: recounting versus reconstrual and resource expectations. In the case of recounting versus reconstrual, these analyses indicated that, when distancing, participants in Samples 2a and Sample 4 reconstrued their emotional events more and recounted them less relative to immersing. Both samples came from our most rigorous studies, the first employing two IAT tasks (Study 2) and the latter requiring participants to use both distance and immersed instructions to process their emotional events. Therefore, it's possible that the nature of the tasks, which were otherwise unique, led these participants to become more engaged with the self-talk task. In the case of resources, participants who distanced in Samples 1a and 1b demonstrated greater resource expectations than those who immersed. In Study 1, resource expectations were coded from self-talk essays, whereas these processes were self-reported in other studies. Therefore, it's possible that while distanced participants wrote about their emotional events with more attributions to their coping resources, when asked to make an assessment about their overall ability to cope with their stressor, participants felt less confident in their skills.

General Discussion

When used for introspection, self-distancing has been linked to reductions in negative emotional experience as well as adaptive changes in appraisal processes. This has been demonstrated in many studies, whereby this emotion regulation strategy leads one to reconstrue emotional events more and recount them less (e.g., Ayduk & Kross, 2010a; Kross & Ayduk, 2008, 2009), appraise stressors in more challenging and less threatening ways (Bruehlman-Senecal et al., 2016; Kross et al., 2014), and demonstrate lower emotional reactivity (Ayduk & Kross, 2008; Ayduk & Kross, 2010b; Kross et al., 2005; Kross & Ayduk, 2009; Kross et al., 2011) than one might experience if they maintained a first-person perspective. We examined whether these numerous benefits might extend to self-evaluations in a series of four studies. Largely, our findings indicate that this practice, though established as beneficial for appraisal and emotion processes, generally does not influence the way one feels about the self.

These findings add to the current self-distancing literature in notable ways. Both theoretically and experimentally, connections have been made between distancing and shifts in the way one thinks about the self (Liberman et al., 2007) as well as one's tendencies to engage in self-control (Metcalfe & Mischel, 1999). However, to our knowledge, no studies to date have directly examined how an emotion regulation strategy such as self-distancing influences self-esteem. The field of emotion regulation research is incredibly broad, but has primarily focused on how specific strategies affect the experience of emotions and, more widely, how these effects influence well-being. Although this is certainly not a limitation of the field, its attention to the self has mainly focused on individual differences in emotion regulation tendencies (Bonanno & Burton, 2013; Gross & John, 2003) or strategy effectiveness (Troy, Shallcross, & Mauss, 2013). It has not, by contrast, examined how the use or implementation of emotion regulation influences how we feel about the self. The present set of studies contributes to the burgeoning literature on emotion regulation effects, and indicate that although the self and emotion are tightly coupled (Brockner, 1983; McFarland & Ross, 1982; Sedikides & Green, 2001), self-distancing does not likely induce changes in self-esteem.

It is possible that distancing influences self-esteem via mechanisms that were untested in the present set of studies. For example, a self-distanced perspective on one's emotions has consistently been shown to lead one to recount the details of the emotional event less and reconstrue them more, increase appraisals of challenge relative to threat, and ultimately feel less emotionally reactive and anxious about the event (e.g., Ayduk & Kross, 2010b; Kross et al., 2005; Kross & Ayduk, 2008; Kross & Ayduk, 2009; Kross et al., 2012; Kross et al. 2014).

