RESPONSIVE LOW SELF-ESTEEM: LOW EXPLICIT SELF-ESTEEM, IMPLICIT SELF-ESTEEM, AND REACTIONS TO PERFORMANCE OUTCOMES

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Whereas some research has found that low self-esteem individuals (LSEs) with high implicit self-esteem fare better psychologically than those with low implicit self-esteem, other research has found they fare worse. In an attempt to integrate and extend this work, we propose that the well-being of LSEs with high implicit self-esteem is responsive to outcomes in important domains; they are more de-bilitated than LSEs with low implicit self-esteem by negative outcomes but benefit more from positive outcomes. In Study 1, LSEs with high implicit self-esteem had higher state self-esteem than those with low implicit self-esteem after positive feedback. In Study 2, LSEs with high implicit self-esteem had higher well-being (higher trait self-esteem and less severe depressive symptoms) than LSEs with low implicit self-esteem two weeks after receiving high grades, but lower well-be-

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ing after receiving low grades. Thus, individuals with discrepant low self-esteem might be aptly characterized as having responsive self-esteem.

Though many of the presumed benefits of high self-esteem (SE) have been questioned (Baumeister, Campbell, Kruger, & Vohs, 2003), low SE is not an attractive alternative. It is associated with depression, diminished life satisfaction, even suicidal impulses (Harter, 1993; Myers & Diener, 1995; Orth, Robins, & Roberts, 2008). Individuals with low self-esteem (LSEs) suffer more distress after negative experiences than those with high self-esteem (HSEs; Brown, 2010; Brown & Marshall, 2006). But do all LSEs suffer equally after setbacks and failure? And how do LSEs respond to success? The evidence is mixed. They sometimes benefit from positive outcomes (Brown & Dutton, 1995; Kernis, Brockner, & Frankel, 1989), but other times fare worse: After positive feedback, compared to a neutral experience, LSEs report more anxiety (Wood, Heimpel, Newby-Clark, & Ross, 2005) and more doubt about the positive regard of others (Logel, Spencer, Holmes, & Wood, 2004; Murray, Holmes, MacDonald, & Ellsworth, 1998). What accounts for these divergent reactions? We propose that how LSEs respond to success and failure depends on their implicit SE. We believe that LSEs with high implicit SE may be aptly characterized as having *responsive SE*: Whether they fare better or worse than their low implicit SE counterparts may depend on—or be responsive to—recent outcomes in important domains. When things go poorly, LSEs with high implicit SE may experience less psychological well-being than those with low implicit SE, but when they do well, they may experience greater well-being. We test this possibility across two studies.

IMPLICIT SELF-ESTEEM

We conceptualize implicit SE as the degree of cognitive association between one's self-concept and positive or negative affect (Karpinski & Steinberg, 2006; Zeigler-Hill & Jordan, 2010). Whereas explicit SE is a deliberative appraisal of oneself that is *propositional* in nature, implicit SE is *associative* and may be activated efficiently, with little or no conscious guidance (Gawronski & Bodenhausen, 2006; Zeigler-Hill & Jordan, 2010). Notably, implicit and explicit SE are

typically uncorrelated, so implicit SE can be discrepant from explicit SE. Indeed, discrepancies between implicit and explicit SE have meaningful psychological consequences. Individuals with discrepant high SE (i.e., high explicit but low implicit SE) are more self-enhancing and defensive than those who are high in both explicit and implicit SE (e.g., Bosson, Brown, Zeigler-Hill, & Swann, 2003; Jordan, Spencer, Zanna, Hoshino-Browne, & Correll, 2003).

Discrepant low SE (i.e., low explicit but high implicit SE) may also be consequential. This form of discrepant SE has been characterized as "damaged" SE, in part because it is associated with a variety of maladaptive outcomes such as anger suppression, nervousness, and poor physical health (Schröder-Abé, Rudolph, & Schütz, 2007; Schröder-Abé, Rudolph, Wiesner, & Schütz, 2007). High implicit SE among LSEs has also been linked to bulimia nervosa (Cockerham, Stopa, Bell, & Gregg, 2009), maladaptive perfectionism (Zeigler-Hill & Terry, 2007), borderline personality disorder (Vater, Schröder-Abé, Schütz, Lammers, & Roepke, 2010), and, in some studies, symptoms of depression, including suicidal ideation (Creemers, Scholte, Engels, Prinstein, & Wiers, 2012; De Raedt, Schacht, Franck, & De Houwer, 2006; Franck, De Raedt, & De Houwer, 2007; Franck, De Raedt, Dereu, & Van den Abbeele, 2007). Notably, LSEs with high implicit SE also experience more negative emotion in response to stressful events (Haeffel et al., 2007).

Such findings defy early theorizing that high implicit SE might act as a buffer to stress or a psychological resource for LSEs to draw on. In our earlier theorizing, we proposed that individuals with discrepant low SE may sometimes experience a "glimmer of hope" as they become aware of their high implicit SE and that this might enhance their well-being (Spencer, Jordan, Logel, & Zanna, 2005). Zeigler-Hill, Clark, and Beckman (2011) similarly described discrepant low SE as "uncertain" low SE. They reasoned that individuals with discrepant low SE, relative to those with low explicit and low implicit SE "may feel at least somewhat better about themselves at times due to the uncertain nature of their low self-esteem" (p. 514).

Although the majority of available evidence suggests that high implicit SE is actually a liability for LSEs, a few findings are consistent with the idea that it can be beneficial. High implicit SE among LSEs has been associated with less severe symptoms of body dysmorphic disorder (Buhlmann, Teachman, Gerbershagen, Kikul, & Rief, 2008; Buhlmann, Teachman, Naumann, Fehlinger, & Rief, 2009), less social anxiety (Tanner, Stopa, & De Houwer, 2006), and,

in at least one study, less depression (Risch et al., 2010). Research examining the relation between implicit SE and depression may be particularly instructive in this context, because implicit SE has been variously observed to be positively associated, not associated, or negatively associated with depression. Such inconsistent findings are perplexing. They suggest that more than just levels of explicit and implicit SE determine whether LSEs with high implicit SE fare better or worse psychologically than those with low implicit SE. We believe it is also necessary to consider recent outcomes in important domains, as we elaborate below.

