

Implicit Self-Esteem: Nature, Measurement, and a New Way Forward

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Gaining insight into the nature and consequences of people's global self-evaluations (i.e., their self-esteem) has been fraught with difficulty. Nearly 2 decades ago, researchers suggested that such difficulties might be addressed by the development of a new class of measures designed to uncover implicit self-esteem. In this article, we evaluate the construct validity of the 2 most common measures of implicit self-esteem, the Implicit Association Test (IAT) and Name–Letter Test (NLT). Our review indicates that the research literature has not provided strong or consistent support for the validity of either measure. We conclude that both tests are impoverished measures of self-esteem that are better understood as measures of either generalized implicit affect (IAT) or implicit egotism (NLT). However, we suggest that there surely are aspects of self-esteem that people are unwilling or unable to report and suggest a general approach that may allow researchers to tap these unspoken aspects of self-esteem.

Keywords: self-esteem, implicit measures, Implicit Association Test, name–letter effect, implicit egotism

Proper self-esteem [is] a state of mind that ought to be. Those, moreover, who estimate their own worth correctly, do so on the basis of their past deeds, and so, what they have done, they dare to try again. Those who estimate their worth too highly, or who pretend to be what they are not, or who believe flatterers, become disheartened when dangers actually confront them.

—Thomas Hobbes, *De Homine*

As Hobbes's remarks testify, the construct of self-esteem has a long history in Western culture. But his remarks also acknowledge the difficulty of accurately assessing and reporting one's value. And so, although self-esteem has soared in popularity among both laypersons (e.g., Branden, 1994) and academics (e.g., Bosson & Swann, 2009), some have registered gnawing doubts regarding the capacity of people to report faithfully their true self-evaluations. These concerns have recently dovetailed with growing interest in implicit, nonconscious processes to produce an exciting new construct: Implicit self-esteem. Here, we focus on the nature and measurement of this new construct, what is known about its relation to theoretical correlates of self-esteem, and how researchers might approach this new construct in the future. To place our analysis in context, we begin with a brief discussion of challenges associated with measuring self-esteem using traditional, explicit methods.

Measuring Self-Esteem

Throughout most of the 6 decades since the introduction of the first measure of self-esteem (Raimy, 1948), theorists agreed that explicit self-esteem refers to feelings of self-worth or the global evaluation of the self (Bosson & Swann, 2009; Rosenberg, 1965; Shavelson, Hubner, & Stanton, 1976). But, if there is consensus regarding the nature of self-esteem, there is less agreement regarding the most appropriate means of assessing it. To date, the most widespread approach has been to explicitly ask people a series of questions regarding their global self-evaluation. Critics have faulted such measures on at least three counts. First, the verbal questionnaires designed to assess explicit self-esteem may fail to capture self-views of which people are unaware (e.g., Greenwald & Farnham, 2000). Second, even if people are aware of a given self-view, they might fail to express it due to self-presentational pressures that tempt them to inflate their self-evaluations (e.g., Paulhus, 1991, 2002). Third, perhaps due to the foregoing limitations, researchers have failed to uncover strong and consistent support for the predictive validity of measures of explicit self-esteem (see Baumeister, Campbell, Krueger, & Vohs, 2003).

Although some have countered the foregoing critiques (e.g., Marsh & Craven, 2006; Swann, Chang-Schneider, & McClarty, 2007), it is certainly possible that measures of explicit self-esteem may fail to capture important aspects of self-knowledge. With this possibility in mind, researchers developed several measures of implicit self-esteem (see Bosson, Swann & Pennebaker, 2000). By far the most popular of these measures have been a pair dubbed the Implicit Association Test (IAT) and the Name–Letter Test (NLT). Both measures are based on the assumption that implicit self-esteem is a valenced association that a person has toward himself or herself. Although researchers differ in how they characterize this association, some consensus has emerged regarding its nature

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and properties. This consensus and the research it has generated provide the basis for our assessment of the construct validity of measures of implicit self-esteem.

Implicit Self-Esteem: Nature and Measurement

Some of the enthusiasm for developing implicit variants of existing psychological constructs derives from interest in exploring the utility of new research methods (Fazio & Olson, 2003). Although new methods can certainly be useful, care must be taken if the development of new research methods morphs into the introduction of new psychological constructs. For example, the mere presence of new labels such as *implicit self-esteem* tends to legitimize associated measures by implying that the construct has already been validated. But for a measure to have broad potential to advance basic and applied research, construct validation should be viewed as an ongoing process, one that includes a focus on both the methods and the related theories. From this vantage point, past critiques of implicit measurement (De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009; Gawronski, LeBel, & Peters, 2007) and reviews of validity issues (e.g., Greenwald, Poehlman, Uhlmann, & Banaji, 2009) have been limited by a focus on methodological issues. Our goal is to focus on the theorized nature of implicit self-esteem so that the construct validity of existing measures can be evaluated.

Assessing the construct validity of measures of implicit self-esteem is challenging for several reasons. One fundamental issue is definitional. That is, the first step to any construct validation effort traditionally involves the identification of a single, consensual definition of the construct of interest (John & Soto, 2007; Smith, 2005). With implicit self-esteem, however, at least two working definitions can be found.

The earliest definition of implicit self-esteem grew out of dual systems theory (Greenwald & Banaji, 1995). Workers in this tradition defined implicit self-esteem as a unique construct, distinct from the construct measured by traditional explicit measures. Whereas explicit self-esteem was thought to be rooted in rational, conscious self-assessments, implicit self-esteem was presumed to be “preconscious, automatic, nonverbal, associative, rapid, effortless, concrete, holistic, and intimately associated with affect” (Epstein, 2006, p. 69). From this vantage point, explicit and implicit self-knowledge represent fundamentally distinct constructs that derive from different types of learning experiences, have independent effects on thoughts, feelings, and behaviors, and may even be processed via separate systems in the brain (Rudman, Dohn, & Fairchild, 2007).

From a less radical perspective, one assumes that implicit and explicit self-esteem are derived from the same knowledge system but have unique properties because implicit self-esteem is indirectly measured (Hetts, Sakuma, & Pelham, 1999; Fazio & Towles-Schwen, 1999). Indirect measurement is thought to be important because it deprives people of the opportunity to consciously alter responses. As such, scores obtained via implicit, as opposed to explicit, measures are more apt to capture unfiltered aspects of self-esteem (Olson, Fazio, & Hermann, 2007; Dijksterhuis, Albers, & Bongers, 2010). This feature should be particularly valuable to researchers when respondents are motivated to engage in impression management.

Although distinct, these two interpretations of the implicit self-esteem construct do share some common ground. For example, both definitions imply that this new form of self-esteem cannot be

measured by simply asking people how they feel about themselves; measures of implicit self-esteem must be indirect in a way that explicit measures are not. In addition, because implicit measures are capable of unveiling aspects of self-knowledge that are not captured by explicit measures, relations between the two types of measures should be weak or nonexistent.

From these points of agreement, we distill the following working definition of implicit self-esteem: a global self-evaluation that people are unable or unwilling to report. Note that this minimalist definition is agnostic with respect to the existence of a distinct construct dubbed implicit self-esteem (e.g., Tafarodi & Ho, 2006). Rather than take a stand regarding the existence of such a construct, for now we simply acknowledge the potential existence of aspects of self-esteem that people routinely fail to report and proceed to evaluate the construct validity of instruments that have been developed to measure these aspects of self-esteem.

We have organized our assessment of the construct validity of implicit self-esteem measures into three sections. The first section describes the two most widely used measures of implicit self-esteem, including each measure’s psychometric properties (i.e., temporal stability, convergent validity and discriminant validity). The second section offers a general characterization of studies of implicit self-esteem as well as our approach to reviewing the literature. The third section focuses on the extent to which implicit self-esteem measures display relations to criteria that are consistent with our working definition and that support the construct validity of these instruments. Within each section, we assess the IAT and NLT separately because they have been shown to be largely independent.

Measures of Implicit Self-Esteem: Methodological and Psychometric Properties

Assessment of Implicit Self-Esteem

One of the first articles to examine the psychometric properties of measures of implicit self-esteem was Bosson et al. (2000). Among other things, they concluded that only two extant measures—the IAT and NLT—approached acceptable levels of test-retest reliability. This conclusion appears to have led nearly all subsequent researchers to use one of these two measures. When we reviewed the literature on implicit self-esteem (as described below), we found 79 studies with the IAT, 40 with the NLT, and only 20 studies with all other measures combined. In light of the preponderance of studies using the IAT and NLT, we focused our analysis on these two tests.¹

¹ Several less popular measures have been developed that rely on the same logic as the NLT. For example, one task asks respondents to rate how much they like every number between 1 and 50. Those who prefer their own birthday numbers more than the other numbers are said to have high implicit self-esteem (Bosson et al., 2000; Koole et al., 2001). Similarly, researchers have introduced a single item measure that asks, “How much do you like your name, in total?” (Gebauer, Riketta, Broemer, & Maio, 2008). Other infrequently used measures include a signature size task (Stapel & Blanton, 2004), the Extrinsic Affective Simon Task (De Houwer, 2003), the Implicit Self-Evaluation Survey (Pelham & Hetts, 1999), the single category IAT (Karpinski & Steinman, 2006), and the Breadth-Based Adjective Rating Task (Karpinski, Steinberg, Versek, & Alloy, 2007).

The IAT is the most popular measure of implicit self-esteem. Developed by Greenwald and colleagues (Farnham, Greenwald, & Banaji, 1999; Greenwald & Farnham, 2000), the IAT consists of a computer-based reaction time task. The rationale for using the IAT to measure implicit self-esteem was straightforward: Implicit beliefs are nonconscious associations and people presumably have nonconscious associations with the self (Farnham, Greenwald, & Banaji, 1999; Greenwald & Farnham, 2000). That is, just as people have positive and negative associations towards Black people versus White people, they also have positive and negative associations towards self versus others.