Table 13

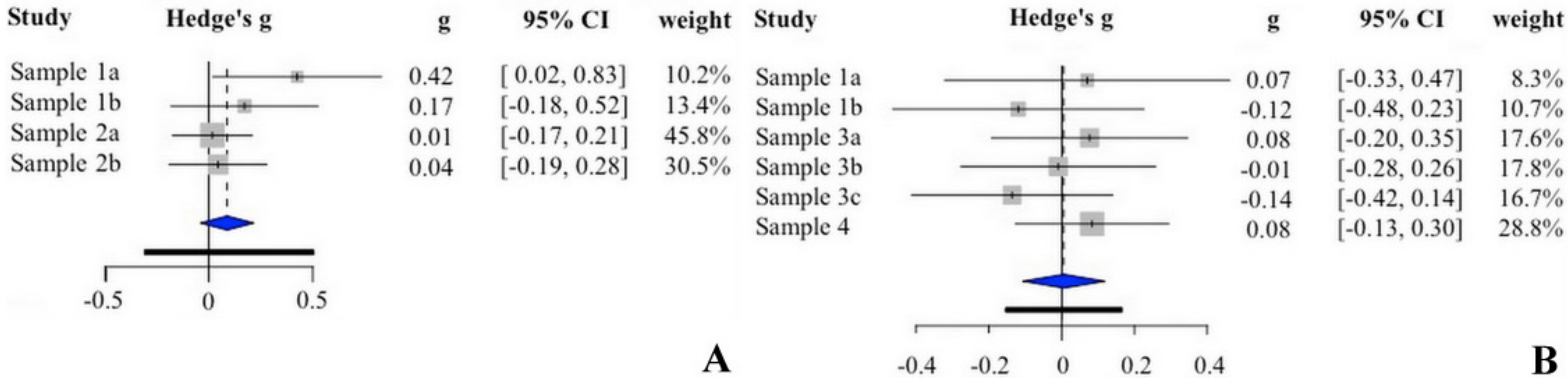
Meta-Analytic Means, SDs, and Inferential Tests By Condition for All Studies

		Self-Talk Condition			
	N	Immersed	Distanced	Inferential Statistics for Fixed Effects	I^2
Implicit Self-Esteem	860	0.50 (0.07)	0.54 (0.08)	h = .09, 95% CI = [-0.04, 0.22], z = 1.33, p = .18	15%
Explicit Self-Esteem	1152	4.36 (0.30)	4.36 (0.32)	h = .005, 95% CI = [-0.11, 0.12], z = 0.09, p = .93	0%
Recounting vs. Reconstrual	1538	1.38 (0.24)	1.30 (0.19)	h = -.06, 95% CI = [-0.16, 0.04], z = -1.22, p = .22	45.6%
Emotional Reactivity	1634	4.73 (0.28)	4.63 (0.23)	h = -.08, 95% CI = [-0.17, 0.02], z = -1.53, p = .13	19.2%
Anticipated Anxiety	1631	4.97 (0.56)	5.06 (0.57)	h = .09, 95% CI = [-0.01, 0.19], z = 1.80, p = .07	0%
Challenge-Threat Appraisals	1850	0.89 (0.30)	0.86 (0.24)	h = .01, 95% CI = [-0.08, 0.10], z = 0.23, p = .82	7.9%
Resources	1851	3.24 (0.91)	3.25 (0.78)	h = .01, 95% CI = [-0.08, 0.10], z = 0.21, p = .83	46.4%
Demands	1854	4.80 (0.94)	4.90 (0.93)	h = .05, 95% CI = [-0.04, 0.14], z = 1.01, p = .31	0%

Note. Values given are weighted means with standard deviations in parentheses. Meta-analytic effect sizes were calculated with the immersed group serving as the reference group.

