

**Self-Affection without Self-Reflection:
Origins, Models, and Consequences of Implicit Self-Esteem**

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There is a certain average tone of self-feeling, which each of us carries about with him, and which is independent of the objective reasons we may have for satisfaction or discontent.

William James, 1890, p. 306

As James once observed, people's feelings towards themselves are strikingly impervious to reason. Some of the most celebrated and accomplished individuals may feel worthless and disgusted with themselves, whereas chronic underachievers and social outcasts can possess an unshakable sense of pride and dignity. Indeed, a recent review of more than 20,000 relevant studies concluded that individuals with high self-esteem neither perform better nor display more interpersonal success compared with individuals with low self-esteem (Baumeister, Campbell, Krueger, & Vohs, 2003). Self-esteem thus has little to do with people's objective talents or achievements. Instead, self-esteem appears to arise from people's gut feelings and intuitions (Brown, 1993, 1998).

Until recently, psychologists knew very little about the intuitions that underlie people's feelings towards themselves. This was probably because such intuitions are hard to observe in a systematic and scientifically rigorous manner. People find it notoriously difficult to verbalize their intuitions (Nisbett & Wilson, 1977). In addition, some intuitions about the self may be so deep-seated that they completely bypass conscious experience. Therefore, explicit self-reports are a less than ideal method for studying intuitive processes. Fortunately, researchers have recently begun to develop measures of self-esteem that do not rely on

people's conscious self-reports. These measures of *implicit self-esteem* are specifically designed to tap into self-evaluations that cannot be accessed via conscious introspection (Greenwald & Banaji, 1995). Research on implicit self-esteem thereby offers a window into the unconscious intuitions that underlie people's feelings about themselves.

Over the last 10 years or so, the study of implicit self-esteem has developed into a burgeoning area of psychological research. Our goal in the present chapter is to summarize some of the conclusions that have emerged from this work. In the following paragraphs, we begin by outlining the major methods and models that have guided implicit self-esteem research. We then consider recent findings with regard to three important aspects of implicit self-esteem. First, what are the social and developmental origins of implicit self-esteem? Second, what is the relation between implicit and explicit self-esteem? Third, what are the consequences of implicit self-esteem for psychological functioning? After covering these various issues, we summarize the main findings on implicit self-esteem and suggest possible avenues for future implicit self-esteem research.

Measures and Models of Implicit Self-Esteem

Implicit self-esteem research has branched off from the more general study of the psychological unconscious (Bargh & Chartrand, 1999; Kihlstrom, 1987; Wilson, 2002). For the greater part of the 20th century, any notions regarding the unconscious were rejected by mainstream psychology. However, this changed during the 1980s, when cognitive psychologists discovered *implicit memory*, memory that is not consciously remembered but whose influence can nonetheless be observed indirectly (e.g., Roediger, 1990; Schacter, 1992). Implicit processes were subsequently found to be pervasive in many forms of social cognition, such as person perception (Higgins, Rholes, & Jones, 1977), attribution (Uleman & Moskowitz, 1994), stereotyping (Devine, 1989) and inter-group evaluation (Perdue, Dovidio, Gurtman, & Tyler, 1991). Implicit processes have also been implicated in affectively driven

responses (Zajonc, 1998). For instance, Fazio and associates showed that attitudes may be activated automatically by the mere presence of an attitude object (Fazio, Sanbonmatsu, Powell, & Kardes, 1986).

The widespread interest in implicit (social) cognition set the stage for research on implicit self-esteem. In their ground-breaking article, Greenwald and Banaji (1995, p. 11) defined implicit self-esteem as "the introspectively unidentified (or incorrectly identified) effect of the self attitude on self-associated versus self-dissociated objects." A literature review by these authors suggested that implicit self-esteem plays an important role in well-documented biases regarding self-associated stimuli, including in-group bias (Tajfel, 1970), similarity-attraction effects (Byrne, 1969), and role-playing effects in persuasion (Janis & King, 1954). This provocative conclusion stimulated researchers to develop more systematic procedures for measuring implicit self-esteem.