Respondents taking the IAT measure learn that their task is to categorize exemplar words into correct categories by pressing one of two keys on a keyboard. They first categorize words that belong to just one bipolar dimension (e.g., pleasant vs. unpleasant words, and self vs. nonself words); then in later blocks, they categorize words from both dimensions. The key comparison is the difference in reaction time between the trials in which self and pleasant are paired (and not-self and unpleasant) versus trials in which self and unpleasant are paired (and not-self and pleasant). Respondents are thought to possess high implicit self-esteem insofar as they are quicker to associate self with pleasant words and not-self with unpleasant words than to associate self with unpleasant words and not-self with pleasant words.

The other commonly used measure of implicit self-esteem is the NLT. The key assumption underlying this measure is that “people’s positive associations about themselves spill over into their evaluations of objects associated with the self” (Jones, Pelham, Mirenberg, & Hetts, 2002, p. 170). Just as individuals tend to enhance their judgments for objects they own (Nuttin, 1987), people’s enhanced liking for their own initials is theorized to reflect carryover from their high self-esteem (Greenwald & Banaji, 1995). Hence, people’s feelings toward their initials provide a window into their global evaluations of themselves (Koole & Pelham, 2003).

The NLT itself is a straightforward questionnaire that can be administered via computer or paper and pencil. Respondents are usually asked to rate how aesthetically pleasing or beautiful they find each letter of the alphabet on scales ranging from 5 points to 9 points. In nearly all studies using the NLT, implicit self-esteem is computed by subtracting the difference between a person’s average rating of their own first and last initials and the average ratings of those same letters by individuals who do not have those letters as initials. Respondents are considered to possess high implicit self-esteem insofar as they preferentially rate the letters in their own name higher than others.

Temporal Stability

Self-esteem is generally characterized as relatively stable over time but capable of state fluctuations depending on the situation. Explicit measures have been developed to tap both state (e.g., Heatherton & Polivy, 1991) and trait (e.g., Rosenberg, 1965) self-esteem. In contrast, we were unable to find both state and trait versions of the IAT and NLT. If the IAT and NLT do indeed assess a form of trait self-esteem, they ought to display acceptable levels of temporal stability. Do they? To address this question, for each measure we examined (a) temporal stability estimates and (b) reactivity to state manipulations.

When the stability of measures of implicit and explicit self-esteem have been directly compared (e.g., Bosson et al., 2000), the test–retest correlations for implicit self-esteem were consistently lower ($r = .69$ for the IAT and $.63$ for the NLT) than the comparable correlations for explicit self-esteem ($r = .80$ for the Rosenberg Self-Esteem Scale). DeHart, Pelham, and Tennen (2006) found a 6 week test–retest correlation of $r = .60$ for the NLT. Gregg & Sedikides (2010) found a 1 week test–retest correlation of $r = .31$ for the IAT, but due to unusually low internal consistency of the IAT in their study, they also computed a disattenuated r . Although this procedure increased the reliability estimate to $.51$, it is questionable because it involves using the weak internal consistency of the measure as a basis for bolstering one’s estimate of its temporal stability, which is similar to elevating one’s estimate of a basketball player’s shooting ability based on his poor dribbling skills.

The notion that the IAT and NLT have state qualities is further supported by evidence that scores on implicit measures are more responsive to laboratory manipulations than scores on explicit trait self-esteem measures. Research indicates that implicit self-esteem changes as a function of evaluative and subliminal conditioning (Baccus, Baldwin, & Packer, 2004; Dijksterhuis, 2004; Grumm, Nestler, & von Collani, 2009), subtle social cues (Weisbuch, Sinclair, Skorinko, Eccleston, 2009), personal threats (Jones et al., 2002; Rudman et al., 2007), academic feedback (Park, Crocker, & Kiefer, 2007), and whether respondents are instructed to focus on reasons or feelings while completing the measure (Koole, Dijksterhuis, & van Knippenberg, 2001). To change trait levels of explicit trait self-esteem, strong situational influences are usually required (e.g., Swann, 1983; Swann & Bosson, 2010).

In sum, evidence bearing on the temporal stability of scores on the IAT and NLT indicates that both are more state-like and malleable than are trait explicit self-esteem measures. It is unclear why implicit self-esteem scores tend to fluctuate more than explicit self-esteem scores. This could reflect instability of the underlying construct or the high amounts of measurement error present in implicit measures generally (Koole et al., 2001). Whatever the reason, however, our review indicates that temporal stability is modest, which means that these measures may be picking up on ephemeral states rather than chronic dispositions. This conclusion reinforces DeHart et al.’s (2006) suggestion that “Presumably, the ideal way to assess a person’s level of *trait self-esteem* would be to assess implicit self-esteem on numerous occasions, taking an average across all these occasions.” (p. 8). Unfortunately, we encountered only one instance of this multiassessment approach in our review of the literature (Zeigler-Hill, 2006).

Convergent and Discriminant Validity

As can be seen in Table 1, assessment of convergent validity indicated that the IAT and NLT were very weakly correlated. This finding contrasts sharply with the strong correlations between the four measures of explicit self-esteem. In theory, this lack of evidence of convergent validity could reflect a tendency for each implicit measure to triangulate on different aspects of implicit self-esteem (Cunningham, Preacher, & Banaji, 2001). Alternatively, one measure may tap implicit self-esteem, whereas the other does not, or it may be that neither measure taps implicit self-esteem. Finally, given the relatively low test–retest reliability

Table 1
Convergent and Discriminant Validity

Measure	IAT	NLT	RSES
NLT	.08* (9)		
RSES	.13* (11)	.12** (19)	
SL	.11 (3)	.02 (3)	.85** (1)
SC	.11 (3)	.13 (1)	.79** (1)
SAQ	.21** (3)	.11 (1)	.42** (3)

Note. For each cell, the number of independent correlations on which the average is based is in parentheses. Each cell value represents an r , when only 1 sample was available, values from respective studies are reproduced. Values for RSES-IAT and RSES-NLT taken from meta-analyses from Hofmann et al. (2005) and Krizan and Suls (2008), respectively. RSES = Rosenberg Self-Esteem Scale (Rosenberg, 1965); SL = Self-Liking subscale; SC = Self-Competence subscale (Tafarodi & Swann, 2001); SAQ = the Self-Attributes Questionnaire (Pelham & Swann, 1989); IAT = Implicit Association Test; NLT = Name-Letter Test.
* $p < .05$. ** $p < .01$.

of the two measures, diminished associations between them might reflect the convergence of shared measurement error.

In contrast to convergent validity, if one assumes that implicit and explicit self-esteem should be relatively independent of one another, evidence for discriminant validity was strong. That is, Table 1 indicates that both the IAT and NLT were weakly correlated with the explicit self-esteem measures.

In sum, our review indicated that evidence for temporal stability of the IAT and NLT was modest, convergent validity was nil, and discriminant validity was strong. When compared with explicit measures, implicit measures displayed weaker evidence of temporal stability and convergent validity.

Characteristics of the Literature and Our Approach

To evaluate the construct validity of the IAT and NLT, we began with a systematic search of the extant literature. Mindful of the need to be exhaustive in the articles we considered, we searched PsycInfo and Google Scholar for the terms *implicit* and common terms for self-esteem, including *self-worth* and *self-attitude*. Articles were excluded if they were not published in peer-reviewed outlets, were not written in English, or if their only contribution was to correlate variations of the same implicit measure to each other. Because we wished to limit our review to implicit self-esteem, we did not include studies on a variety of other implicit self-concepts, such as implicit morality (Perugini & Leone, 2009) or broad, implicit personality traits (Back, Schmukle, & Egloff, 2009).

With our pool of studies in hand, we classified each one according to the type of design employed. The numbers plotted in Table 2 show that most researchers have used indices of implicit self-esteem as either a moderator or an outcome variable in cross-sectional or experimental designs, with the single largest category being outcome variable in experimental designs. Only about a quarter of the studies (35 of 137) examined implicit self-esteem as a predictor variable. This is surprising in light of the strong tendency for researchers to use explicit self-esteem as a predictor variable. In light of this discovery, in addition to computing and reporting quantitative estimates of effect sizes from published studies and referencing the results of recent meta-analyses that

included unpublished studies (Bosson et al., 2008; Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005; Krizan & Suls, 2008), we qualitatively reviewed research that bore upon issues pertaining to the construct validity of measures of implicit self-esteem.

The meta-analytic phase of our analysis consisted of coding studies that included zero-order correlations between (a) implicit and explicit measures and (b) outcome measures. We were specifically interested in zero-order correlations because (a) they are easily interpretable, (b) they illuminate basic forms of construct validity, such as convergent and discriminant validity, and (c) they lend themselves to parameter statistics. The major limitation is that our estimates of effect size might fail to control for known and measurable confounds. Moreover, we are unable to test for the unique variance accounted for by explicit versus implicit self-esteem, and this is a serious limitation. Our read of the literature, however, suggests that despite the popularity of the implicit self-esteem construct, relevant empirical work is still in its infancy. As such, a focused analysis of zero-order relations allows us to make an initial assessment of the viability of current implicit measures.

Upon completion of the initial coding, we discovered several nonoptimal features of the dataset. First, for several variables, such as depression level, researchers examined only one implicit self-esteem measure, thereby precluding any comparison between the two major indices. Second, in many instances, we could locate only a single study that reported a correlation, thereby rendering a meta-analysis impossible. We handled both of these limitations by simply acknowledging them in the text. Third, some studies reported a predictive relation with multiple, equally viable outcome variables. Without a theoretical basis for nominating a single effect size as the “correct” or “best” value to enter into the analysis, we randomly selected one, to yield an unbiased estimate of effect size that permitted standard inferential statistics. As a check on this procedure, we also computed a simple average of all effects to determine if the effect sizes we obtained were comparable (they were, but we also provide all raw data in the Appendix so that readers can check for themselves).