Figure 1

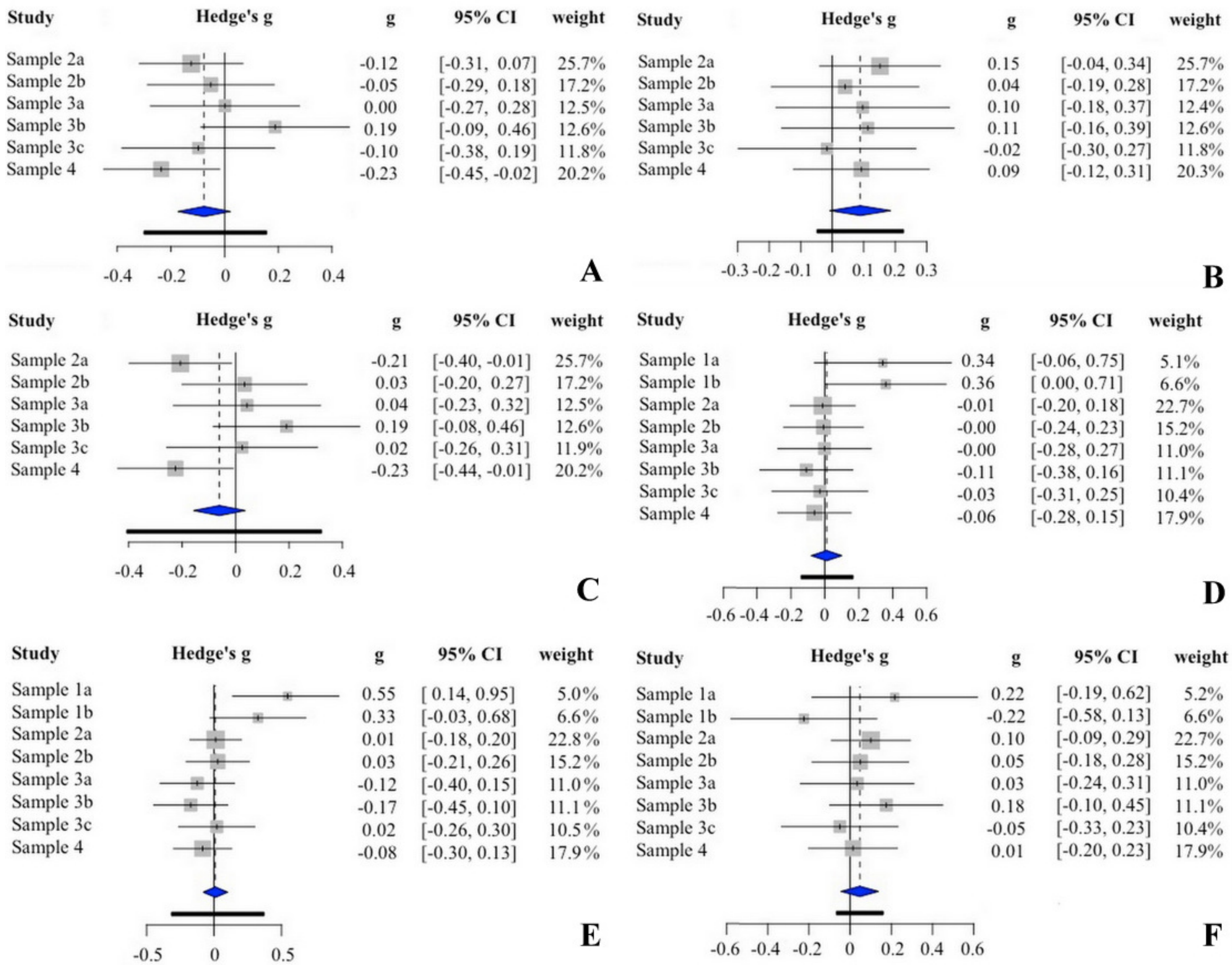
Forest Plots of Meta-Analytic Effects on Self-Esteem



Note. Panel A visualizes heterogeneity of condition effects on implicit self-esteem (positive estimates indicate that distancing predicts higher implicit self-esteem). Panel B visualizes heterogeneity of condition effects on explicit self-esteem (positive estimates indicate that distancing predicts higher explicit self-esteem).

Figure 2

Forest Plots of Meta-Analytic Effects on Emotion and Appraisal Processes



Note. Visualized heterogeneity of condition effects on emotional reactivity (Panel A), anticipated anxiety (Panel B), recounting vs. reconstrual (Panel C), challenge-threat appraisals (Panel D), resource expectations (Panel E), and demand expectations (Panel F). In all plots, positive estimates indicate that distancing predicts higher levels.