SELF-ESTEEM DISCREPANCIES

One reason that having discrepant implicit and explicit SE may be maladaptive is because it may reflect "deficient integration of self-representation" (Schröder-Abé, Rudolph, & Schütz, 2007, p. 321). As Schröder-Abé et al. note, implicit–explicit SE discrepancy may be similar to the experience of having ambivalent explicit attitudes (see also Schröder-Abé, Rudolph, Wiesner, & Schütz, 2007). As with explicit ambivalence, implicit–explicit attitude discrepancies may be influential when people become simultaneously aware of their discrepant implicit and explicit attitudes (see Jordan, Logel, Spencer, & Zanna, 2012). There is increasing evidence that people can become aware of their implicit attitudes, including SE (Jordan, Whitfield, & Zeigler-Hill, 2007; Ranganath, Smith, & Nosek, 2008; Scarabis, Florack, & Gosejohann, 2006). In addition, discrepancies between implicit and explicit attitudes are related to experiences of negative arousal and psychological discomfort (Rydell, McConnell, & Mackie, 2008; Cheng, Govorun, & Chartrand, 2012). Implicit–explicit self-concept discrepancies are also associated with efforts that may be motivated to resolve the inconsistency, such as seeking new information relevant to the discrepancy (Briñol, Petty, & Wheeler, 2006; Petty, Tormala, Briñol, & Blair, 2006; Rydell et al., 2008).

Thus, we believe that individuals with discrepant SE may experience negative arousal that they are motivated to reduce by trying to resolve the inconsistency between their implicit and explicit SE (Jordan et al., 2012). Individuals with discrepant high SE may be characteristically defensive because they regularly strive to resolve discrepant self-feelings in the direction of their high explicit SE, reflecting a motivation to maintain high SE (Jordan et al., 2012). Indi-

viduals with discrepant low SE may also strive to resolve discrepant self-feelings, but they may be more conflicted about how to do so. They may struggle with opposing pressures: They may be motivated to achieve high SE, but may experience their low explicit SE as a compelling and valid appraisal of themselves, limiting their ability to revise their self-evaluations in a more positive direction (Epstein & Morling, 1995; Gawronski & Bodenhausen, 2006).

LSEs with high implicit SE (i.e., discrepant low SE) may thus seek additional guides to resolve their discrepant self-feelings. They may focus on recent outcomes in important domains. When they perceive that they have performed poorly, as LSEs may be predisposed to do, they may lower their explicit self-evaluations even further. (Because explicit attitudes are more responsive to deliberative reasoning and consistency pressures than implicit attitudes, we expect efforts to resolve SE discrepancies to affect explicit more than implicit SE; Gawronski & Bodenhausen, 2006; Gawronski & Strack, 2004; Gawronski, Strack, & Bodenhausen, 2009). In such cases, LSEs with high implicit SE may have lower well-being than those with low implicit SE, as most past research has found. This is because, in an attempt to resolve their self-esteem discrepancy, they may be relatively strongly impacted by the negative implications of setbacks and failures. When they have performed well, however, they may revise their explicit SE upward, in the direction of their high implicit SE, and become better adjusted.

We thus offer an integration and extension of past theorizing about discrepant low self-esteem. Consistent with research on "damaged" self-esteem, we believe that discrepant low self-esteem reflects a lack of integration of self-representation that can be a liability. Consistent with past findings, it may typically be detrimental, for two reasons. First, it may be a direct source of negative arousal and psychological discomfort. Second, LSEs make less self-serving attributions for important outcomes (Blaine & Crocker, 1993) and have a negative bias in interpreting events (Roberts, 2006). They are thus likely to perceive neutral or ambiguous outcomes in relatively negative terms. However, consistent with the idea of "uncertain" self-esteem, or high implicit SE reflecting a "glimmer of hope" for LSEs, we believe that individuals with discrepant low SE can benefit from unambiguously positive outcomes more than individuals with low explicit and low implicit SE. If this is true, then individuals with discrepant low SE may be aptly characterized as having *responsive* SE. We test this possibility in the present studies.

OVERVIEW OF THE PRESENT STUDIES

Across two studies, we test whether LSEs with high implicit SE fare better than LSEs with low implicit SE, in terms of their psychological well-being, after positive outcomes. In Study 2, we also test whether they fare worse after negative outcomes. Specifically, we examine the effects of performance outcomes on LSEs' levels of self-esteem. In both studies, we focus on self-esteem as an outcome because the predicted responsiveness of LSEs with high implicit SE may result from efforts to resolve discrepant self-evaluations. Such efforts may primarily affect explicit SE, because implicit SE is less influenced by deliberative reasoning and pressures to maintain cognitive consistency (Gawronski & Bodenhausen, 2006; Gawronski & Strack, 2004; Gawronski et al., 2009; Grumm, Nestler, & von Collani, 2009). Thus, in both studies we examine changes in explicit self-esteem as a consequence of initial levels of implicit SE, explicit SE, and performance outcomes.

Study 1 tests whether positive feedback on an intellectual test increases state self-esteem for LSEs with high implicit SE more than those with low implicit SE. Study 2 examines natural variation in the midterm grades of first-year university students. It examines whether high midterm grades enhance the trait self-esteem of LSEs with high implicit SE more than those with low implicit SE, and whether poor midterm grades diminish the trait self-esteem of LSEs with high implicit SE more than those with low implicit SE. In addition, Study 2 examines depressive symptoms as an indicator of psychological well-being. As noted earlier, past research has been inconsistent concerning the relation between implicit self-esteem and depression among LSEs. Taking into consideration recent outcomes in important domains (such as university grades) may help to clarify this relation. As with self-esteem, we expect LSEs with high implicit SE to experience more severe depressive symptoms after receiving poor grades but less severe symptoms after receiving high grades, compared to those with low implicit SE.

Note that we did not expect performance in either study to significantly affect the self-esteem or depressive symptoms of individuals with high explicit SE, regardless of their levels of implicit SE. Positive performance seemed unlikely to enhance these individuals already positive self-views and lack of depressive symptoms.

Similarly, negative performance might threaten individuals with discrepant high SE, but their defensive tendencies would likely prevent significant decreases in self-esteem due to poor performances. We similarly expected these individuals to be buffered from increases in depressive symptoms due to negative outcomes. Because of these considerations, we expected the effects of performance on self-esteem, as a function of implicit SE, to be evident only for LSEs.

STUDY 1

We first tested the effects of positive performance. As noted earlier, a number of studies comparing LSEs with high and low implicit SE have found that those with high implicit SE fare worse than those with low implicit SE. These studies have examined differences between LSEs under baseline conditions or after negative events (i.e., stressors or a negative mood induction). We contend, however, that LSEs with high implicit SE may fare better than those with low implicit SE when they perform well. To test this possibility, in Study 1, we manipulate feedback on an intellectual task and examine its effect on state self-esteem. We expect LSEs with high implicit SE to report higher state self-esteem than those with low implicit SE after receiving positive feedback, but not after a neutral experience.