We included estimates of the effects of explicit self-esteem only when researchers happened to include explicit measures in studies of implicit self-esteem. Because this inclusion criterion meant focusing on studies that were published on the merits of the observed relations obtained with implicit measures, our approach could augment the estimates associated with implicit measures relative to those associated with explicit measures. Nevertheless,

Table 2
Types of Designs and Causal Roles of Implicit Self-Esteem

Design type	Causal role				Total
	Predictor	Moderator	Mediator	Outcome	
Cross-sectional	22	17	1	16	56
Longitudinal	11	6	0	6	23
Experimental	2	23	5	28	58
Total	35	46	6	50	137

Note. Any study with measures administered in more than one session was coded as longitudinal, inflating this number somewhat.

the criterion we employed maximized the comparability of implicit and explicit results and ensured a liberal test of the viability of implicit measures, which seemed appropriate for a new measure. These limitations notwithstanding, we performed a meta-analysis on the available studies.

Studies were included if they contained the necessary meta-analytic information (i.e., standardized effect estimate and sample size). Decisions about what studies to include for each analysis were driven by stated hypotheses about the nature of implicit self-esteem (as described below). A total of 182 correlations from 37 separate studies were included. After categorizing studies, the direction of all correlations was made consistent within each category. All effect-size estimates invoked a random effect model, with a restricted maximum likelihood criterion weighting each effect estimate based on its standard error. As noted earlier, in cases where multiple estimates were generated in a single sample, the assumption of independence was met by randomly selecting a single estimate from each study. See the Appendix for a full listing of studies included in the meta-analyses.

Criterion Validity of the IAT and NLT

We next assessed the relation between measures of implicit self-esteem and two sets of variables. The first set included relations that implicit and explicit self-esteem measures have with outcomes that have historically been correlated with self-esteem. The second set included relations that implicit and explicit self-esteem measures have with outcomes that have been theoretically linked to implicit (as opposed to explicit) self-esteem.

Relation of Implicit and Explicit Measures to Typical Covariates of Self-Esteem

Past research on explicit self-esteem has revealed robust relations with several socially key outcome variables, including psychological well-being, depression, and physical and mental health (e.g., Baumeister et al., 2003). Do implicit measures also predict these outcome variables? As can be seen in Table 3, measures of explicit self-esteem are more strongly related to these outcomes

than are the measures of implicit self-esteem. Moderate to strong correlations were found between explicit self-esteem measures and measures of psychological well-being (e.g., Satisfaction with Life Scale; Schimmack & Diener, 2003), self-clarity (e.g., Self-Concept Clarity Scale; DeHart et al., 2006), depression (e.g., Beck Depression Inventory; Haefffel et al., 2007), emotional instability (e.g., Goldberg's Neuroticism Scale; Robinson & Meier, 2005), physical health problems (e.g., experience-sampling of momentary somatic symptoms; Robinson, Mitchell, Kirkeby, & Meier, 2006), contingent self-esteem (e.g., Contingent Self-Esteem Scale; Kernis, Lakey & Heppner, 2008), positive life events (e.g., Life Experiences Survey; Shimizu & Pelham, 2004), preferences for positive versus negative self-feedback (Bosson et al., 2000), interpretations of ambiguously valenced statements (Bosson et al., 2000), and rater evaluations of global self-esteem and certainty based on written essays (Bosson et al., 2000). The NLT tended to have weak but significant relations with these outcomes, and the IAT was unrelated to them.

Having said this, it could be that implicit measures may be associated with less direct indices of depression, well-being, and so on. Two different datasets offered evidence relevant to this possibility. In one study, informant-reports of psychological well-being were more strongly correlated with explicit self-esteem than the NLT ($r = .42$ vs. $r = .05$, respectively; Schimmack & Diener, 2003). In another study, participants wrote passages that were later used as a basis for objective judges to estimate their self-esteem and indicated their preference for positive versus negative feedback as well as their interpretation of ambiguous self-relevant statements (see last three rows of Table 3). All three of these indices were more strongly related to measures of explicit as compared to implicit self-esteem (Bosson et al., 2000). In short, both studies revealed that even when typical self-esteem covariates were measured indirectly (i.e., similar to implicit methods), these constructs were more closely associated with explicit than implicit self-esteem measures.

In summary, although many critical relations have yet to be examined (see Table 3), thus far the evidence indicates that implicit self-esteem measures are at best weakly correlated with

Table 3
Relations Between Self-Esteem Measures and Typical Covariates

Measure	IAT	NLT	ESE
Psychological well-being	—	.17* (2)	.62** (2)
Self-clarity	—	.15* (3)	.68** (3)
Depression	-.14 (6)	—	-.64** (4)
Emotional instability	-.17 (4)	—	-.43** (3)
Physical health problems	-.08 (5)	.11 (2)	-.21** (4)
Contingent self-esteem	-.01 (2)	-.25* (1)	-.37** (3)
Positive life events	.11 (1)	.02 (3)	.21** (3)
Preference for positive feedback	.11 (1)	.23* (1)	.25* (1)
Positive interpretations of ambiguity	-.04 (1)	.22* (1)	.33* (1)
Rater evaluations of global self	.02 (1)	.22* (1)	.45** (1)

Note. For each cell, the number of independent correlations on which the average is based is in parentheses. Each cell value represents an R . A dash indicates that no data for the given relation was available. Explicit measures, such as Rosenberg's (1965) Self-Esteem Scale and Tatarodi & Swann's (2001) Self-Liking and Self-Competence Scale converge highly, so we combined them into one variable. ESE = Explicit Self-Esteem; IAT = Implicit Association Test; NLT = Name-Letter Test.

* $p < .05$. ** $p < .01$.

typical self-esteem covariates, with many correlations hovering around zero. Moreover, in no instance did an implicit correlation exceed its explicit counterpart, and this pattern was observed whether the outcome measure was a conscious self-report or an indirect, potentially nonconscious index. Comparing the two implicit measures, the NLT was somewhat stronger in that it correlated significantly with most outcomes. In contrast, the IAT yielded no significant correlations.

Relation of IAT and NLT to Hypothesized Covariates of Implicit Self-Esteem

In light of the evidence that neither the IAT nor NLT are robustly related to explicit self-esteem or the typical covariates of explicit self-esteem, we consulted the literature for clues as to what implicit self-esteem might be related to. Three plausible hypotheses struck us as having a priori viability based on common statements in the research literature. (We acknowledge, however, that implicit self-esteem researchers might differ in their degree of support for the different hypotheses.)

The three hypotheses we examined are that implicit self-esteem should show signs of being (a) nonconscious (e.g., Devos & Banaji, 2003; Dijksterhuis, 2004; Epstein, 2006; Koole et al., 2001; Pelham & Hetts, 1999), (b) affectively charged (e.g., Conner & Barrett, 2005; Epstein, 2006; Holland, Wennekers, Bijlstra, Jongenelen, & Van Knippenberg, 2009; Jordan, Whitfield, & Zeigler-Hill, 2007; Pelham & Hetts, 1999), and (c) immune to self-presentational pressures (e.g., Greenwald & Banaji, 1995; Olson et al., 2007; de Jong, 2002). Given that each of these hypotheses is at least somewhat plausible, support for any one of them would bolster the validity of the implicit self-esteem measure.

Do measures of implicit self-esteem tap nonconscious processes that are not tapped by explicit self-esteem? One attraction of implicit self-esteem measures is that they might tap into aspects of self-esteem that explicit measures fail to measure because they rely on conscious self-insight. Testing this proposition, however, is complicated by the fact that there are multiple ways in which implicit self-esteem might be nonconscious, each with distinct implications.

First, implicit self-esteem might be nonconscious in the sense that people are not aware of its antecedents. Perhaps when people engage in self-relevant cognitive tasks, they draw on a sense of self that has come to fruition, without their awareness or knowledge. Although theoretically possible, this form of the nonconscious self cannot be a dividing line between implicit and explicit self-esteem. Self theorists agree that explicit self-esteem grows out of a lifetime of experiences, most notably the appraisals of others (Cooley, 1902; Mead, 1934; Stryker, 2000), self-observation of one's own behavior (Bem, 1972), social comparisons (Festinger, 1954), genes (McGuire et al., 1999), and so on. Although people may be aware of the impact of at least some of these antecedents of self-esteem initially, they surely lack the cognitive resources to store them in an accessible fashion for long; instead, they store them as summary self-representations (e.g., Klein, 2004). Because inaccessibility to the antecedents of self-esteem presumably characterizes explicit as well as implicit self-esteem, it cannot be used to discriminate the two.

Alternatively, implicit self-esteem might be nonconscious in the sense that people are unaware of its consequences on their decisions, emotion states or behavior. Indeed some have offered a radical variation of this argument by defining implicit self-esteem in such a way that it seems devoid of content—consciously or nonconsciously held. In this scheme, implicit self-esteem is defined as “the introspectively unidentified (or inaccurately identified) effect of the self-attitude on evaluation of self-associated and self-dissociated objects” (Greenwald & Banaji, 1995, p. 11). Here, implicit measures are thought to detect a subtle form of self-evaluation that exerts influences on individuals that they cannot see or appreciate. Although theoretically possible, this definition again runs into trouble as a defining quality of implicit self-esteem. That is, it seems likely that people are only dimly aware of the many consequences of explicit self-esteem. In fact, most human behaviors are multiply determined, and so it seems doubtful that people are able to reliably and accurately pinpoint the causal role of explicit self-esteem on their life experiences and actions. Indeed, countless psychological constructs that are explicitly measured (e.g., extraversion, ego strength, etc.) could be viewed as nonconscious on the basis of this definition.