Measures of Implicit Self-Esteem. One of the most widely used measures of implicit self-esteem is the *name letter test*. The name letter test is based on the pioneering work of Nuttin (1985, 1987) and associates, who found that people favor the letters that are included in their names more than letters that are not in their names. This so-called "name letter effect" occurs without people's conscious awareness (Koole, Dijksterhuis, & Van Knippenberg, 2001; Nuttin, 1985; Wentura, Kulfanek, & Greve, in press) and cannot be reduced to methodological artifacts (Koole & Pelham, 2003) or mere exposure (Jones, Pelham, Mirenberg, & Hetts, 2002). Reliable name letter effects have been documented in at least 15 different countries and across 6 different alphabets (Jones et al., 2002; Hoorens, Nuttin, Erdélyi-Herman, & Pavakanun, 1990; Kitayama & Karasawa, 1997; Nuttin, 1987).

In the standard name letter test (e.g., Kitayama & Karasawa, 1997) participants are presented with random arrangements of all letters of the alphabet -- to obscure the association between name letters and the self. Participants then rate their liking for the letters, ratings that

are usually corrected for the average attractiveness of alphabet letters. Because positive bias is most pronounced for initial letters (you should probably make it clear here that “initial” refers to initials in one’s name, and not the first ones they evaluate) (Nuttin, 1985), researchers often focus exclusively on initial letter ratings. The name letter test has been used to assess implicit self-esteem as a more or less enduring trait (DeHart, Pelham, & Tennen, 2005; Koole et al., 2001) or as a temporary psychological state (DeHart & Pelham, 2005).

A second popular measure of implicit self-esteem is the *implicit association test* (IAT) that was developed by Greenwald and associates. The IAT represents a general procedure to assess implicit associations, including implicit attitudes, prejudice, and stereotypes. The test was adapted to the study of implicit self-esteem by Greenwald and Farnham (2000). In the self-esteem IAT, participants perform various combinations of self-related and evaluative categorization tasks. Implicit self-esteem is determined by comparing how well participants are able to combine the categorization of self-related and positive stimuli versus how well participants are able to combine the categorization of self-related and negative stimuli. A convenient aspect of the IAT is that it can be easily adapted to assess implicit self-concept (e.g., by changing the evaluative categorization task for a gender categorization task). The IAT has mainly been used to assess implicit self-esteem at the trait level, but it might also be sensitive to fluctuations in state implicit self-esteem (Dijksterhuis, 2004). Although the IAT is a popular research instrument, its underlying processes are still debated (see Rothermund & Wentura, 2004, for an alternative interpretation of the IAT in terms of salience asymmetries) (Although I doubt you want to get into this here, the salience asymmetries argument works better as an alternative explanation for some IAT effects than for others. I don’t think it works well at all for the self-esteem IAT, for two reasons. First, the major effects that we have shown in which implicit SE interacts with explicit IAT would not be predicted by a salience asymmetry interpretation. Second, if we assume that self is more salient than something that

is not self (which I think a lot of research would suggest) and negative stimuli are more salient than positive (which is again supported) by a lot of research then we should expect self to be associated with negative stimuli for almost everyone, but exactly the opposite is the case. So although I think Rothermund & Wentura have a point in some uses of the IAT (their account does seem plausible for racial IATs for example), I don't think it works very well for the self-esteem IAT. If you agree with my reasoning here, you might want to just drop this little reference to their work, but that is of course up to you) .

The third measure of implicit self-esteem that we consider is the *implicit self-evaluation test*. The implicit self-evaluation test was developed by Hetts, Pelham and associates (Hetts, Sakuma, & Pelham, 1999). The logic of the implicit self-evaluation test is based on evaluative priming research (Fazio et al., 1986). This research has established that the brief presentation of an evaluatively charged stimulus (e.g., the word *happiness*) facilitates the evaluation of similarly valenced targets (e.g., *good*) and inhibits evaluations of dissimilarly valenced targets (e.g., *bad*). In the implicit self-evaluation test, participants are asked to evaluate a series of positive and negative target words, which are either preceded by self-related primes (e.g., the word "I") or non-self-related primes (e.g., the letter "X"). Implicit self-esteem is indicated by facilitation of positive words and/or inhibition of negative words by the self-related primes relative to the non-self-related primes.