METHODS

Participants

Eighty-one undergraduates participated for $7 Canadian or course credit. Three were excluded because they expressed suspicion during debriefing,[1] two for failing to follow instructions, and one's data were lost due to experimenter error, leaving 75 participants. All were Caucasian, 31 were male.

Materials and Procedure

Participants completed the Rosenberg (1965) Self-Esteem Scale (RSES) at the start of term. They were invited to participate in a

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1. Retaining these participants does not change the pattern of results.

study on "validating psychological measures." Participants individually completed the SE Implicit Association Test (IAT) and were randomly assigned to the positive feedback or control condition by a female experimenter. She was blind to participants' explicit and implicit SE, but not feedback condition. She followed a script to maintain consistent behavior.

Explicit Self-Esteem. The RSES is a 10-item measure of trait SE (Cronbach's α = .90). Items include, "I feel that I am a person of worth, at least on an equal basis with others" (1 *very strongly disagree* to 9 *very strongly agree*).

Implicit Self-Esteem. We measured implicit SE using the IAT (Greenwald, McGhee, & Schwartz, 1998), because it has better reliability than other implicit SE measures (Bosson, Swann, & Pennebaker, 2000), and a number of studies suggest its construct validity (e.g., Greenwald & Farnham, 2000; Jordan, Spencer, Zanna, et al., 2003; Jordan et al., 2007). It also corresponds better than other measures to our conceptualization of implicit SE as the association between the self-concept and positive or negative affect (Karpinski & Steinberg, 2006). We acknowledge some controversy over the construct validity of the SE IAT (Buhrmester, Blanton, & Swann, 2011) and consider this controversy in the general discussion.

Participants categorized words as quickly and accurately as possible. Category labels appeared at the upper right and left of the screen. Participants used keys on the right and left of the keyboard to indicate the category to which words belonged. They categorized words as "pleasant" or "unpleasant" (e.g., *sunshine*, *party*, *disease, vomit*) and as "self" or "object" (i.e., *me*, *myself*, *it*, *that*). We chose the category label "object" rather than "other" (as has been used in other studies) to help ensure that IAT scores reflect evaluations of self, and not others (see Jordan et al., 2007; Karpinski, 2004).

During the critical blocks, participants used the combined categories of "pleasant or object" and "unpleasant or self" (Block 3) or "pleasant or self" and "unpleasant or object" (Block 5). For individuals with high implicit SE, the task should be more difficult when unpleasant and self share a response than when pleasant and self share one. They should thus take longer to respond in the former condition. IAT scores represent the difference between average response times in these critical blocks. We used the D600 algorithm to calculate IAT scores (Greenwald, Nosek, & Banaji, 2003). Higher

scores reflect higher implicit SE. Eleven participants had error rates >15% and were excluded from analyses.[2]

Positive Feedback Manipulation. Participants next completed a purported test of "integrative ability," which was described as "a stable, immutable component of intelligence." Test questions came from the easiest items in the Remote Associates Test (RAT; Mednick, 1962). For each item, participants saw three words (e.g., falling, actor, dust) and entered a fourth word that relates the other three (star). Positive feedback participants completed 16 problems and received the feedback: "Adjusted percentage score: 86%; Adjusted percentile score: 85th percentile; Rank 52 out of 351" (pilot testing revealed these as the highest scores participants would believe). The experimenter reinforced this feedback by commenting, "Wow, that's a really high score!" Control participants read through the test but did not answer the questions or receive feedback.

State Self-Esteem. Next participants completed Heatherton and Polivy's (1991) State Self-Esteem Scale (SSES; Cronbach's α = .94). Participants indicated how true 20 statements such as "I feel good about myself" were for them "right now" (1 *not at all* to 5 *extremely*).

Manipulation Check. Participants then completed additional measures and tasks concerning interpersonal relationships that are not germane to the present study, before completing the manipulation check. Participants completed three items on 7-point scales reporting their impressions of their test performance and integrative abilities, and a final item in which they circled their score on the test. Neutral condition participants completed similar items reporting their predictions of how they would have performed if they had taken the test.

RESULTS AND DISCUSSION

Implicit and explicit SE were uncorrelated (r = .01, p = .91). We centered explicit and implicit SE, dummy-coded condition (control = 0, positive feedback = 1), and calculated cross-product vectors between these variables to create interaction terms. There were no gender differences on the dependent variables, so we collapsed across gender for analyses.

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2. Retaining these participants does not change the pattern of results.

Manipulation Check. Every participant in the positive feedback condition correctly identified their percentile rank on the test, with the exception of one LSE participant.[3] We combined the three items on which participants rated or predicted their abilities and their satisfaction with their score (Cronbach's α = .86). Positive feedback participants reported stronger abilities and better performance than control participants anticipated they would have, β = .71, $t(56)$ = 7.53, $p < .001$, suggesting the manipulation was effective. Higher explicit SE was also associated with reports of stronger abilities and better actual or predicted performance, β = .43, $t(56)$ = 3.16, $p < .01$.

Effect of Positive Feedback on State Self-Esteem. We next examined the extent to which explicit SE, implicit SE, and condition predicted subsequent state self-esteem. There was a significant effect of explicit SE, β = .76, $t(56)$ = 6.40, $p < .001$; HSEs reported higher state self-esteem than LSEs. There was also a significant interaction between implicit SE and condition, β = .26, $t(56)$ = 2.03, $p < .05$, such that participants with higher implicit SE reported higher state self-esteem after positive feedback, but not after a neutral experience. All other main effects and interactions were nonsignificant (βs < .12, ts < 1.22, ps > .19), including the three-way interaction (β = -.13, t = -.93, p = .36). Because we were interested in LSEs specifically, however, we tested the implicit SE by condition interaction separately for LSEs (-1 *SD*) and HSEs (+1 *SD*; see Figure 1) to ensure that it was significant for LSEs. This analysis is also comparable to a targeted, planned contrast given our specific *a priori* predictions for LSEs.

As predicted, the interaction was significant for LSEs, β = .38, $t(56)$ = 3.04, p = .004. Implicit SE did not predict state SE in the control condition, β = -.12, $t(56)$ = -.98, p = .33, but did in the positive feedback condition, β = .54, $t(56)$ = 4.21, $p < .001$, such that higher implicit SE predicted higher state self-esteem. Moreover, LSEs with high implicit SE (+1 *SD*) had higher state self-esteem in the positive feedback condition than neutral condition, β = .22, $t(56)$ = 2.74, p = .008, whereas LSEs with low implicit SE (-1 *SD*) had lower state self-esteem in the positive feedback condition than control condition, β = -.27, $t(56)$ = -3.31, p = .002.