However, participants who self-distanced in our studies did not consistently report differences in appraisal or emotion processes relative to those who took an immersed perspective while thinking about their emotional event. Therefore, our findings did not meet the criteria necessary for testing indirect effects on self-esteem via changes in appraisal or emotion processes.

Additionally, other studies have shown that the effectiveness of distanced self-talk may be moderated by individual differences. Specifically, prior work has demonstrated that visual (Gruber, Harvey, & Johnson, 2009; Kross et. al, 2012) and verbal (Kross et al., 2014, Kross et al., 2017) forms of self-distancing can be effectively utilized for vulnerable individuals. Thus, it is possible that the self-views of certain individuals, such as those with unstable self-esteem (e.g., Kernis, 1993), benefit more from distancing relative to their more stable peers. Furthermore, how qualities of the emotional experience impact this strategy's effectiveness is less clear. Therefore, future research should employ measures to capture both trait and state measures of vulnerability related to self-esteem to better discern these effects. Additionally, due to the fact that some of our studies were part of larger investigations, we collected several measures in well-being and personality along with our data on self-esteem. Thus, in the future, we aim to explore whether these individual difference indices provide a more comprehensive understanding of distancing's effect on self-views.

Last, it is possible we were unable to detect effects on self-esteem due to the nature of our measures of self-views. That is, to assess self-esteem, we employed modified versions of the self-esteem IAT (Greenwald & Farnham, 2000) as well as state and trait self-report measures (Heatherton & Polivy, 1991; Robins et al., 2001; Rosenberg, 1965). Although these indices are indeed valid and reliable measures of self-esteem, it is plausible that distancing instead affects self-views more specific to the context in which it is used. That is, these self-evaluations are indeed related one's feelings about the self in a specific context (Crocker et al., 2003; Heatherton & Polivy, 1991; Juth et al., 2008; Leary, 2006; Leary et al., 1995; Sherer et al., 1982), but they may also be influenced via distinct mechanisms. This argument has already been made for implicit and explicit attitudes (Grumm et al., 2009), whereby the more automatic processing system underlying implicit self-esteem relies more on activated associations in memory relative to the more controlled system underlying explicit self-views, which weighs rational processing of self-relevant information more heavily. How this framework extends to other indirect measures of self-esteem, such as those gathered via challenge-threat appraisals, is less clear. On the one hand, challenge-threat appraisals may be influenced in ways more similar to implicit self-views, and be driven by the active associations currently top of mind. On the other hand, these appraisals may be more similar to explicit attitudes, in which appraisals are made using global assessments of one's feelings of threat or abilities to cope. It is also possible that, like self-esteem, the manner by which these indirect processes are influenced is contingent upon its assessment method.

With this in mind, we suggest that our distanced participants may have experienced a shift in the self-oriented associations that were active in recent memory when writing about their stressor. This theory is supported by our distanced participants in Study 1, who wrote about their stressors with more frequent mention of their ability to cope with the event (i.e., resource expectations) than those who immersed. This shift may not have been detected by our self-report measures of challenge-threat appraisals, which allowed participants the opportunity to override any active associations in favor of more global self-views. Furthermore, the relationship between resource and demand expectations varied across studies: when coded as statements in the self-talk essay, frequencies of resource and demand statements were not consistently correlated. This pattern was consistent with our expectations that these processes may vary independently (i.e., higher feelings of demand do not necessarily mean one feels less able to cope). However, when measured via self-report, resource and demand expectations were significantly and negatively correlated in all samples. Additionally, the majority of correlations between these two variables were large, indicating that participants did not evaluate these constructs independently when self-reporting, which may have subsequently weakened any existing effects of distancing on appraisals. Therefore, although we did not analyze the essays of participants in Studies 2-4 due to timing constraints, it will be important for our future work to examine if these more indirect, behavioral indices of situation specific self-esteem replicate and determine how they relate to other appraisal and emotion processes affected by self-distancing.