Some researchers have analyzed positive versus negative words separately in the implicit self-evaluation test (Koole, 2004). A notable feature of the implicit self-evaluation test is that the duration of the self-related primes can be experimentally varied. In the standard version of the task, the self-related primes are presented for 200 ms, which is too quick to permit conscious control but still slow enough to be consciously perceived. However, some investigations have used much more rapid prime presentations, such that the self-related primes were presented subliminally (e.g., Spalding & Hardin, 1999). The implicit self-

evaluation test is thus particularly suited for the investigation of implicit self-esteem processes that operate on subliminal levels.

The name letter test, IAT, and implicit self-evaluation test have so far been the most popular measures in implicit self-esteem research. However, they are by no means the only available measures of implicit self-esteem. Alternative measures make use of word fragment completions (Hetts et al., 1999), sentence completions under cognitive load (Wenzlaff & Bates, 1998), the extrinsic affective Simon Test (De Houwer, 2003), the go-no-go association test (Sedikides & Gregg, 2005), the Stroop color-naming task (Bosson, Swann, & Pennebaker, 2000), and measurements of signature size (Stapel & Blanton, 2004).

The availability of various measures of implicit self-esteem raises the question whether all implicit self-esteem measures tap into a single underlying construct, or whether each measure taps into a unique facet of implicit self-esteem. The evidence on this issue is mixed. On the one hand, correlations among different measures of implicit self-esteem appear to be low (Bosson et al., 2000). On the other hand, several meaningful empirical findings have replicated across different measures of implicit self-esteem (Baccus, Baldwin, & Packer, 2004; Dijksterhuis, 2004; Pelham, Koole, Hardin, Hetts, & Seah, 2005; Spencer, Jordan, Logel, & Zanna, 2005). Thus, different measures of implicit self-esteem may tap into similar processes despite their low inter-correlations.

Models of Implicit Self-Esteem. Implicit self-esteem research has so far invested more in the development of empirical measures than in formal theoretical models. Nevertheless, most researchers seem to attribute an important role to *associations*. The general idea is that implicit self-esteem is based on a network of associations between representations of the self and positive or negative evaluations. Whenever a self-representation becomes co-activated with a positive or negative evaluation (e.g., when mentioning a person's name is followed by reward or punishment), the associations between the self and the respective evaluation will be

strengthened . When such associations have become sufficiently strong, activation of the person's self-representations can automatically trigger the associated evaluations. For instance, when implicit self-esteem is positive, activation of the self may automatically activate positive evaluations.

The logic of the associative model is most visible in the implicit self-evaluation test, which draws explicitly on associative principles. However, evaluative associations are similarly presumed to underlie IAT responses (Greenwald et al., 2002; cf. Rothermund & Wentura, 2004) and name-letter evaluations (Koole et al., 2001). In fact, Greenwald et al. (2002) have used associative network principles to construct a unified theory of implicit attitudes, stereotypes, and self-concept.

Other theoretical orientations suggest that implicit self-esteem may involve more than mere associations. According to *personality systems interactions (PSI) theory*, the implicit self can be modeled as a parallel-distributed processing network (Kuhl, 2000; Koole & Kuhl, 2003; see also Nowak, Vallacher, Tesser, and Borkowski, 2000, for a related model). Parallel-distributed processing is capable of handling vast amounts of complex information at much higher speeds than serial processing (Rumelhart, McClelland, & the PDP Research Group, 1986). Implicit self-representations may therefore include more than valenced associations, and can even represent the totality of the person's needs, motives, and autobiographical experiences. According to PSI theory, the implicit self is largely inaccessible to introspection because its representations are too rich and information-laden to be contained by the conscious mind. This view may be contrasted with associative network models, which assume that the associations that underlie implicit self-esteem are much simpler than explicit, conscious self-representations.

Models of parallel-distributed processing and associative networks are not mutually exclusive. Indeed, PSI theory attributes an important role to associations in the functioning of

the implicit self. Specifically, the networks of the implicit self may become associated with positive affect or the down-regulation of negative affect through elementary conditioning processes (Kuhl, 2000). These associations between the implicit self and affect systems may provide the basis not only for implicit self-esteem, but also for efficient affect regulation, cognitive integration processes, and the implementation of difficult intentions (Kuhl, 2000; Koole & Kuhl, in press). PSI theory thus offers a more complex information-processing approach to implicit self-esteem than standard associative models. This conception of the implicit self has recently begun to attract empirical attention (Koole, 2004; Koole & Jostmann, 2004; Baumann & Kuhl, 2003; Baumann, Kuhl, & Kazén, in press; Kazén, Baumann, & Kuhl, 2003). As such, parallel-processing models may be useful in understanding the nature of implicit self-esteem.