In contrast, this interaction was not significant for HSEs, β = .08, $t(56)$ = .61, p = .55, and implicit SE did not predict state self-esteem

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3. This participant identified 65th percentile as their ranking on the test. Excluding this participant does not cause any substantive change to any of the analyses.
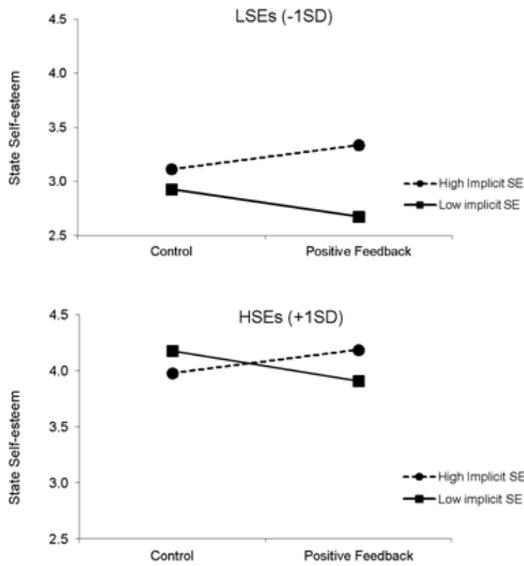
FIGURE 1. State self-esteem as a function of implicit self-esteem and feedback condition for LSEs (-1 SD) and HSEs (+1 SD), Study 1.

in either condition (βs < .11, ts < .85, ps > .40), nor were there any effects of feedback condition on HSEs with high (+1 SD) or low (-1 SD) implicit SE (βs < .06, ts < .76, ps > .45).

Study 1 thus suggests that LSEs with high implicit SE experience greater well-being than those with low implicit SE after positive outcomes. The state self-esteem of LSEs with high implicit SE did not differ from those with low implicit SE after a neutral experience, but was higher after positive feedback. Notably, individuals with low explicit and low implicit SE in this study felt significantly worse, in terms of their state self-esteem, after positive feedback relative to a neutral experience. This is consistent with empirical evidence that LSEs sometimes fare worse after positive experiences (e.g., Logel et al., 2004; Murray et al., 1998; Wood et al., 2005). This reaction might reflect the fact that positive outcomes are inconsistent with LSEs' typically negative self-views and thus violates their expectations and motive for self-verification (Swann, Griffin, Predmore, & Gaines, 1987; Swann, Stein-Seroussi, & Giesler, 1992). This reaction, however, was only evident for LSEs with low implicit SE. LSEs with high implicit SE, as noted, felt significantly better about themselves after a positive experience, in line with our predictions.

The results were more ambiguous for HSEs. When we examined HSEs' responses specifically, implicit SE did not moderate their state SE as a function of feedback. However, the omnibus three-way interaction between explicit SE, implicit SE, and condition was not significant, suggesting that HSEs with high implicit SE (i.e., those with secure self-esteem) may also experience higher state SE than those with low implicit SE (i.e., those with defensive self-esteem) after positive feedback. The results of Study 1 may thus suggest that high implicit SE benefits individuals who experience positive outcomes, regardless of their levels of explicit SE.

We nevertheless expect individuals with discrepant low self-esteem to be particularly responsive to important outcomes. That is, we predict that individuals with low explicit but high implicit SE—rather than all individuals with high implicit SE—will notably benefit from positive outcomes and be notably debilitated by negative outcomes. In Study 2, we thus broaden our analysis to examine negative outcomes. Although HSEs with high implicit SE may benefit more from positive feedback than those with low implicit SE, we did not expect them to experience lower self-esteem as a consequence of negative feedback. We thus expect the full pattern of responsiveness to characterize only LSEs with high implicit SE and not HSEs, a prediction we test in Study 2.

STUDY 2

In Study 2 we attempt to conceptually replicate and extend Study 1 in a high-impact, naturalistic context. During students' first term at university, midterm grades provide feedback about their performance in a new environment in which they are heavily invested. We thus examined the effect of first-year students' midterm grades on self-esteem. This approach extends Study 1 in a number of ways. First, the feedback in Study 1 might have been viewed as trivial by some participants, but midterm grades are consequential for first-year students. The effects observed in Study 1 might also be short-lived; it is possible that positive outcomes lead LSEs with high implicit SE to fare worse over a longer period of time. Thus, in Study 2, we examine the effects of midterm grades on trait self-esteem two weeks later.

Our approach in Study 2 also allows us to address a potential methodological concern in Study 1. The experiences of control par-

ticipants in Study 1 differed from positive feedback participants in a number of ways. To create a neutral experience, we had participants only read the intelligence test questions, rather than answer those questions and receive "average" feedback (following Fein & Spencer, 1997; Jordan, Spencer, & Zanna, 2005). This allowed us to avoid the difficulty of calibrating feedback to be experienced as neutral for all (or most) participants: Though some participants might view 65% as neutral, others would consider it a failure, and this may particularly be the case for LSEs. Thus, although our control participants received a neutral experience, observed differences in Study 1 could arguably reflect effects of completing the test and having received *any* feedback, rather than effects of positive feedback. In Study 2, we avoid this problem by examining participants' responses to actual grades. All participants completed exams and assignments, as part of their program of study, for which they receive graded evaluations. Although participants might still perceive different levels of achievement differently, the outcomes represent the full range of possible letter grades and allow us to examine the effects of actual grade outcomes on LSEs' well-being.

In addition, Study 2 allows us to examine a question raised by Study 1: If success enhances the state self-esteem of LSEs with high implicit SE, can it lead them to develop higher trait self-esteem over time? We believe that it can. But the flipside of this responsiveness hypothesis is that LSEs with high implicit SE may also be particularly debilitated by failure. Thus we predict that LSEs with high implicit SE will develop higher trait self-esteem if they experience significant success. But if they experience failure, they may experience more diminished well-being and lower trait self-esteem than LSEs with low implicit SE. We test these possibilities by examining the effects of midterm grades on trait self-esteem.