Conclusion

The present studies provide consistent evidence that although self-distancing is an adaptive form of emotion regulation, it generally does not influence the way one feels about the self via measures of self-esteem. They also suggest that additional research is needed into the mechanisms by which distancing may influence the self via indirect or situation-specific methods. These findings add to the growing body of work on the effects of various emotion regulation strategies, and contribute new information on how such strategies may impact the self. Given that emotion processes and self-esteem are highly correlated (see Heatherton & Polivy, 1991) and each hold strong implications for well-being (Leary, 2007), it will be important for future work to examine the role that emotion regulation can play in promoting adaptive approaches to both emotion and the self.

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Appendix

Table S1

Study 1 Zero-Order Correlations Between All Variables, by Sample

Sample 1a	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Baseline Measures							
1. Affect	-						
2. Explicit Trait Self-Esteem	.58 ***	-					
Post-Manipulation Measures							
3. Implicit Self-Esteem (D score)	.27 **	.27 **	-				
4. Explicit Trait Self-Esteem	.54 ***	.85 ***	.27 **	-			
5. Affect	.83***	.64 ***	.29 **	.63 ***	-		
Coded Appraisals in Self-Talk Essay							
6. Challenge-Threat Appraisals	.11	.14	-.09	.15	.07	-	
7. Resource Statements	.17	.26 **	-.01	.21 *	.12	.84 ***	-
8. Demand Statements	-.03	.08	.07	-.05	.01	-.52 ***	-.09
Sample 1b	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Baseline Measures							
1. Affect	-						
2. Explicit Trait Self-Esteem	.34 ***	-					
Post-Manipulation Measures							
3. Implicit Self-Esteem (D score)	-.05	.13	-				
4. Explicit Trait Self-Esteem	.30 ***	.75 ***	.18 *	-			
5. Affect	.80 ***	.40 ***	.05	.42 ***	-		
Coded Appraisals in Self-Talk Essay							
6. Challenge-Threat Appraisals	-.03	.04	.15 †	-.07	-.01	-	
7. Resource Statements	.01	.08	.08	-.07	.02	.90 ***	-
8. Demand Statements	.13	.05	-.16 †	.07	.14	-.53 ***	-.25 **

Note. † $p < .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table S2.
Self-Esteem IAT Stimuli

Category (*Label*)			
Self ("*Me*")	**Other** ("*Others*")	**Positive** ("*Good*")	**Negative** ("*Bad*")
me	they	funny	hated
my	them	loved	lonely
myself	themselves	adored	stupid
mine	others	warmth	failure
I	their	admired	useless
me	they	accepted	inferior
my	them	included	rejected
myself	themselves	respected	insecure
mine	others	supported	excluded
I	their	welcomed	criticized

Note. Positive and negative words were matched for word length and frequency.