Origins of Implicit Self-Esteem

As we have seen, there is a consensus among researchers that evaluative associations are fundamental to implicit self-esteem (Greenwald et al., 2002; Koole & Pelham, 2003). This notion has important implications for the likely origins of implicit self-esteem. Presumably, most evaluative associations develop through learning, although some evaluative associations are innate or hard-wired (Öhman & Mineka, 2001; Tesser, 1993). Consequently, if implicit self-esteem is based on evaluative associations, it seems reasonable to assume that implicit self-esteem is learned based on interactions with others.

Social Origins of Implicit Self-Esteem. One important context for the development of implicit self-esteem may be people's early relations with their caregivers. According to attachment theory (Bowlby, 1973), children develop conscious and unconscious beliefs about the self in relation to others based on their interactions with their primary caregivers. These caregivers are usually the children's parents (particularly the mother). When parents are responsive to their children's emotional needs, the children develop a secure attachment style

and come to believe that they are good and worthy of love. On the other hand, when parents are unresponsive to their children's emotional needs, the children develop an insecure attachment style and come to believe that they are bad and unworthy of love. Consistent with this reasoning, different attachment styles in infancy predict self-esteem in preschool and kindergarten, such that securely attached children display higher self-esteem than insecurely attached children (Cassidy, 1990; Sroufe, 1983). However, the latter investigations only included measures of explicit self-esteem. It thus remains to be seen whether parent-child interactions play a similar role in the formation of implicit self-esteem.

The relation between parenting style and implicit self-esteem has recently been investigated by DeHart, Pelham, and Tennen (2005). In three separate studies, DeHart et al. found that college students' reports of their early interactions with their parents were systematically related to the students' levels of implicit self-esteem (as indicated by the name letter test). Students who recalled that their mothers were more nurturing reported higher trait implicit self-esteem compared with students whose mothers were presumably less nurturing. In addition, students who recalled that their mothers were more overprotective reported lower trait implicit self-esteem compared with students whose mothers were less over-protective. It is worth noting that the observed associations between parenting styles and implicit self-esteem occurred over and above the associations involving explicit self-esteem. In addition, in one study DeHart et al. found that mothers' independent reports of their early interactions with their children were related to children's level of implicit self-esteem. It therefore appears unlikely that the observed effects of implicit self-esteem were due to biases in recall of childhood experiences.

The DeHart et al. (2005) research has been among the first to link early childhood experiences with implicit self-esteem. However, some caution is warranted in interpreting these results. Implicit self-esteem could be the outcome of the experiences people had with

their parents while they were growing up, but it is also conceivable that parenting styles are influenced by implicit self-esteem. For instance, implicit self-esteem might be related to an agreeable temperament (Suls & Krizan, 2005), such that children with higher implicit self-esteem evoke more positive behaviors from their parents. Therefore, determining the precise causal relation between parenting styles and implicit self-esteem will require longitudinal research designs. Nevertheless, the results by DeHart et al. are consistent with the idea that people's interactions with their parents during childhood can leave a unique mark on their implicit self-esteem as young adults.

Conditioning Implicit Self-Esteem. How might people's social interactions shape or influence their level of implicit self-esteem? One possibility is suggested by evaluative conditioning research (De Houwer, Thomas, & Baeyens, 2001). Findings in this area have shown that people's attitudes towards a neutral stimulus can be changed by pairing this stimulus with another stimulus that is affectively valenced. For example, when a neutral stimulus is consistently paired with a positive stimulus, people's evaluations of the neutral stimulus become more positive. Conversely, when a neutral stimulus is consistently paired with a negative stimulus, people's evaluations of the neutral stimulus become more negative. Evaluative conditioning processes of this kind are presumably very basic and require no conscious awareness (DeHouwer et al., 2001).