A third way that implicit self-esteem might be nonconscious is that it might be comprised of content that people cannot access (e.g., Gailliot & Schmeichel, 2006). Because explicit measures direct individuals to engage in introspection and implicit measures do not, this conceptualization of nonconscious seems viable as a dividing line between implicit and explicit self-esteem. In our review of the literature, however, we could not identify strong tests or consistent results that might speak to the validity of this view. In one investigation, participants completed the NLT and Rosenberg Self-Esteem Scale, then completed a different version of the Rosenberg Scale in which statements were modified to focus on their nonconscious self-worth (e.g., “On the whole, at an unconscious level, I am satisfied with myself.”). Participants' NLT scores were unrelated to their estimated unconscious self-worth when controlling for explicit self-esteem (Gailliot & Schmeichel, 2006). This study is suggestive, although it assumes that people are conscious of their unconscious, which seems debatable. In a more recent study, participants completed the NLT and were then asked what they believed the task measured. Nearly half the participants reported that they recognized the self-relevant nature of the task and these participants displayed significantly higher NLT scores than those who expressed no awareness. This suggests that at least some participants have conscious access to the content of their NLT scores and could therefore be subject to the same self-presentational biases that purportedly compromise explicit measures (Krizan, 2008). For the IAT, one investigation has shown that implicit self-esteem more strongly correlates with explicit self-esteem when positive self-presentational bias is accounted for. This suggests that participants are capable of accessing the self-views that the IAT seeks to tap implicitly (Olson et al., 2007).

Each of these studies suggests that respondents have some degree of conscious awareness of their responses to implicit measures, which would seem to call into question the construct validity of these measures. An alternative approach to examining this issue, however, would be to determine whether implicit measures show greater correspondence with explicit measures when respondents are deprived of the opportunity to reflect on their responses. In this spirit, Koole et al. (2001) compared implicit–explicit correlations

among participants in control conditions versus a condition in which they were resource deprived while completing the measure of explicit self-esteem. (These researchers used two different measures of resource deprivation: responding rapidly and responding while rehearsing eight digits.) NLT scores were more strongly associated with explicit self-esteem when participants were deprived of cognitive resources (c.f., LeBel, 2010). The authors interpreted these findings as evidence that removing some of the conscious, deliberate content from the explicit measure increased the degree to which it corresponded to implicit measures. Although this interpretation is certainly plausible given the findings, later in this article we note that other investigations of the effects of cognitive load (e.g., Hixon & Swann, 1993; Swann et al., 1990) point to a very different conclusion. We also suggest that Koole et al.'s (2001) study can provide only suggestive evidence regarding nonconscious content. After all, even in the resource deprivation condition, participants did consciously reflect on the questions posed to them prior to responding. Rather than presenting support for the nonconscious hypothesis, this research may merely suggest that implicit measures tap into the first self-evaluation that comes to mind, a self-evaluation that may be revised with more time to reflect. Although initial self-evaluations may be interesting in their own right, they should not be confused with self-esteem, which is typically understood to emanate from a reflective process in which people judge their own value (Tafarodi & Ho, 2006).

Considered together, the studies reviewed here suggest that at a minimum, implicit self-esteem measures might be contaminated with conscious content that is not of theoretic interest. If so, future investigations should include explicit measures as statistical controls to remove overlapping conscious self-esteem from the prediction models (see Blanton & Jaccard, 2008, for a discussion of analytic strategies). Given the lack of correlation between implicit and explicit self-esteem measures, however, there is reason to doubt that the conscious content in implicit measures has much to do with explicit self-esteem. This suggests that such a covariation strategy might have limited utility and that the conscious content of implicit measures is artifactual.

We considered a final potentially testable form of the nonconscious hypothesis. Although we suggested that both implicit and explicit

self-esteem might exert influences on individuals that operate outside their conscious awareness, perhaps implicit measures tap a form of self-esteem that is especially potent with regards to criteria that are themselves difficult to monitor or perceive, criteria that evade deliberate or conscious self-control (Verplanken, Friborg, Wang, Trafimow, & Woolf, 2007). We have already examined several outcome measures that speak to this interpretation. As noted earlier and shown in Table 3, explicit measures showed stronger relations than implicit measures to behavioroid outcomes (preference for positive feedback and positive interpretations of ambiguity) and rater evaluations of the global self. Both of these findings argue against the notion that implicit measures are uniquely effective in tapping processes that evade deliberate or conscious self-control. To obtain additional traction on this issue, we located two additional criteria that seemed relevant to this last definition. These were nonverbal behaviors (DePaulo, 1992) and habitual responses. Unfortunately, for each criterion, we were able to find only one relevant article (in the case of nonverbal behaviors, one article reported two studies). As can be seen in Table 4, the results were mixed. On the one hand, two studies revealed that the IAT was more strongly related to nonverbal displays of negative affect than was explicit self-esteem (Robinson & Meier, 2005). This finding supports the notion that the IAT is a measure of implicit affect, a theme to which we return in the following section on affective processes. On the other hand, the only investigation of habitual responses indicated that explicit self-esteem was more strongly correlated to an index of uncontrollable negative self-thinking than were both the IAT and NLT, exactly opposite to the hypothesized pattern (Verplanken et al., 2007). This second set of findings argues against this way of linking nonconscious processes to implicit self-esteem.

Considering the four definitions of nonconscious examined, the first two (unawareness of antecedents or consequences) do not seem to represent viable distinctions between implicit and explicit self-esteem. The evidence for the remaining two definitions (unawareness of content, unawareness of nonconscious consequences) appears tentative or mixed at present. We therefore conclude that the extant literature fails to support the hypothesis that the IAT and NLT tap nonconscious processes.

Do implicit measures tap affectively charged processes?

Researchers often assert that implicit self-esteem is fundamentally affective in nature (Conner & Barrett, 2005; Epstein, 2006; Hol-

Table 4
Relations Between Self-Esteem Measures and Other Hypothesized Covariates

Hypothesis	IAT	NLT	ESE
Nonconscious			
Nonverbal displays of negative affect	-.35** (2)	—	-.15 (2)
Uncontrollable negative self-thoughts	-.28** (1)	-.17** (1)	-.47** (1)
Affectively charged			
Transitory Affect	.21** (5)	.15* (3)	.40** (4)
Depression	-.14 (6)	—	-.64** (4)
Avoids self-presentation			
Positive self-presentation	.15** (4)	.16 (2)	.25** (4)
Self-humility	.22** (2)	—	.20* (1)
Judges' ratings	.36* (2)	.37** (2)	.27** (4)

Note. For each cell, the number of independent correlations on which the average is based is in parentheses. Each cell value represents an r . A dash indicates that no data for the given relation was available. ESE = Explicit self-esteem; IAT = Implicit Association Test; NLT = Name-Letter Test.

* $p < .05$. ** $p < .01$.

land et al., 2009; Jordan et al., 2007; Pelham & Hetts, 1999). For example, one conceptualization has posited that implicit self-esteem acts as an automatic affective lens, coloring how individuals appraise and respond emotionally to stimuli (Conner & Barrett, 2005). Jordan et al. (2007) offer a similar perspective, hypothesizing that implicit self-esteem is akin to an intuition, experienced as a “gut reaction” to events. Coupled with the notion that implicit self-esteem is relatively devoid of conscious, relatively controlled thought processes, this suggests that implicit self-esteem should include a somewhat stronger representation of affective processes than does explicit self-esteem. If so, then implicit self-esteem scores should be more closely associated with measures of affect and they should predict emotion-related outcomes better than explicit self-esteem scores. For tests of this proposition, we examined studies relating implicit self-esteem to transitory affect (Albers, Rotteveel, & Dijksterhuis, 2009; Bosson et al., 2000; DeHart & Pelham, 2007; Robinson, Mitchell, & Kirkeby, 2006; Robinson & Meier, 2005; Robinson & Wilkowski, 2006) and to depression (Bos et al., 2010; Buhlmann et al., 2008; De Raedt, Franck, Fannes, & Verstraeten, 2008; Haefel et al., 2007). Meta-analytic results are presented in Table 4.

Correlations with measures of transitory affect. The results displayed in Table 4 indicate that both implicit and explicit self-esteem have weak to moderate relations with measures of affect (e.g., Positive and Negative Affectivity Schedule; DeHart & Pelham, 2007). In fact, explicit self-esteem measures showed stronger links to measures of affect than did either of the two implicit indices. Overall, these results are inconsistent with the hypothesis that implicit measures should be more strongly related to measures of affect than are explicit measures.

The most exhaustive test of the proposed link between implicit self-esteem and affect comes from two studies reported in Conner and Barrett (2005). The studies had a complex experience sampling method and hierarchical linear modeling techniques. Although these features were strengths, they prevented us from incorporating the findings into our summary meta-analysis without considerable loss of information. We thus review their findings separately. In both studies, participants completed Rosenberg’s Self-Esteem Scale and the IAT as well as multiple measures of momentary affect. Combining across the two studies, implicit self-esteem was significantly associated with only 13 of 45 affect outcomes, compared with 38 of 45 for explicit self-esteem. It is interesting that all 13 emotions found to relate to IAT scores were negatively valenced (e.g., disgust, angry); however, other researchers have reported that the IAT is correlated with positive affect but not negative affect (Bosson et al., 2000). Further, whereas all of the associations between explicit self-esteem and affect remained significant after controlling for implicit self-esteem, just eight of the 13 associations between implicit self-esteem and affect remained significant after controlling for explicit self-esteem. Finally, the absolute magnitude of explicit–affect associations tended to be stronger than implicit–affect associations.

In summary, correlations with measures of transitory affect offer little support for the notion that implicit self-esteem is more affectively charged than explicit self-esteem. One caveat here is that nearly all measures of transitory affect were self-reported. We revisit this “implicit affect” link to the IAT later when we contemplate what the IAT likely measures.

Correlations with depression. Although scores on implicit measures are not especially good predictors of transitory affective states, they might still be strong predictors of relatively stable affective states. Indeed, on the face of it, low implicit self-esteem seems almost certain to predict depression. Consider that Beck’s cognitive theory of depression posits that negative self-views bias cognitive processing in relatively automatic and uncontrollable ways. This suggests that implicit measures should be more effective in capturing such automatic processes than explicit measures (Franck, De Raedt, & De Houwer, 2008). Furthermore, at least some of the negative self-views that foment depression are thought to develop during childhood (Clark, Beck, & Alford, 1999), which is also when many implicit evaluations are thought to be formed (e.g., DeHart et al., 2006; Greenwald & Banaji, 1995; Koole et al., 2001). Therefore, consistent with the long history of research showing links between depression and explicit self-esteem, low implicit self-esteem should be associated with higher levels of depressive symptoms. In addition, people currently suffering from depression and people with a prior history of depression should show lower implicit self-esteem than should people who have never been depressed.