Lastly, to extend Study 1, we also examine depressive symptoms as an indicator of psychological well-being in Study 2. To the extent that individuals with discrepant low self-esteem look to recent outcomes for cues to how to resolve their inconsistent self-evaluations, a focus on positive outcomes may reduce their depressive symptoms whereas a focus on negative outcomes may exacerbate them. We thus expected that two weeks after receiving high grades, LSEs with high implicit self-esteem would report less severe depressive symptoms. In contrast, two weeks after poor grades, they would report more severe depressive symptoms. This pattern of results may suggest a reason why research on the relation between implicit

self-esteem and depression has been inconsistent in past studies: Researchers may need to consider recent outcomes in important domains to determine how the implicit SE of LSEs relates to depression.

Thus, in Study 2, we measured first-year students' explicit and implicit SE soon after they arrived at university, and had them report their grades, trait self-esteem, and depressive symptoms every two weeks until after midterms, for a total of four time points. We examined the effect of midterm grades (at Time 3) on trait self-esteem and depressive symptoms two weeks later (Time 4). Consistent with Study 1, we expected high grades to lead LSEs with high implicit SE to report higher self-esteem two weeks later, relative to LSEs with low implicit SE. In contrast, we expected low grades to lead LSEs with high implicit SE to report lower self-esteem relative to LSEs with low implicit SE. We had parallel predictions for depression: We expected LSEs with high implicit SE to be less depressed than those with low implicit SE two weeks after receiving high grades, but to be more depressed after receiving low grades.

METHODS

Participants and Design

Two hundred and three first-year undergraduates participated in four online surveys in exchange for course credit. There was some attrition, with 176 participants (87%) responding to all measures at all four times. Participants were predominantly Caucasian ($n = 134$), followed by Asian ($n = 34$), and East Indian ($n = 14$). Sixty-one were male.

Materials

Explicit and Implicit Self-Esteem. We measured implicit and explicit SE with the IAT and RSES exactly as in Study 1. Seventeen participants had error rates > 15% on the IAT and were excluded from analyses.[4]

Depression. Depressive symptoms were measured with Beck's Depression Inventory (BDI; Beck, Erbaugh, Ward, Mock, & Mendelsohn, 1961). The BDI is a widely used measure of depression that

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4. Retaining these participants does not change the pattern of results.

consists of 21 items (Cronbach's α = .90), which each contain four statements reflecting an escalating severity of depressive symptoms. For each item, participants select the statement that best describes how they have felt in the past week. Responses were summed, with higher scores reflecting greater severity of depressive symptoms.

Procedure

The Time 1 survey was administered during the second week of participants' first year of university. As part of a mass-testing package, participants filled out the RSES and the IAT. Participants reported the average grade they expected to receive, would be satisfied with, and would be pleased with, so we could determine whether any effects were simply due to differing expectancies. Participants also completed the BDI. Individuals who identified themselves as first-year students living in an on-campus residence were invited to participate in additional surveys every two weeks.

At each time point, participants first completed the BDI and a series of measures unrelated to this study (see Stinson et al., 2008, Study 2 for full details). They then reported any grades they received in the previous two weeks on assignments, exams, or papers, using drop-down boxes with 6-point scales to indicate their average grades in each category (0: 49% or under, 1: 50–59%, 2: 60–69%, etc. to 5: 90% or higher). Next, participants completed additional measures not germane to this study (dealing with relationship stress and conflict) and the RSES.

RESULTS AND DISCUSSION

As in Study 1, explicit and implicit SE did not correlate ($r = .08$, $p = .30$). Explicit SE, implicit SE, and their interaction did not predict participants' reports of grades they expected to receive or grades with which they would be satisfied or pleased (ts < 1.10, ps > .27), suggesting that these factors cannot explain our observed results.

Effect of Grades on Self-Esteem. We averaged participants' Time 3 reports of grades in the past two weeks on exams, papers, and assignments, which coincided with midterm exams for most first-year students. We centered explicit SE (Time 1), implicit SE (Time 1), and midterm grades (Time 3), and created interaction terms by multi-
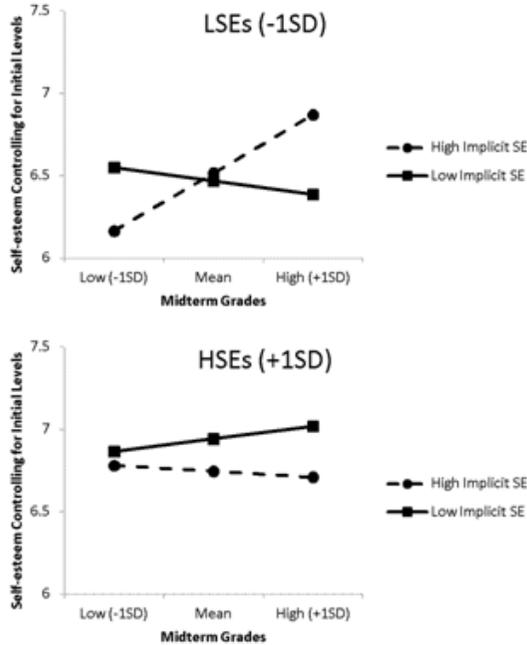
FIGURE 2. Trait self-esteem, controlling for initial levels, as a function of implicit self-esteem and midterm grades for LSEs (-1 SD) and HSEs (+1 SD), Study 2.

plying the centered variables together. Initial analyses included gender, but no significant effects of gender emerged (ts < .49, ps > .63). We thus dropped gender as a predictor.

To examine how trait self-esteem changed after midterms, we included explicit SE from before midterms (at Time 2) as a control variable. *The dependent variable thus represents change in self-esteem from before midterms (Time 2), to two weeks after midterms (Time 4). Participants' explicit SE before midterms predicted self-esteem after midterms,* β = .75, $t(150)$ = 9.97, p < .001. This effect was qualified by a significant three-way interaction, β = -.09, $t(150)$ = -1.93, p = .05. No other main effects or interactions were significant (βs < .11, ts < 1.40, ps > .16). As illustrated in Figure 2, the two-way interaction between implicit SE and grades was significant among LSEs (-1 *SD*), β = .13, $t(150)$ = 2.19, p =. 03, but not HSEs (+1 *SD*), β = -.03, $t(150)$ = -.54, p = .59.

To understand the two-way interaction for LSEs, we first examined simple slopes for LSEs at high (+1 *SD*) and low (-1 *SD*) implicit

SE. Among LSEs with low implicit SE, grades did not predict later self-esteem, β = -.05, $t(150)$ = -.67, p = .50. For LSEs with high implicit SE, in contrast, grades predicted self-esteem two weeks later, β = .21 $t(150)$ = 2.02, p = .046. Thus, whereas the self-esteem of LSEs with low implicit SE was unrelated to their midterm grades, LSEs with high implicit self-esteem had higher self-esteem two weeks after high midterm grades and lower self-esteem two weeks after poor midterm grades.