Table S3

Study 2 Zero-Order Correlations Between All Variables, by Sample

Sample 2a	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Baseline Measures										
1. Affect	-									
2. Explicit Trait Self-Esteem	.56 ***	-								
3. Implicit Self-Esteem (D score)	.16 **	.17 **	-							
Post-Manipulation Measures										
4. Implicit Self-Esteem (D score)	.07	.10 †	.36 ***	-						
5. Affect	.65 ***	.45 ***	.11 *	.01	-					
6. Emotional Reactivity	-.11 *	-.22 ***	-.08	-.03	-.38 ***	-				
7. Anticipated Anxiety	-.25 ***	-.24 ***	-.04	.02	-.50 ***	.38 ***	-			
8. Recounting vs. Reconstrual	-.11 *	-.08 †	.06	.06	-.30 ***	.19 ***	.39 ***	-		
9. Challenge-Threat Appraisals	.25 ***	.28 ***	.07	.09 †	.44 ***	-.41 ***	-.61 ***	-.21 ***	-	
10. Resource Ratings	.33 ***	.37 ***	.07	.02	.58 ***	-.33 ***	-.62 ***	-.37 ***	.68 ***	-
11. Demand Ratings	-.19 ***	-.22 ***	-.06	-.05	-.40 ***	.42 ***	.69 ***	.29 ***	-.77 ***	-.51 ***
Sample 2b	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Baseline Measures										
1. Affect	-									
2. Explicit Trait Self-Esteem	.43 ***	-								
3. Implicit Self-Esteem (D score)	.03	.11 †	-							
Post-Manipulation Measures										
4. Implicit Self-Esteem (D score)	.14 *	.15 *	.46 ***	-						
5. Affect	.66 ***	.41 ***	.05	.08	-					
6. Emotional Reactivity	-.09	-.12 †	.05	.00	-.32 ***	-				
7. Anticipated Anxiety	-.13 *	-.11 †	-.04	-.05	-.36 ***	.35 ***	-			
8. Recounting vs. Reconstrual	.02	-.04	-.08	.00	-.15 *	.18 **	.23 ***	-		
9. Challenge-Threat Appraisals	.14 *	.20 ***	.04	.10	.36 ***	-.26 ***	-.67 ***	-.16 **	-	
10. Resource Ratings	.21 ***	.25 ***	.04	.15 *	.42 ***	-.21 ***	-.53 ***	-.09	.72 ***	-
11. Demand Ratings	-.11 †	-.03	-.03	-.07	-.26 ***	.35 ***	.73 ***	.20 ***	-.73 ***	-.38 ***

Note. † $p < .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table S4

Study 3 Zero-Order Correlations Between All Variables, by Sample

Sample 3a	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Baseline Measures								
1. Affect	-							
2. Explicit Trait Self-Esteem	.52 ***	-						
Post-Manipulation Measures								
3. Explicit State Self-Esteem	.42 ***	.70 ***	-					
4. Emotional Reactivity	-.23 ***	-.35 ***	-.49 ***	-				
5. Anticipated Anxiety	-.25 ***	-.27 ***	-.30 ***	.41 ***	-			
6. Recounting vs. Reconstrual	-.10	-.06	-.04	.34 ***	.37 ***	-		
7. Challenge-Threat Appraisals	.21 **	.27 ***	.27 ***	-.39 ***	-.66 ***	-.14	-	
8. Resource Ratings	.28 ***	.29 ***	.30 ***	-.33	-.52 ***	-.29 **	.59 ***	-
9. Demand Ratings	-.18 **	-.18 *	-.19 **	.36 ***	.71 ***	.28 **	-.69 ***	-.35 ***
Sample 3b	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Baseline Measures								
1. Affect	-							
2. Explicit Trait Self-Esteem	.40 ***	-						
Post-Manipulation Measures								
3. Explicit State Self-Esteem	.30 ***	.65 ***	-					
4. Emotional Reactivity	-.21 **	-.33 ***	-.36 ***	-				
5. Anticipated Anxiety	-.15 *	-.16 *	-.24 ***	.28 ***	-			
6. Recounting vs. Reconstrual	-.26 ***	-.30 ***	-.31 ***	.41 ***	.38 ***	-		
7. Challenge-Threat Appraisals	.13 †	.14 †	.18 *	-.31 ***	-.43 ***	-.28 ***	-	
8. Resource Ratings	.22 **	.25 ***	.30 ***	-.37 ***	-.56 ***	-.47 ***	.63 ***	-
9. Demand Ratings	-.10	-.12 †	-.22 **	.33 ***	.63 ***	.39 ***	-.77 ***	-.59 ***
Sample 3c	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Baseline Measures								
1. Affect	-							
2. Explicit Trait Self-Esteem	.43 ***	-						
Post-Manipulation Measures								
3. Explicit State Self-Esteem	.44 ***	.68 ***	-					
4. Emotional Reactivity	-.15 *	-.27 ***	-.46 ***	-				
5. Anticipated Anxiety	-.20 **	-.24 ***	-.28 ***	.34 ***	-			
6. Recounting vs. Reconstrual	-.10	-.31 ***	-.36 ***	.45 ***	.36 ***	-		
7. Challenge-Threat Appraisals	.23 **	.23 **	.25 ***	-.30 ***	-.70 ***	-.29 ***	-	
8. Resource Ratings	.30 ***	.26 ***	.29 ***	-.29 ***	-.58 ***	-.27 ***	.75 ***	-
9. Demand Ratings	-.20 **	-.14 †	-.17 *	.29 ***	.71 ***	.33 ***	-.81 ***	-.54 ***