Of the studies included in the meta-analysis, six investigations correlated the IAT with depression scores, but no depression studies utilized the NLT (see Table 4 and Appendix). Overall, there was no support in these results for a link between the IAT and depression measures ($r = -.14$), but strong support for a link between explicit self-esteem and depression ($r = -.64$).

Not included in the foregoing meta-analysis were results from six known-groups designs. These studies show that clinically depressed and nondepressed persons do not differ in implicit self-esteem, whether the measure used was the NLT (De Raedt, Schacht, Franck, & De Houwer, 2006; Franck, De Raedt, & De Houwer, 2007) or IAT (De Raedt et al., 2006; Franck, De Raedt, Dereu, & Van den Abbeele, 2007; Franck et al., 2008). Most of these studies also included a measure of explicit self-esteem and showed the expected result: Depressed persons had lower explicit self-esteem than nondepressed persons (Franck, De Raedt, & De Houwer, 2007; Franck, De Raedt, Dereu, & Van den Abbeele, 2007; Franck et al., 2008).

Apparent support for the link between implicit self-esteem and depression comes from evidence that participants with low implicit self-esteem who experienced high stress were more inclined to display depression later on (Haefel et al., 2007). Unfortunately, the authors did not report parallel analyses for explicit self-esteem, raising the possibility that similar or stronger results may have emerged for explicit self-esteem. Another study showed that a negative mood induction caused formerly depressed people to report lower IAT scores. However, in one of these studies, formerly depressed people displayed equally high implicit self-esteem as controls at baseline (Gemar, Segal, Sagrati, & Kennedy, 2001). In the other study, formerly depressed persons displayed higher implicit self-esteem than did nondepressed controls at baseline (Franck et al., 2008). Other relevant research comes from studies of imbalanced hemispheric prefrontal cortex activation, a condition that is known to be related to depression. One study indicated that this brain profile is more strongly related to explicit, as compared with implicit, self-esteem (De Raedt et al., 2008). Moreover, whereas explicit self-esteem partially mediated the link

between frontal lobe asymmetry and depression, implicit self-esteem did not.

Perhaps most worrisome for the two dominant measures of implicit self-esteem are the results of a study by Franck, De Raedt, and De Houwer (2007). Formerly depressed and nondepressed participants completed the Beck Depression Inventory as well as a measure of explicit and implicit self-esteem twice, with a 6-month interval in between. Although implicit self-esteem uniquely predicted depression 6 months later (after controlling for initial depression symptoms), the direction of the effect was the opposite of what was expected—higher implicit self-esteem was associated with more symptoms of depression. Similar findings were reported in a sample of individuals suffering from an eating disorder—those with an eating disorder reported higher implicit self-esteem than did controls (Cockerham, Stopa, Bell, & Gregg, 2009). Studies have also failed to yield expected relations between implicit self-esteem and numerous other psychopathologies (Bos et al., 2010; Tanner, Stopa & De Houwer, 2006). Although some authors have attempted to interpret these findings in light of revised theories of depression (e.g., Sheppes, Meiran, Gilboa-Schechtman, & Shahar, 2008), this evidence—like the attempts to link implicit self-esteem with transitory affect—falls short of establishing that implicit self-esteem is uniquely associated with measures of stable affect.

Taken together, the body of work on transitory affect and depression suggests that, if anything, scores on explicit self-esteem measures show stronger links to affective states than do scores on implicit esteem measures. Evidence of positive correlations between implicit self-esteem and depression also require explanation, and it is not clear how our current conceptions of implicit self-esteem and its measurement could survive such an explanation. More generally, contrary to dual processing accounts of the implicit self-esteem construct (Epstein, 2006), we found little support for the notion that implicit self-esteem measures capture a temporally stable, affectively charged aspect of self-esteem that is experienced as an intuitive feeling in response to self-related stimuli (Jordan et al., 2007). Instead, it appears that responses to implicit measures do not seem uniquely associated with self-related affect and are actually more volatile than responses to explicit measures.

Do implicit measures evade self-presentational pressures? Because responses to implicit measures are presumably emotional, spontaneous, and made with little conscious deliberation, it was hoped that they would be immune to the self-presentational concerns that are thought to plague explicit measures. As Lambird and Mann (2006) put it, “To the extent that self-presentational biases require self-reflection, they cannot interfere with the measurement of implicit self-esteem” (p. 1179). Insofar as implicit measures escape the influence of self-presentational tendencies, they may have a predictive advantage over explicit measures in domains in which self-presentational processes systematically corrupt indices of explicit self-esteem. Studies that include three types of measures are relevant to assessing this issue: positive self-presentation, self-humility, and judges’ ratings of behavior in which motivation to self-present is high.

Results are presented in the last three rows of Table 4. Positive self-presentation, measured with self-deception and impression management scales (Paulhus, 1991) was weakly related to both implicit and explicit measures (Greenwald & Farnham, 2000; Riketta, 2005), although of the three, explicit measures were most strongly related. Self-humility, measured with several implicit and

self-report scales, was significantly but weakly correlated with both the IAT and explicit self-esteem (Rowatt et al., 2006). Finally, we computed estimates of the relation between self-esteem measures and judges’ ratings of behavior that is likely to be positively biased on self-report measures but less so by more objective judges (i.e., defensive responses during an interview, Kernis et al., 2008; informant-reports of well-being, Schimmack & Diener, 2003; judges’ reports of negative affect, Robinson & Meier, 2005). Overall, these scores were significantly and moderately related to the IAT and explicit self-esteem but not the NLT.

Not included in the meta-analysis was a study reported by Olson et al., 2007. The investigators found that instructions to present oneself honestly on explicit measures increased implicit–explicit correlations, a pattern that could indicate that the IAT taps into unfiltered self-esteem. Although this interpretation may be correct, it may also be that the instructions biased participants’ responses to the explicit measure in ways that resembled the bias inherent in responses to the IAT. More generally, these findings cause one to ask: If unfiltered self-esteem can be tapped by merely encouraging participants to respond honestly on explicit measures, then is there really a need to develop measures of implicit self-esteem?

Overall, there is some evidence that implicit self-esteem scores are independent of self-presentational motives, but it is inconsistent and inconclusive. Of greater concern, our review failed to unearth studies testing the most relevant hypothesis: that when self-presentational concerns are high, measures of implicit self-esteem predict esteem-related criteria better than do measures of explicit self-esteem. Until such studies are conducted, the notion that measures of implicit self-esteem are uniquely impervious to self-presentational concerns will remain little more than an intriguing possibility. In short, although there is some evidence that implicit measures are free of self-presentational influences, on balance, the correlational evidence for this proposition is weak and inconsistent.

Other Research Topics

Several studies did not bear on the three major hypotheses regarding implicit self-esteem considered above. We review them here because they may nevertheless contribute to an emerging picture of the IAT and NLT as measures of self-esteem.

Does implicit self-esteem emerge developmentally prior to explicit self-esteem? Some have suggested that implicit measures tap “early emerging” self-esteem, presumably growing out of “the experiences they [children] had with their parents while they were growing up” (DeHart et al., 2006, p. 13). Consistent with this hypothesis, DeHart, Pelham, and Murray (2004) reported that college students whose parents had divorced had lower implicit self-esteem than did students from intact families. Similarly, children who enjoyed secure attachment relations and childhood experiences with peers scored higher on measures of implicit self-esteem than did their peers (DeHart et al., 2006). Contrary to this view, however, above we noted that implicit measures have relatively weak temporal stability and some investigations have treated implicit self-esteem as a state measure. For example, DeSteno et al. (2006) found that jealousy-inducing situations decreased IAT scores which in turn mediated felt jealousy. In another study, individuals with low explicit self-esteem reported liking their

name letters less when they experienced negative events that day (DeHart & Pelham, 2007).

Taken together, these results lend some support to the notion that implicit self-esteem may emerge early in life (e.g., Hets & Pelham, 2001). This evidence is tempered by the fact that implicit measures display considerable volatility, a finding that suggests that implicit self-esteem measures tap more state evaluations than trait evaluations. Conceivably, these contradictory themes might be resolved if future researchers were to develop separate measures of trait and state implicit self-esteem, as has been done in the domain of explicit self-esteem.

Do all people have positive implicit self-esteem? Nearly all people are quicker to pair the self, as compared with other, with positive adjectives on the IAT. This self-positivity bias has been shown cross-culturally in Hispanic American adults and children (Dunham, Baron, & Banaji, 2007), in East Asians and Canadians (Falk, Heine, Yuki, & Takemura, 2009), and in Japanese and Chinese college students (Yamaguchi et al., 2007). Such data have led some to conclude that there is a universal tendency for people to possess positive implicit self-esteem. This conclusion, however, rests on the questionable assumption that there exists a nonarbitrary zero-point in the IAT (Blanton & Jaccard, 2006) and is not supported by evidence that there are East–West differences when implicit self-esteem is measured with the NLT and birthday numbers (Kitayama & Karasawa, 1997). More generally, this notion that all people have positive implicit self-esteem is curious given that one of the original goals of developers of measures of implicit self-esteem was to devise measures that would circumvent self-presentational pressures to inflate self-evaluations (e.g., Paulhus, 1991, 2002). We explore this issue further in the discussion.

Does implicit self-esteem serve as a moderator variable? Numerous studies converge in indicating that implicit self-esteem measures moderate reactions to threats. Two studies have reported evidence that higher implicit self-esteem mitigates the impact of negative performance feedback on mood (Dijksterhuis, 2004; Haefel et al., 2007). Moreover, in one of the studies, the researchers included an explicit measure of cognitive vulnerability for depression and reported that the implicit measure was a more effective buffer than the explicit measure (Haefel et al., 2007).