We also examined simple slopes for LSEs with low grades (-1 SD, corresponding with a grade in the high 50s), average grades (corresponding with a grade in the low 70s), and high grades (+1 SD, corresponding with a grade in the mid-80s). Among LSEs with average grades, the slope for implicit SE was nonsignificant, β = .01, $t(150)$ = .25, p = .80. However, for those with high grades, the slope for implicit SE was marginally positive, β = .14, $t(150)$ = 1.76, p = .08, such that higher implicit SE predicted higher self-esteem two weeks later. In contrast, the slope was negative among LSEs with low grades, such that higher implicit SE predicted lower self-esteem two weeks later, though nonsignificantly, β = -.11, $t(150)$ = -1.36, p = .17. If, instead of testing at the conventional testing points of 1 SD above and below the mean for grades, we test at 1.5 SD, the results are more pronounced. For LSEs with high grades (+1.5 SD), the slope for implicit SE is significantly positive, β = .21, $t(150)$ = 2.00, p = .048. For LSEs with low grades (-1.5 SD), the slope for implicit SE is marginally negative, β = -.18, $t(150)$ = -1.66, p = .098.

Effect of Grades on Depression. To examine the effect of grades on participants' levels of depression we conducted parallel analyses to those reported above for self-esteem. However, in these analyses, we controlled for the average of participants' BDI scores at Time 1 and Time 2 and omitted Time 2 RSES scores as a control variable. The dependent variable thus reflects change in depressive symptoms from before midterms (Times 1 & 2 averaged), to two weeks after midterms (Time 4). Participants' depressive symptoms before midterms predicted depression after midterms, β = .74, $t(150)$ = 10.40, p < .001. The interaction between implicit self-esteem and grades also predicted depression, β = -.14, $t(150)$ = -2.54, p = .01, but this effect was qualified by a significant three-way interaction, β = .12, $t(150)$ = 2.00, p = .047. No other main effects or interactions were significant (βs < .08, ts < 1.35, ps > .17). As illustrated in Figure 3, the two-way interaction between implicit SE and grades was significant
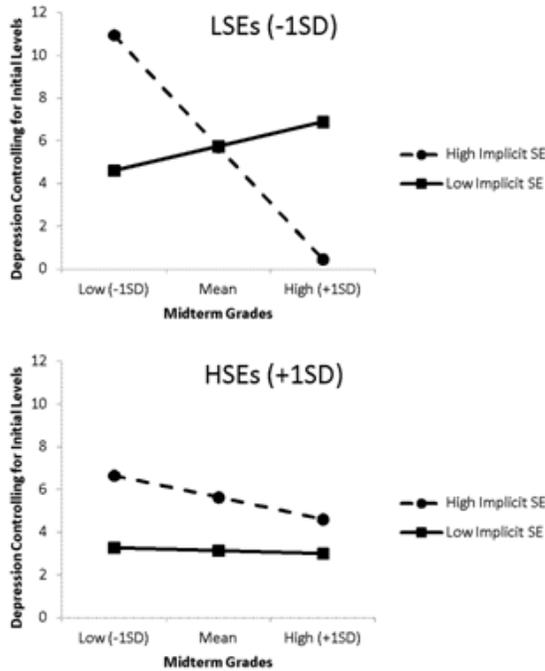
FIGURE 3. Depressive symptoms, controlling for initial levels, as a
function of implicit self-esteem and midterm grades for LSEs (-1 SD)
and HSEs (+1 SD), Study 2.

among LSEs (-1 *SD*), β = -.25, *t*(150) = -3.27, *p* =. 001, but not HSEs
(+1 *SD*), β = -.03, *t*(150) = -.41, *p* = .69.

   To understand the two-way interaction for LSEs, we examined
simple slopes for LSEs at high (+1 *SD*) and low (-1 *SD*) implicit SE.
Among LSEs with low implicit SE, grades did not significantly pre-
dict later depression, β = .13, *t*(150) = 1.44, *p* = .15. For LSEs with
high implicit SE, in contrast, grades predicted depressive symp-
toms two weeks later (and lower grades predicted more depressive
symptoms), β = -.37, *t*(150) = -2.72, *p* = .007. Thus, whereas the de-
pressive symptoms of LSEs with low implicit SE were unrelated to
their midterm grades, LSEs with high implicit self-esteem had less
severe depressive symptoms two weeks after high midterm grades
and more severe symptoms two weeks after poor midterm grades.

   We also examined simple slopes for LSEs with low grades (-1 *SD*),
average grades, and high grades (+1 *SD*). Among LSEs with aver-
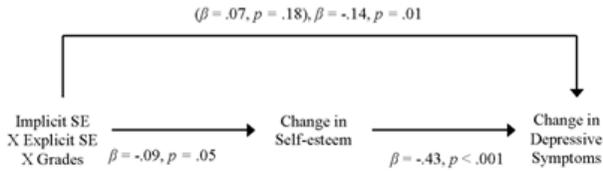age grades, the slope for implicit SE was nonsignificant, β = -.01,

FIGURE 4. The interaction between implicit SE, explicit SE and midterm grades predicting depressive symptoms two weeks later, controlling for initial levels, as mediated by changes in trait self-esteem, Study 2.

$t(150) = -.14$, $p = .89$. However, for those with high grades, the slope for implicit SE was significantly negative, $\beta = -.26$, $t(150) = -2.45$, $p = .02$, such that higher implicit SE predicted less depressive symptoms two weeks later. In contrast, the slope was positive among LSEs with low grades, such that higher implicit SE predicted more depressive symptoms two weeks later, $\beta = .24$, $t(150) = 2.18$, $p = .03$.

Mediation

We also examined the possibility that the effect of discrepant low self-esteem, in combination with grades, on depressive symptoms was mediated by changes in self-esteem. That is, we examined a model of mediated moderation in which the three-way interactive effect of explicit SE, implicit SE, and grades on depressive symptoms was mediated by changes in self-esteem (see Figure 4). Among LSEs, implicit SE moderated the effect of grades on both changes in self-esteem (the mediator) and depression (the outcome) two weeks later, as reported above. When self-esteem (at Time 3) was included in the regression analysis predicting change in depression, it was a significant predictor, $\beta = -.43$, $t(150) = -5.14$, $p < .001$, and the three-way interaction was reduced to nonsignificance, $\beta = .07$, $t(150) = 1.34$, $p = .18$. Furthermore, a test of the indirect effect of self-esteem on depression, using a bootstrapping analysis with 1000 bootstrap samples (Preacher & Hayes, 2004), indicated that this degree of mediation was significant; the 95% confidence interval for the indirect effect did not include zero [lower bound = .0151, upper bound = 1.704]. In contrast, a reverse mediation model (testing the indirect effect of the three-way interaction on self-esteem, mediated by depression) was not a good fit for our data. In this case, the 95% con-

fidence interval for the indirect effect included zero [lower bound = -.24, upper bound = .03].