Note. † $p < .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table S5.
Study 3 Post-Manipulation Self-Esteem Items, by Sample

	Sample		
Heatherton State Self-Esteem Scale (Heatheron & Polivy, 1991)	3a	3b	3c
I feel confident about my abilities.	✓		
I am worried about whether I am regarded as a success or failure.	✓	✓	
I feel frustrated or rattled about my performance.	✓		
I feel that I am having trouble understanding things that I read.	✓		
I feel self-conscious.	✓	✓	
I feel as smart as others.	✓		
I feel displeased with myself.	✓	✓	✓
I feel good about myself.			✓
I am worried about what other people think of me.	✓	✓	
I feel confident that I understand things.	✓		
I feel inferior to others at this moment.	✓	✓	✓
I feel concerned about the impression I am making.	✓	✓	
I feel that I have less scholastic ability right now than others.	✓		
I feel like I'm not doing well.	✓		✓
I am worried about looking foolish.	✓	✓	
Single-Item Self-Esteem Scale (Robins et al., 2001)	3a	3b	3c
I have high self-esteem	✓	✓	
Sample size (*n*)	224	270	269

Table S6

Study 3 Post-Hoc Sample Contrasts for All Measured Variables

Measures	Sample 3a	Sample 3b	Sample 3c	Post-hoc Contrasts
Baseline Measures				
Affect	6.33 (1.51)	6.17 (1.63)	6.08 (1.56)	3a vs. 3b: $t(761) = 1.13$, $p = .50$ 3a vs. 3c: $t(761) = 1.78$, $p = .18$ 3b vs. 3c: $t(761) = 0.69$, $p = .77$
Explicit Trait Self-Esteem	5.03 (1.12)	4.82 (0.89)	4.73 (1.00)	3a vs. 3b: $t(760) = 2.10$, $p = .09$ 3a vs. 3c: $t(760) = 2.99$, $p = .008$ 3b vs. 3c: $t(760) = 0.93$, $p = .62$
Self-Talk Task				
Minutes spent writing	2.36 (0.48)	3.78 (7.16)	2.73 (3.37)	3a vs. 3b: $t(761) = -3.11$, $p = .005$ 3a vs. 3c: $t(761) = -2.42$, $p = .04$ 3b vs. 3c: $t(761) = -0.81$, $p = .70$
Number of Words Written	59.28 (39.53)	67.49 (61.74)	58.03 (37.27)	3a vs. 3b: $t(761) = -1.90$, $p = .14$ 3a vs. 3c: $t(761) = 0.29$, $p = .96$ 3b vs. 3c: $t(761) = 2.29$, $p = .06$
Post-Manipulation Measures				
State Explicit Self-Esteem	4.95 (0.25)	4.29 (1.28)	4.10 (1.31)	3a vs. 3b: $t(761) = 5.67$, $p < .0001$ 3a vs. 3c: $t(761) = 8.79$, $p < .0001$ 3b vs. 3c: $t(760) = 3.28$, $p = .003$
Emotional Reactivity	4.42 (1.70)	4.34 (1.42)	4.88 (1.15)	3a vs. 3b: $t(760) = 0.61$, $p = .82$ 3a vs. 3c: $t(760) = -3.61$, $p = .0009$ 3b vs. 3c: $t(760) = -4.44$, $p < .0001$
Anticipated Anxiety	5.74 (1.41)	5.53 (1.50)	5.89 (1.26)	3a vs. 3b: $t(758) = 1.71$, $p = .20$ 3a vs. 3c: $t(758) = -1.19$, $p = .46$ 3b vs. 3c: $t(758) = -3.06$, $p = .007$
Recounting vs. Reconstrual	1.62 (1.94)	1.06 (1.87)	1.28 (1.76)	3a vs. 3b: $t(653) = 2.76$, $p = .02$ 3a vs. 3c: $t(653) = 1.68$, $p = .21$ 3b vs. 3c: $t(653) = -1.39$, $p = .35$
Challenge-Threat Appraisals	0.82 (1.03)	0.66 (1.10)	0.84 (0.66)	3a vs. 3b: $t(759) = 0.20$, $p = .98$ 3a vs. 3c: $t(759) = -1.93$, $p = .13$ 3b vs. 3c: $t(759) = -2.24$, $p = .06$