The role of implicit-explicit self-esteem discrepancies in moderating defensive reactions to self-esteem threats has drawn considerable attention. Several studies have indicated that those with high explicit self-esteem but low implicit self-esteem display defensive self-enhancement (e.g., unrealistic optimism, preference for excessively positive personality feedback, smaller actual-ideal discrepancies; Bosson, Brown, Zeigler-Hill, & Swann, 2003; ingroup bias and dissonance reduction; Jordan, Spencer, Zanna, Hoshino-Browne, & Correll, 2003) and anger (Schröder-Abé, Rudolph, & Schutz, 2007). Those high in explicit self-esteem and low in implicit self-esteem also seem inclined to show degraded abilities to self-regulate following failure (Lambird & Mann, 2006) and to compensate for self-threats by taking a punitive stance towards ethnic outgroup members (Jordan, Spencer, & Zanna, 2005). Such individuals also responded to failure by increasing conviction on unrelated issues and self-aspects (McGregor & Marigold, 2003) and by exhibiting more defensive responses to challenging questions (Kernis et al., 2008). Finally, two studies reported higher narcissism scores among participants with high

explicit and low implicit self-esteem (Jordan et al., 2003; Zeigler-Hill, 2006).

An important caveat to the foregoing links between discrepant self-esteem and narcissism is needed here. Specifically, a large meta-analysis (Bosson et al., 2008) reported no links between narcissism and discrepant self-esteem when the measure of implicit self-esteem was the IAT ($r = -.02$). Although slightly stronger and significant links to narcissism were found when discrepancy scores were based on NLT scores ($r = -.06$), the pattern departed sharply from the earlier research in that equally high narcissism scores emerged among all implicit–explicit combinations, with the exception of individuals scoring low on both self-esteem measures, who were significantly less narcissistic. Considered together with the findings reviewed above, it appears that discrepant self-esteem fosters exaggerated responses to threats, but links to narcissism are unclear.

Finally, several investigators have used implicit self-esteem as moderators of various other relations. NLT scores moderate relations between explicit self-esteem and perfectionism (Zeigler-Hill & Terry, 2007), the quality of interpersonal interactions and alcohol consumption (DeHart, Tennen, Armeli, Todd, & Mohr, 2009), the quality of broader life events and self-reported physical health (Shimizu & Pelham, 2004), and mortality salience and defensiveness (Schmeichel et al., 2009). IAT scores moderate relations between anxious distress and trait agreeableness (Robinson & Wilkowski, 2006), group status and IAT-measured ingroup bias (Jost, Pelham, & Carvallo, 2002), and explicit self-esteem and self-discrepant information (Briñol, Petty, & Wheeler, 2006).

If one were confident that the NLT and IAT actually measured implicit self-esteem, then these findings would suggest that discrepancies between implicit self-esteem and various other predictor variables trigger efforts to reduce intrapsychic inconsistency (although the diversity of predictor and outcome variables would make it challenging to identify a single mechanism). However, given that our review failed to reveal strong evidence for the construct validity of either measure, it seems hazardous to tie these seemingly disparate findings together under a single theory regarding the effects of explicit-implicit self-esteem discrepancies. From this vantage point, the proper interpretation of these findings should await a better understanding of what the NLT and IAT actually measure. We attempt to further this understanding in the next section.

General Discussion

We examined the construct validity of the two most popular measures of implicit self-esteem—the IAT and NLT. Psychometrically, both measures displayed modest temporal stability and weak convergent validity, weaker on both counts than explicit measures. Although weak relations of both the IAT and NLT to explicit self-esteem indicated discriminant validity, there was scant evidence that either test was related to the typical covariates of explicit self-esteem (e.g., well-being, depression). This raises concerns that either measure truly assesses self-esteem.

We also assessed evidence that the two tests possess the qualities that theorists have attributed to them. In most instances, support for these hypotheses was weak and inconsistent. For example, evidence that implicit self-esteem was nonconscious was mixed (nonverbal behaviors yes, habitual responses no). The hy-

pothesis that implicit measures are more strongly related to self-reported affective states than explicit measures received little support, whether the affective measure focused on transitory or chronic states. Similarly, there was no consistent evidence that implicit measures are more immune to self-presentational pressures than explicit measures. Although there was some evidence that implicit measures tap processes that emerge early in development, the notion that they tap a gut intuition that is slow to change was undercut by evidence that implicit scores fluctuate in response to laboratory manipulations and are not highly stable over time. Finally, although we found consistent evidence that persons who possess high explicit self-esteem but low implicit self-esteem are exceptionally defensive, we offered reasons to believe that these findings should be interpreted with caution.

Although one could quibble about the psychometric shortcomings of the IAT and NLT or question whether either measure is truly implicit, the most troubling aspect of our review is the lack of evidence that either test measures self-esteem. Although the weak correlations between measures of implicit and explicit self-esteem could reflect the independence of the constructs, the failure of measures of implicit self-esteem to predict outcomes that measures of explicit self-esteem are known to predict is troubling. Of course, these correlations could be depressed by the relatively low reliability of implicit measures, but the correlations were not merely weak—many hovered around zero. More generally, explanations that focus on the low reliability of implicit measures do nothing to alter the fact that when it comes to predictive utility, the IAT and NLT are no match for measures of explicit self-esteem.

What Is Wrong With Measures of Implicit Self-Esteem?

On the face of it, the paucity of evidence for the construct validity of the IAT and NLT is surprising and perplexing. After all, the initial assumptions of implicit self-esteem researchers were intuitively appealing and followed logically from dual process theories. Why, then, have the data been so uncooperative?

We suspect that the most fundamental shortcoming of the IAT and NLT is that they rest on the dubious assumption that self-esteem can be reduced to a simple self-related association or conditioned response (e.g., Koole et al., 2001). This assumption is problematic because, by definition, self-esteem is the product of a reflective process whereby the individual judges his or her own value (Tafarodi & Ho, 2006). As such, any measure that fails to engage this reflective process cannot capture self-esteem, at least as it has historically been understood. Furthermore, the results of our literature review indicate that this assertion is not merely idle speculation. Again and again, the evidence indicated that the implicit associations tapped by the IAT and NLT were poor predictors of socially important phenomena that self-esteem should theoretically predict, such as happiness, resistance to depression, and so on.

But if both the IAT and NLT are impoverished measures of self-esteem, it is worth noting that they are impoverished for different reasons. The IAT is constrained by the fact that respondents are induced to place a premium on responding in a speedy manner. This deprives them of the time they need to access and reflect upon autobiographical knowledge (the essence of self-esteem) that is potentially relevant to the associations they are

making. Compelled by instructions to respond quickly, participants presumably respond on the basis of whatever information happens to be immediately available to them, such as their non-conscious mood states, conditioned responses, working self-concepts, or idiosyncratic associations to the particular stimulus words they have been asked to consider. This could explain why our review revealed that IAT scores were associated with judges' reports of transitory affect. From this vantage point, although the IAT is surely sensitive to several distinct processes, it seems to have a significant representation of implicit affective processes.

Just as the structure of the IAT precludes depth of self-insight, the structure of the NLT precludes breadth of self-insight. That is, the NLT focuses on respondents' reflexive feelings regarding a specific aspect of self-regard, their initials. The hope is that people's associations with their initials reflects their global feelings of self-worth. This may be true to a degree, but there are two major problems with equating name-esteem with implicit global self-esteem. First, as noted above, the assumption that the NLT taps nonconscious processes is dubious, as nearly half of respondents report recognizing that the NLT is designed to tap self-esteem and NLT scores are moderately correlated with the single items "How much do you like your name, in total?" (Gebauer, Riketta, Broemer, & Maio, 2008) and "I like my name" (Krizan, 2008). Second, it is questionable that global self-esteem can be reduced to a single aspect of self such as one's initials. Indeed, attempts to use specific self-views to predict global self-esteem have revealed that even 136 specific self-views account for only half of the variance in global self-esteem (Marsh, 1986). Insofar as implicit self-esteem is just as broad as explicit self-esteem, the relatively small sample of items in the IAT and especially the NLT will limit the effectiveness of such tests (Epstein, 1984).

To provide a better estimate of global self-esteem, researchers have needed to include not only a host of specific self-views but also positive and negative affectivity, the certainty and importance of those self-views, and real-ideal self-view discrepancies (Pelham & Swann, 1989). Overall, it seems to us that the NLT is best understood as it was originally conceptualized—as a measure of implicit egotism rather than self-esteem (Pelham, Mirenberg, & Jones, 2002; Jones, Pelham, Carvallo, & Mirenberg, 2004). This is an important distinction because considerable empirical evidence supports a distinction between the tendency to display positivity biases (i.e., implicit egotism) and self-esteem (Kwang & Swann, 2010; Swann, Griffin, Predmore, & Gaines, 1987).

The notion that the IAT and NLT are differentially impoverished measures of self-esteem could explain why they are not correlated with one another as well as the fact that they are largely independent of phenomena that are traditionally associated with self-esteem. This notion could also explain evidence that the predictive utility of implicit measures can be augmented by administering them after participants complete measures of explicit self-esteem (e.g., Bosson et al., 2000). Cognitively activating explicit self-esteem, it would seem, infuses responses to the IAT and NLT with esteem-related components that they ordinarily lack.

The esteem-impoverishment of the IAT and NLT might also explain the aforementioned evidence of a motivating role of implicit self-esteem discrepancies. Rather than identifying a stable intrapsychic conflict between implicit and explicit evaluations, perhaps these studies simply identify individuals who are experiencing momentary (implicit) sentiments that conflict with stable

(explicit) evaluations. If so, then this research may belong within the larger body of evidence indicating that discrepancies between state and trait explicit self-esteem are associated with defensiveness and other important psychological outcomes (Kernis, Lakey, & Heppner, 2008).