SUMMARY

Overall, these results support our responsiveness hypothesis in a high-impact, naturalistic context. Two weeks after receiving average midterm grades, LSEs' trait self-esteem and depressive symptoms (controlling initial levels) did not differ according to their implicit SE. But after high midterm grades, LSEs with high implicit SE experienced higher self-esteem and less severe depressive symptoms two weeks later, compared to LSEs with low implicit SE. This finding replicates Study 1, but demonstrates a more enduring change in trait self-esteem. In contrast, after low midterm grades, LSEs with high implicit SE experienced lower self-esteem (albeit marginally) and more severe depressive symptoms two weeks later, compared to LSEs with low implicit SE. Thus both aspects of our responsiveness hypothesis were supported. Our data, moreover, support a model in which the effects of discrepant low SE and grades on depressive symptoms were mediated by changes in self-esteem. Lastly, it is worth noting that, unlike Study 1, explicit SE significantly moderated the results of Study 2. Perhaps because we broadened our analysis to consider negative outcomes, or because we examined a more consequential personal outcome, the pattern of responsiveness to recent outcomes was evident only for LSEs with high implicit SE and not for HSEs with high implicit SE.

GENERAL DISCUSSION

The results of two studies support the possibility that LSEs with high implicit SE have responsive SE—their well-being may be particularly responsive to performance outcomes in important, self-relevant domains. In Study 1, after receiving positive feedback on an intellectual task, LSEs with high implicit SE reported higher state self-esteem than those with low implicit SE. Study 2 examined changes in trait self-esteem and depressive symptoms among first-year university students after receiving midterm grades. The grades of LSEs with high implicit SE significantly affected their trait self-esteem and depressive symptoms two weeks later. After

receiving high grades, relative to low grades, they reported higher trait self-esteem and less severe depressive symptoms. In contrast, grades had no effect on the trait self-esteem or depressive symptoms of LSEs with low implicit SE. Similarly, among LSEs who received high grades, those with high implicit SE reported higher trait self-esteem and less depressive symptoms two weeks later, relative to those with low implicit SE. In contrast, among LSEs who received low grades, those with high implicit SE reported lower trait self-esteem (albeit marginally) and more severe depressive symptoms two weeks later, relative to those with low implicit SE. Taken together, these findings suggest that LSEs' psychological well-being may depend on the joint influence of their implicit SE and recent outcomes in important domains.

One question that remains is whether this pattern is related to discrepant low SE specifically or high implicit SE in general. In Study 1, we found in focused analyses that implicit SE moderated the impact of positive feedback for LSEs but not for HSEs. However, explicit SE did not significantly moderate the results (i.e., there was no significant 3-way interaction between explicit SE, implicit SE, and feedback condition). This ambiguous pattern of results raises the possibility that implicit SE alone, rather than discrepant low SE, is consequential in determining the impact of recent outcomes on psychological well-being. We do expect that in some instances high implicit SE is beneficial to HSEs as well as LSEs. However, explicit SE did significantly moderate the extent to which implicit SE and midterm grades affected self-esteem and depressive symptoms in Study 2. In addition, to further address this issue, we conducted a meta-analysis combining the three-way interactions between explicit SE, implicit SE, and outcome (positive feedback or grades) for self-esteem in Studies 1 and 2. This analysis revealed an overall significant moderation effect ($z = 2.01$, $p = .04$). Thus, although the conclusion should remain tentative, our results support the importance of discrepant low SE in determining responses to recent outcomes, more so that high implicit SE alone.

RESPONSIVE OR UNCERTAIN LOW SELF-ESTEEM?

Our responsiveness hypothesis suggests that LSEs with high implicit SE benefit more from positive outcomes and are more debilitated by negative outcomes than those with low implicit SE. The

present findings, however, may provide clearer evidence of the beneficial impact of positive outcomes than the deleterious effect of negative outcomes for LSEs with high implicit SE. We did not examine negative outcomes in Study 1. And in Study 2, the difference in trait self-esteem between LSEs with high and low implicit SE was significant for participants who received good grades (at +1.5 *SD*) but was only marginally significant for those who received poor grades (at -1.5 *SD*). Thus, our findings may more clearly support the possibility that discrepant low SE reflects "uncertain" SE (Zeigler-Hill et al., 2010) or provides a beneficial "glimmer of hope" to LSEs (Spencer et al., 2005). However, we believe that our findings and the broader literature support an overall picture of discrepant low SE as reflecting responsive SE.

As described earlier, LSEs with high implicit SE have, in a number of studies, been found to be less well adjusted than LSEs with low implicit SE across a variety of indicators of well-being (Cockerham et al., 2009; Creemers et al., 2012; De Raedt et al., 2006; Franck, De Raedt, & De Houwer, 2007; Franck, De Raedt, Dereu, & Van den Abbeele, 2007; Schröder-Abé, Rudolph, & Schütz, 2007; Schröder-Abé, Rudolph, Wiesner, et al., 2007; Vater et al., 2010). There is also evidence that LSEs with high implicit SE react more negatively to stressful events (Haeffel et al., 2007). We, moreover, found a significant impact of midterm grades on the depressive symptoms of LSEs with high implicit SE. After receiving high grades, LSEs with high implicit self-esteem reported significantly less severe depressive symptoms than LSEs with low implicit self-esteem; after receiving poor grades, they reported significantly more severe depressive symptoms. Thus, taken together, we believe the available evidence for how implicit SE relates to the well-being of LSEs supports a view of these individuals as having responsive SE.

Our findings may thus help to resolve inconsistency in past results. Though most studies have found that LSEs with high implicit SE fare worse psychologically than those with low implicit SE, some studies have found that LSEs with high implicit SE fare better (Buhlmann et al., 2008, 2009; Risch et al., 2010; Tanner et al., 2006). Our findings may help to resolve this inconsistency because they suggest that how LSEs with high implicit SE fare relative to those with low implicit SE may depend on their recent outcomes in important domains. When they experience negative outcomes, LSEs with high implicit SE may fare worse, but when they experience positive outcomes, they fare better. In particular, our findings may

help to clarify the relation between depression and implicit self-esteem, which, as noted earlier, has been inconsistent in past research. It may also be worth examining whether other indicators of well-being, such as physical health symptoms, anxiety, and body image concerns demonstrate a similar pattern of responsiveness among LSEs with high implicit SE.