Evaluative conditioning processes may explain how socialization processes come to shape people's implicit self-esteem. Whenever parents respond sensitively to children's needs, children's sense self may become conditioned to or associated with positive affect. Conversely, whenever parents neglect children's needs or become over-protective, children's sense of self may become conditioned to or associated with negative affect. Notably, this type of evaluative conditioning can be carried out without conscious awareness (DeHouwer et al.,

2001). Consequently, socializing agents (such as parents) may condition implicit self-esteem even in the absence of any conscious self-evaluation process.

At present, it remains unclear whether socialization influences on implicit self-esteem are mediated by evaluative conditioning processes. However, some initial research has addressed the influence of evaluative conditioning on implicit self-esteem in adults. Baccus et al. (2004) had participants complete a baseline measure of implicit and explicit self-esteem. Then participants performed a computer game in which they were repeatedly exposed to self-relevant versus non-self-relevant words that were paired with images of faces. In the experimental condition, the self-relevant words were always paired with images of smiling faces. In a control condition, the self-relevant words were randomly paired with images of smiling, frowning, or neutral faces. After this manipulation, participants completed measures of implicit (i.e., the name letter test and IAT) and explicit self-esteem. The results showed that positive evaluative conditioning led to an increase in implicit self-esteem, whereas explicit self-esteem was unaffected by evaluative conditioning. Further evidence that evaluative conditioning can alter implicit self-esteem was found by Riketta and Dauenheimer (2003) and Dijksterhuis (2004), who demonstrated that implicit self-esteem (as indicated by self-serving bias or the name letter test) can even be conditioned on subliminal levels. These latter findings are important, because they rule out the possibility that evaluative conditioning of implicit self-esteem depends on some form of conscious self-evaluation process.

In everyday life, conditioning experiences may be repeated many times and thus become deeply engrained in people's minds. Such repeated conditioning experiences may be provided by one's cultural context. Western cultures emphasize the positive value of the individual self, whereas Eastern cultures emphasize the positive value of the collective (Heine, Lehman, Markus, & Kitayama, 1999). Through evaluative conditioning processes, these different cultural contexts may shape implicit self-esteem. Directly relevant to these

issues, Hetts et al. (1999) examined implicit and explicit self-esteem among Asian immigrants in the USA with varying levels of exposure to American culture. Because of the cultural differences between Eastern and Western conceptions of the self, Hetts et al. hypothesized that increasing exposure to American culture should render Asian immigrants to display more favorable implicit associations towards their individual self and less favorable implicit associations towards their collective self. The results of three studies supported this notion. Specifically, as Asian immigrants spent more time in the U.S., their implicit self-esteem became more positive and their implicit group-esteem became less positive.

Contextual Variability in Implicit Self-Esteem. The research by Hetts et al. (1999) suggests that repeated conditioning experiences are important determinants of implicit self-esteem. As such, implicit self-esteem might be regarded as an enduring personality trait. However, implicit self-esteem may also vary at a state level. Evaluative conditioning studies have found that implicit self-esteem can be conditioned within minutes (Baccus et al., 2004; Riketta & Dauenheimer, 2003; Dijksterhuis, 2004). Nevertheless, these studies used experimental procedures and it is unclear whether classical conditioning manipulations are the same as meaningful positive or negative life events. DeHart and Pelham (2005) investigated whether implicit self-esteem can vary from moment to moment under more naturalistic conditions. These researchers repeatedly measured implicit self-esteem (i.e., the name letter test) in two samples across 3 to 5 weeks. The results showed that implicit self-esteem was significantly lower on days in which participants with low explicit self-esteem experienced more negative events. Thus, implicit self-esteem displayed systematic daily variations in an everyday context.

The variability of implicit self-esteem from moment to moment seems to contradict earlier conceptions of implicit evaluations as automatic and over-learned. Traditional conceptions of automaticity indeed assumed that automatic processes are rigid and resistant to

change. However, more recent conceptualizations of automatic processing have noted the more flexible and contextualized nature of implicit processes (Kuhl & Koole, 2004; Moskowitz, Li, & Kirk, 2004; Smith & Semin, 2004). Consistent with this idea, recent work indicates that implicit evaluations are highly sensitive to context (e.g., Ferguson & Bargh, 2004; Gawronski, Deutsch, & Seidel, 2005; Koole & Jostmann, 2004).