Finally, the notion that the IAT and NLT are uniquely impoverished measures of self-esteem may also explain why placing people under cognitive load increases the correlation between measures of implicit and explicit self-esteem (Koole et al., 2001). A series of investigations by Swann and colleagues (Hixon & Swann, 1993; Swann, Hixon, Stein-Seroussi, & Gilbert, 1990) showed that depriving participants of cognitive resources prevents them from accessing autobiographical information about themselves (see also Paulhus & Levitt, 1987). As a result, participants with low social self-esteem were just as inclined to embrace positive evaluations as were participants with high social self-esteem. The preference for positive evaluators was reversed among persons with low self-esteem when they later recovered sufficient cognitive resources to access autobiographical information about themselves (Swann et al., 1990, Experiment 3). As such, manipulations of resource deprivation remove the self from self-relevant responding, thus tossing out the self-esteem baby with the self-reflection bathwater.

Our argument that the two primary ISE measures tap into different aspects of an impoverished self can promote a reanalysis of prior findings. For instance, it turns on its head the favored interpretation of the impact of the resource deprivation manipulation in the Koole et al. (2001) research. We argue that rather than causing people's responses on explicit self-esteem to converge on their "true," implicit self-esteem, resource deprivation prevents individuals from accessing their chronic self-views. Thus deprived, individuals will rely on automatic, positivity biases or on "implicit egotism."

One could counter the foregoing interpretation by contending that although resource deprivation may have prevented participants in Swann and colleagues' studies from accessing explicit self-knowledge, they were still able to access implicit self-knowledge. Such reasoning would raise an additional puzzle: Why should implicit self-knowledge be uniformly positive? After all, it is well established that roughly 33% of children suffer from insecure attachment relations and such relations predict low self-esteem later in life (e.g., Cassidy, 1988; Sroufe, 1989)—rates of which also happen to be roughly 33% (Diener & Diener, 1995). In light of such evidence, it makes little sense that nearly all adult participants should enjoy high implicit self-esteem. Similarly, Heine and Hamamura (2007) found that among 30 potential indicators of self-esteem examined, only the IAT failed to show a statistically significant East–West cultural difference. The cultural insensitivity of the IAT is consistent with our hypothesis that it fails to tap the biographical experiences that are shaped by culture and reflected in global feelings of self-worth. Instead of providing a window into people's implicit feelings about themselves, resource-deprived respondents to the IAT display an automatized tendency to embrace positive appraisals.

The notion that the IAT measures implicit affect processes and the NLT measures implicit egotism could explain the most robust finding in the implicit self-esteem literature: people who score high on measures of explicit esteem and low on measures of implicit self-esteem display defensive reactions (but not narciss-

ism, see Bosson et al., 2008). That is, people who think well of themselves but have transient feelings of unspoken dysphoria or self-doubt might be prone to engage in compensatory activity to shore up their high self-esteem (e.g., Steele, 1988; Swann, Wenzlaff, & Tatarodi, 1992). This finding thus provides a nice parallel to the literature indicating that people who have fluctuating levels of self-esteem are prone to display defensive self-enhancement, narcissism, anger, self-regulatory failure, and so on (e.g., Kernis et al., 2008; O'Brien, Bartoletti, Leitzel & O'Brien, 2006; Tice & Gailliot, 2006). From this vantage point, work on implicit–explicit discrepancies suggests that discrepant feelings or thoughts may trigger insecurity and defensive reactions even when assessed using putatively implicit measures that are independent of representations of the self.

The Next Step

Despite our conclusion that the IAT and NLT are not valid measures of self-esteem, we continue to believe in the original rationale for developing measures of implicit self-esteem in the first place—to provide insight into aspects of self-esteem that people are unable or unwilling to report. We accordingly urge researchers to turn their attention to developing novel measures of implicit aspects of self-esteem that follow a more traditional and stringent construct validation process. This process is especially important when the correlates of the construct under scrutiny are not well understood (Cronbach & Meehl, 1955)—which is unquestionably true in the case of implicit self-esteem.

Where to begin? Hoping to discover clues that would enable us to chart a path to a valid measure of implicit aspects of self-esteem, we turned to the history of a construct that has a surprisingly large number of parallels: implicit motivation. Although this literature has been largely overlooked by social psychologists, it is potentially instructive here because many of the challenges that self-esteem researchers now confront are similar to the ones that confronted developers of the Thematic Apperception Test (TAT). The developers of the TAT pointed to low correlations with explicit measures as demonstrating that it measured a unique construct. Soon thereafter, critics began complaining that scores on the TAT were unreliable. The controversy grew, resulting in years of research in which advocates sought to address shortcomings of the test while simultaneously striving to demonstrate its predictive validity. In the end, these efforts bore considerable fruit. Indeed, there is now consensus that modern versions of the TAT are valid measures of nonconscious motivation, which predict achievement, economic success, persistence at challenging tasks, job performance, and career choice, often more effectively than explicit measures (McClelland, 1999; Winter, 1999).

These parallels aside, there is at least one crucial difference between the history of research on the TAT and the history of research on implicit self-esteem. The developers of the TAT succeeded in measuring a construct (i.e., implicit motivation) that was distinct from the one measured by explicit measures (i.e., conscious goals and beliefs). In addition, the construct they identified was closely aligned with the one that they originally targeted. In this regard, the developers of extant measures of implicit self-esteem appear to have failed; although the IAT and NLT clearly measure something that is distinct from the construct measured by

traditional self-esteem measures, this something seems to have little to do with self-esteem as it is traditionally defined.

How, then, should researchers measure implicit aspects of self-esteem? A viable measure of self-esteem should avoid the pitfall that we believe besets the IAT and NLT, specifically the fact that neither measure has respondents reflect on their global self-worth. What is needed is a measure that does require such reflection. At first blush, any assessment procedure based on having people report their evaluations of themselves might seem to be liable to the self-presentational processes that have worried past self-esteem researchers. To circumvent this problem, we suggest that respondents be interviewed as they reflect on their self-worth with an eye to illuminating (a) retrospective support for people's assertions about themselves and (b) potential contradictions between people's claims about their self-worth and their putative evidence for such claims. Defensiveness shows signs that people possess self-evaluations that they do not "own" when they engage in deliberate self-report.

A related but distinct procedure might be to code responses using a scheme similar to that employed by developers of the adult attachment interview (AAI; Main & Goldwyn, 1994). In this paradigm, participants reflect on their early relations, and their responses are then scored for degree of negativity and, more important, the coherence of their accounts (e.g., how readily they can recall examples that justify their responses). Although the content of this coding scheme is obviously different from one designed to assess implicit aspects of self-esteem, the problems that the emphasis on coherence of accounts was designed to overcome (e.g., a tendency for people to present overly rosy pictures of their childhood) closely parallels the problems that self-esteem researchers are confronting. Moreover, the effectiveness of responses to the AAI in predicting theoretically relevant outcomes (e.g., maternal responsiveness, resilience, psychopathology) is beyond doubt (e.g., Crowell & Treboux, 1995). We obviously cannot say whether this approach, or some variation of it, could be successfully adapted to lay bare aspects of self-esteem that people are unable or unwilling to report. We believe, however, that an approach such as this one has more potential for measuring implicit aspects of self-esteem than either the IAT or the NLT.

Of course, advocates of the IAT and NLT could point to evidence that each of these measures have demonstrated linkages to some outcome measures. Given this, might it be useful to continue exploring the predictive utility of such measures? Perhaps it is. But in light of our evidence that such measures are, at best, impoverished measures of self-esteem, it would be prudent to relabel these measures with something other than implicit self-esteem. This, of course, would leave other researchers with the challenge of developing a measure that truly captures implicit aspects of self-esteem and would task the developers of the IAT and NLT with identifying the psychological space occupied by their measure. This orientation is different from the one we advocate in this review, wherein researchers begin with a strong theory about how a construct should operate and then pursue critical tests of viable methods to determine their suitability.

We hope that some researchers will step forward to meet the challenge we are introducing—to develop new implicit measures that fulfill the hopes of the developers of extant measures of implicit self-esteem. We firmly believe that the original goal of the implicit self-esteem enterprise—to develop a reliable window into

what people think about themselves but cannot or will not report—is as important now as it was when Hobbes first alluded to this perplexing problem.

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(Appendix follows)

Appendix

Table A1
Meta-Analysis Data

Covariate	Self-esteem measure	<i>N</i>	<i>r</i>
Name–Letter Test			
Bosson et al. (2000)	IAT	84	–.06
Zeigler-Hill (2006)	IAT	120	–.05
Baccus et al. (2004)	IAT	118	.06
Gregg & Sedikides (2010)	IAT	118	.11
Gebauer et al. (2008)	IAT	126	.12
Rudolph et al. (2008)	IAT	102	.06
Rudolph et al. (2008)	IAT	60	.07
Karpinski et al. (2007)	IAT	52	.21
LeBel (2010)	IAT	200	.17
Self-Liking subscale			
Oakes et al. (2008)	IAT	97	.11
Oakes et al. (2008)	IAT	97	.27
Oakes et al. (2008)	IAT	97	.27
Meagher & Aidman (2004)	IAT	63	–.03
Bosson et al. (2000)	IAT	84	.20
Bosson et al. (2000)	NLT	84	.09
Bosson et al. (2003)	NLT	116	–.19
Bosson et al. (2003)	NLT	156	.15
Bosson et al. (2000)	RSES	84	.85
Self-Competence subscale			
Bosson et al. (2000)	IAT	84	.20
Oakes et al. (2008)	IAT	97	.10
Oakes et al. (2008)	IAT	97	.09
Oakes et al. (2008)	IAT	97	.12
Meagher & Aidman (2004)	IAT	63	.00
Bosson et al. (2000)	NLT	84	.13
Bosson et al. (2000)	RSES	84	.79
Self-attributes questionnaire			
Farnham et al. (1999)	IAT	125	.24
Bosson et al. (2000)	IAT	84	.20
Greenwald & Farnham (2000)	IAT	145	.20
Greenwald & Farnham (2000)	IAT	145	.27
Bosson et al. (2000)	NLT	84	.11
Farnham et al. (1999)	RSES	125	.41
Bosson et al. (2000)	RSES	84	.45
Greenwald & Farnham (2000)	RSES	145	.41
Psychological well-being			
Schimmack & Diener (2003)	NLT	141	.11
Schimmack & Diener (2003)	NLT	141	.17
Schimmack & Diener (2003)	NLT	141	.06
Schimmack & Diener (2003)	NLT	141	.05
Schimmack & Diener (2003)	NLT	141	.10
Schimmack & Diener (2003)	NLT	141	.13
Kernis et al. (2008)	NLT	101	.24
Kernis et al. (2008)	NLT	101	.21
Schimmack & Diener (2003)	ESE	141	.59
Schimmack & Diener (2003)	ESE	141	.45
Schimmack & Diener (2003)	ESE	141	.40
Schimmack & Diener (2003)	ESE	141	.42
Schimmack & Diener (2003)	ESE	141	.39
Schimmack & Diener (2003)	ESE	141	.36
Kernis et al. (2008)	ESE	101	.65
Kernis et al. (2008)	ESE	101	.57