Note. Values given are means with standard deviations in parentheses and t-test results.

Table S7

Study 4 Zero-Order Correlations Between All Variables, by Trial

Control Trials	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Baseline Measure							
1. Negative Affect	-						
Post-Visualization Measures							
2. Explicit State Self-Esteem	-.25 ***	-					
3. Emotional Reactivity	.07	-.33 ***	-				
4. Anticipated Anxiety	.13 *	-.32 ***	.32 ***	-			
5. Recounting vs. Reconstrual	-.03	-.08	.38 ***	.21 ***	-		
6. Challenge-Threat Appraisals	-.05	.30 ***	-.31 ***	-.60 ***	-.14 *	-	
7. Resource Ratings	-.17 **	.43 ***	-.33 ***	-.60 ***	-.16 **	.67 ***	-
8. Demand Ratings	.06	-.25 ***	.37 ***	.64 ***	.23 ***	-.80 ***	-.60 ***
Immersed Trials	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Baseline Measure							
1. Negative Affect	-						
Post-Manipulation Measures							
2. Explicit State Self-Esteem	-.09	-					
3. Emotional Reactivity	.15 **	-.27 ***	-				
4. Anticipated Anxiety	.04	-.25 ***	.32 ***	-			
5. Recounting vs. Reconstrual	.00	-.16 **	.40 ***	.27 ***	-		
6. Challenge-Threat Appraisals	-.07	.25 ***	-.33 ***	-.60 ***	-.13 *	-	
7. Resource Ratings	-.05	.36 ***	-.30 ***	-.60 ***	-.26 ***	.65 ***	-
8. Demand Ratings	.09 †	-.27 ***	.43 ***	.69 ***	.26 ***	-.79 ***	-.55 ***
Distanced Trials	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Baseline Measure							
1. Negative Affect	-						
Post-Manipulation Measures							
2. Explicit State Self-Esteem	-.23 ***	-					
3. Emotional Reactivity	.07	-.29 ***	-				
4. Anticipated Anxiety	.12 *	-.33 ***	.33 ***	-			
5. Recounting vs. Reconstrual	-.10 †	-.13 *	.32 ***	.24 ***	-		
6. Challenge-Threat Appraisals	-.08	.27 ***	-.37 ***	-.61 ***	-.09 †	-	
7. Resource Ratings	-.08	.34 ***	-.27 ***	-.65 ***	-.20 ***	.65 ***	-
8. Demand Ratings	.08	-.21 ***	.38 ***	.67 ***	.20 ***	-.80 ***	-.55 ***

Note. † $p < .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.