INTEGRATING AND EXTENDING PAST THEORY

Parallel to the inconsistency in past empirical findings, varied theoretical accounts of the psychological character of individuals with discrepant low SE have been proposed. On the one hand, they have been described as having damaged SE (Cockerham et al., 2009; Schröder-Abé, Rudolph, & Schütz, 2007; Schröder-Abé, Rudolph, Wiesner, et al., 2007). Indeed, maladaptive outcomes have been more commonly found than benefits for LSEs with high implicit SE. This pattern of findings may reflect the fact that self-esteem discrepancies can produce direct negative consequences, in terms of inducing negative affect and arousal (e.g., Cheng et al., 2012; see Jordan et al., 2012; Schröder-Abé, Rudolph, & Schütz, 2007). In addition, our current findings suggest that individuals with discrepant low SE are more adversely affected by negative outcomes. This may be a common response for LSEs because they may typically interpret moderate or ambiguous outcomes as negative (e.g., Roberts, 2006). They may thus interpret a broad range of outcomes to be negative in tone. Our results may thus help to extend research on the maladaptive consequences of high implicit SE for LSEs.

However, our results are also consistent with work that characterizes individuals with discrepant low SE as having uncertain SE (Zeigler-Hill et al., 2011). This perspective suggests that these individuals will sometimes feel positively about themselves and may be able to use these experiences to improve their psychological well-being. Indeed, in our own past theorizing we suggested that high implicit SE may be experienced as a "glimmer of hope" for LSEs. Our present findings suggest that high implicit SE is not always detrimental for LSEs. When LSEs with high implicit SE experience unambiguous positive outcomes, they may have greater well-being than LSEs with low implicit SE. Our current findings thus help to integrate and extend past theorizing about discrepant low SE. There may be both truth and limitations to accounts of discrepant low SE

as being damaged or uncertain. We believe that a reconciliation of these views, that is consistent with the present findings and the broader literature, is that discrepant low SE reflects responsive SE.

IS IT REALLY IMPLICIT SE?

We note that a recent review questions the validity of implicit measures of SE, including the IAT (Buhrmester et al., 2011). The full scope of this review is too broad to debate here, but we note that Buhrmester and colleagues conclude that the problem lies in "the dubious assumption that self-esteem can be reduced to a simple self-related association or conditioned response" (p. 376). We believe a major part of their critique thus lies in what one is willing to label conceptually as SE. They conclude that implicit SE as measured by the IAT should be viewed as "generalized implicit affect" (p. 365). This conclusion is consistent with our working model of implicit SE as cognitive associations between the self-concept and positive or negative affect, if it is interpreted as generalized implicit affect that is associated with the self—as we believe it should be. Elsewhere, we have found that both positive and negative outcomes make positive self-views more accessible to individuals with high implicit SE (measured by the IAT) and negative self-views more accessible to those with low implicit SE (Jordan et al., 2012). Thus, implicit SE appears to be linked to the self-concept.

   Furthermore, Buhrmester and colleagues identify the finding that discrepant high self-esteem is defensive as "the most robust finding in the implicit self-esteem literature" (p. 377). They suggest that this combination of implicit and explicit SE identifies "individuals who are experiencing momentary (implicit) sentiments that conflict with stable (explicit) evaluations," (pp. 376–377) or "people who think well of themselves but have transient feelings of unspoken dysphoria or self-doubt" (p. 377). Though we focus on the opposite discrepancy here (i.e., low explicit with high implicit SE), we generally agree with this assessment. We are, however, more persuaded than Buhrmester et al. by evidence that implicit SE has a stable component (see Zeigler-Hill & Jordan, 2010). Indeed, in Study 2, we found that IAT scores, in combination with explicit SE and midterm grades, predicted well-being eight weeks later. Thus, although SE IAT scores can be affected by context, we believe they also reflect a stable component of implicit SE.

The most significant remaining question, we believe, is whether the construct measured by the SE IAT should be properly conceptualized as a form of SE. This is an important issue and echoes concerns about measures of implicit attitudes generally (i.e., whether they measure attitudes; e.g., Gawronski & Bodenhausen, 2006; Olson & Fazio, 2009). We would support efforts to re-label this construct something more theoretically precise such as "associative self-feelings" or "evaluative self-associations." For the present article, however, we maintain the convention of calling this construct implicit SE in order to link our findings to past research in this area. Although SE IAT scores may not robustly predict the criterion measures that Buhrmester et al. (2011) focused on in their review, we believe the kinds of findings reported in the present article can help move research on implicit SE forward. If one wants to specify the relation between implicit SE and psychological well-being, doing so may require considering explicit SE and recent outcomes in important domains.

CONCLUDING REMARKS

LSEs may stand to gain the most from successful performances. If researchers can understand better how success and failure affect LSEs, they may be better able to enhance LSEs' well-being. Our findings contribute toward understanding these issues. They suggest that LSEs' reactions to positive and negative outcomes depend on their implicit SE. We found that positive performances increased the well-being of LSEs with high implicit SE. Their trait self-esteem and depressive symptoms were measurably improved two weeks after receiving high grades. LSEs with high implicit SE may thus, in effect, become more secure, high SE individuals over time. However, to do so may require sustained success, as these individuals may also be more debilitated by failure. Negative performances, either real or perceived, may prevent them from developing higher self-esteem, consistent with our findings in Study 2. Our findings may nevertheless provide useful clues to how best to enhance the well-being of LSEs.

This research also contributes to a growing literature emphasizing the importance of implicit SE for predicting self-relevant behavior and outcomes. Past research shows that implicit SE is associated with unique psychological outcomes for individuals with high ex-

plicit SE, contributing to defensiveness or security (e.g., Bosson et al., 2003; Jordan et al., 2003). Past research also suggests that implicit SE is consequential for LSEs but the findings have been perplexingly mixed. LSEs with high implicit SE have generally been found to be less well adjusted than LSEs with low implicit SE, though some studies have found them to be better adjusted. The present findings may suggest why past research is inconsistent—how LSEs with high implicit SE fare relative to LSEs with low implicit SE depends on recent performances in self-relevant domains. When things go poorly, LSEs with high implicit self-esteem may fare worse than those with low implicit SE, but when things go well, they fare better. Because of this, we suggest that individuals with discrepant low SE are best characterized as having responsive SE.

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