(Appendix continues)

Table A1 (continued)

Covariate	Self-esteem measure	<i>N</i>	<i>r</i>
Self-clarity			
DeHart et al. (2006)	NLT	159	.03
DeHart et al. (2006)	NLT	154	.26
DeHart & Pelham (2007)	NLT	305	.19
DeHart et al. (2006)	ESE	159	.72
DeHart et al. (2006)	ESE	154	.60
DeHart & Pelham (2007)	ESE	305	.66
Depression			
Buhmann et al. (2008)	IAT	55	-.39
Bos et al. (2010)	IAT	253	.05
De Raedt et al. (2008)	IAT	20	-.46
Haefffel et al. (2007)	IAT	237	-.07
Haefffel et al. (2007)	IAT	237	-.12
Haefffel et al. (2007)	IAT	251	-.08
Haefffel et al. (2007)	IAT	251	-.20
Haefffel et al. (2007)	IAT	251	-.15
Karpinski et al. (2007)	IAT	134	-.01
Buhmann et al. (2008)	ESE	55	-.83
Bos et al. (2010)	ESE	253	-.54
Karpinski et al. (2007)	ESE	134	-.35
De Raedt et al. (2008)	ESE	20	-.74
Emotional instability			
Robinson & Meier (2005)	IAT	54	-.41
Robinson & Meier (2005)	IAT	50	-.32
Robinson & Wilkowski (2006)	IAT	61	-.07
Bos et al. (2010)	IAT	253	.04
Robinson & Meier (2005)	ESE	54	-.46
Robinson & Meier (2005)	ESE	50	-.46
Bos et al. (2010)	ESE	253	-.42
Physical health problems			
Bosson et al. (2000)	IAT	84	.04
Bos et al. (2010)	IAT	253	-.01
Bos et al. (2010)	IAT	253	-.03
Schröder-Abé et al. (2007)	IAT	102	-.10
Robinson et al. (2006)	IAT	93	-.21
Robinson et al. (2006)	IAT	61	-.25
Bosson et al. (2000)	NLT	84	.14
Shimizu & Pelham (2004)	NLT	169	.09
Bosson et al. (2000)	ESE	84	-.13
Bos et al. (2010)	ESE	253	-.38
Bos et al. (2010)	ESE	253	-.09
Schröder-Abé et al. (2007)	ESE	102	-.41
Shimizu & Pelham (2004)	ESE	169	-.23
Contingent self-esteem			
Park et al. (2007)	IAT	109	-.04
Bos et al. (2010)	IAT	253	.01
Kernis et al. (2008)	NLT	101	-.25
Kernis et al. (2008)	ESE	101	-.51
Park et al. (2007)	ESE	109	-.26
Bos et al. (2010)	ESE	253	-.33

(Appendix continues)

Table A1 (continued)

Covariate	Self-esteem measure	<i>N</i>	<i>r</i>
Positive life events			
DeHart et al. (2009)	NLT	505	-.05
DeHart et al. (2009)	NLT	505	.14
DeHart & Pelham (2007)	NLT	305	.09
DeHart & Pelham (2007)	NLT	305	.13
Shimizu & Pelham (2004)	NLT	169	-.01
DeHart et al. (2009)	ESE	505	.19
DeHart et al. (2009)	ESE	505	.17
DeHart & Pelham (2007)	ESE	305	.47
DeHart & Pelham (2007)	ESE	305	.24
Shimizu & Pelham (2004)	ESE	169	.24
Haefel et al. (2007)	IAT	251	.11
Preference for positive feedback			
Bosson et al. (2000)	RSES	84	.25
Bosson et al. (2000)	IAT	84	.11
Bosson et al. (2000)	NLT	84	.23
Positive interpretations of ambiguity			
Bosson et al. (2000)	RSES	84	.33
Bosson et al. (2000)	IAT	84	-.04
Bosson et al. (2000)	NLT	84	.22
Rater evaluations of global self			
Bosson et al. (2000)	IAT	84	.18
Bosson et al. (2000)	IAT	84	.25
Bosson et al. (2000)	IAT	84	.23
Bosson et al. (2000)	IAT	84	.23
Bosson et al. (2000)	NLT	84	.05
Bosson et al. (2000)	NLT	84	.08
Bosson et al. (2000)	NLT	84	-.03
Bosson et al. (2000)	NLT	84	-.01
Bosson et al. (2000)	ESE	84	.51
Bosson et al. (2000)	ESE	84	.47
Bosson et al. (2000)	ESE	84	.50
Bosson et al. (2000)	ESE	84	.32
Nonverbal displays of negative affect			
Robinson & Meier (2005)	ESE	54	-.23
Robinson & Meier (2005)	ESE	50	-.07
Robinson & Meier (2005)	IAT	50	-.4
Robinson & Meier (2005)	IAT	54	-.3
Uncontrollable negative self-thoughts			
Verplanken et al. (2007)	IAT	125	-.28
Verplanken et al. (2007)	NLT	199	-.17
Verplanken et al. (2007)	ESE	125	-.47
Transitory affect			
Robinson & Meier (2005)	IAT	54	.40
Robinson & Meier (2005)	IAT	50	.30
Robinson et al. (2006)	IAT	61	.27
Robinson & Wilkowski (2006)	IAT	61	.09
Robinson & Meier (2005)	IAT	50	.28
Bosson et al. (2000)	IAT	84	.24
Bosson et al. (2000)	IAT	84	.03
Haefel et al. (2007)	IAT	237	.15
Albers et al. (2009)	NLT	30	.36
Albers et al. (2009)	NLT	28	.61
DeHart & Pelham (2007)	NLT	305	.09
DeHart & Pelham (2007)	NLT	305	.13
DeHart & Pelham (2007)	NLT	305	.03
Bosson et al. (2000)	NLT	84	.23
Bosson et al. (2000)	NLT	84	.11

(Appendix continues)

Table A1 (continued)

Covariate	Self-esteem measure	<i>N</i>	<i>r</i>
Robinson & Meier (2005)	ESE	54	.23
Robinson & Meier (2005)	ESE	50	.07
Robinson & Meier (2005)	ESE	50	.30
DeHart & Pelham (2007)	ESE	305	.24
DeHart & Pelham (2007)	ESE	305	.46
DeHart & Pelham (2007)	ESE	305	.47
Bosson et al. (2000)	ESE	84	.31
Bosson et al. (2000)	ESE	84	.36
Positive self-presentation			
Riketta (2005)	IAT	99	.08
Riketta (2005)	IAT	99	.15
Greenwald & Farnham (2000)	IAT	145	.01
Greenwald & Farnham (2000)	IAT	145	.12
Greenwald & Farnham (2000)	IAT	145	.27
Greenwald & Farnham (2000)	IAT	145	.20
Farnham et al. (1999)	IAT	125	.18
Farnham et al. (1999)	IAT	125	.17
Karpinski et al. (2007)	IAT	134	.10
Karpinski et al. (2007)	IAT	134	.04
Riketta (2005)	NLT	99	.17
Riketta (2005)	NLT	99	.15
Riketta (2005)	ESE	99	.01
Riketta (2005)	ESE	99	.45
Greenwald & Farnham (2000)	ESE	145	.02
Greenwald & Farnham (2000)	ESE	145	.47
Karpinski et al. (2007)	ESE	134	.31
Karpinski et al. (2007)	ESE	134	.14
Farnham et al. (1999)	ESE	125	.48
Farnham et al. (1999)	ESE	125	.17
Self-humility			
Rowatt et al. (2006)	IAT	135	.32
Rowatt et al. (2006)	IAT	135	.24
Rowatt et al. (2006)	IAT	135	.25
Rowatt et al. (2006)	IAT	135	.06
Rowatt et al. (2006)	IAT	135	-.06
Rowatt et al. (2006)	IAT	55	.18
Rowatt et al. (2006)	ESE	135	-.03
Rowatt et al. (2006)	ESE	135	.28
Rowatt et al. (2006)	ESE	135	.20
Rowatt et al. (2006)	ESE	135	.03
Rowatt et al. (2006)	ESE	135	.10
Judges' ratings			
Robinson & Meier (2005)	IAT	54	.40
Robinson & Meier (2005)	IAT	50	.30
Kernis et al. (2008)	NLT	101	.56
Schimmack & Diener (2003)	NLT	141	.18
Schimmack & Diener (2003)	NLT	141	.13
Schimmack & Diener (2003)	NLT	141	.14
Kernis et al. (2008)	ESE	101	.26
Robinson & Meier (2005)	ESE	54	.23
Robinson & Meier (2005)	ESE	50	.07
Schimmack & Diener (2003)	ESE	141	.42
Schimmack & Diener (2003)	ESE	141	.39
Schimmack & Diener (2003)	ESE	141	.36

Note. RSES = Rosenberg Self-Esteem Scale; ESE = Explicit self-esteem; IAT = Implicit Association Test; NLT = Name-Letter Test.

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