The flexible and dynamic nature of changes in implicit self-esteem may go beyond basic conditioning processes. Specifically, implicit self-esteem can change through self-affirmation (Holland, Meertens, & Van Vugt, 2002; Koole, Smeets, van Knippenberg, & Dijksterhuis, 1999; Sherman & Kim, 2005), social comparison (Stapel & Blanton, 2004), or self-regulation processes (Dodgson & Wood, 1998; Jones et al., 2002; Koole, 2004). Self-affirmation, social comparison, and self-defense all presumably involve relatively complex information processing. The associative network models that have been assumed to underlie implicit self-esteem cannot explain the influence of complex information processing on implicit self-esteem without making additional assumptions. Therefore, a complete understanding of the dynamics of implicit self-esteem may require more sophisticated models of the implicit self (Kuhl, 2000).

The Relation between Implicit and Explicit Self-Esteem:

Dual Processes and Beyond

Implicit and explicit self-esteem do not necessarily go hand in hand. In fact, the existing evidence suggests that the correlation between implicit and explicit self-esteem is small (e.g., Bosson et al., 1999; Hetts et al., 1999; but cf. Pelham et al., in press). A striking example of how implicit and explicit self-esteem can become dissociated was documented by Hetts et al. (1999). As noted before, these researchers observed that Asian immigrants' implicit self-esteem became more positive after living in the USA for several years. By contrast, Asian immigrants' explicit self-esteem was equally as favorable as that of European

Americans. It is well-established that Asian populations in Asia generally have lower explicit self-esteem than Western populations (Heine et al., 1999). Thus, it seems likely that Asian-American immigrants had quickly adjusted their explicit self-esteem to Western standards, whereas their implicit self-esteem only changed after several years of living in the West. Implicit self-esteem may thus continue to bear the mark of early socio-cultural experiences, even when explicit self-esteem has adapted to a new cultural reality.

The relation between implicit and explicit self-esteem is closely connected with basic questions about the nature of self-knowledge (Wilson & Dunn, 2004). To the extent that people possess implicit self-esteem, self-knowledge may be inherently imperfect, in that some self-evaluations are presumed to be inaccessible to conscious awareness. Yet most implicit self-esteem researchers do not assume that implicit and explicit self-esteem are completely independent. Although implicit self-esteem is by definition mediated by unconscious processes, researchers have speculated that intuitions about implicit self-esteem may occasionally "seep through" and reach conscious awareness (Spencer et al., 2005). Consistent with this speculation, participants with high explicit and low implicit self-esteem reported more unstable explicit self-esteem (assessed twice a day) across a two week period compared with participants with high explicit and high implicit self-esteem (Zeigler-Hill, in press). These findings suggest that implicit self-esteem helps to maintain the stability of explicit self-esteem.

Implicit and Explicit Self-Esteem as Dual Processes. A powerful theoretical analysis of the relation between implicit and explicit self-esteem is provided by *dual process models* (Chaiken & Trope, 1999; Smith & DeCoster, 2000). Although dual process models exist in different varieties, the models generally distinguish between automatic-intuitive versus controlled-deliberative processes. For instance, Epstein's (1994) Cognitive-Experiential Self Theory (CEST) has posited an experiential and a rational cognitive system. The experiential

system operates primarily on an unconscious level, and processes information holistically, rapidly, and effortlessly. By contrast, the rational system operates primarily on a conscious level and processes information serially, slowly, and effortfully. The rational and experiential systems are assumed to interact in determining people's behavior.

Implicit and explicit self-esteem may map onto dual processes. For example, controlled-deliberative processes seem more important in explicit self-esteem, whereas automatic-intuitive processes seem more important in implicit self-esteem (Epstein & Morling, 1995). If this is correct, then one can expect implicit and explicit self-esteem to vary relatively independently of each other. Consistent with this, correlations between measures of implicit and explicit self-esteem measures typically range from modest to zero (e.g., Bosson et al., 2000; Koole et al., 2001). From a dual process perspective, such low correlations do not pose a construct validity problem for measures of implicit or explicit self-esteem. Rather, low correlations between measures of implicit and explicit self-esteem are to be expected, given that these measures are presumed to be mediated by different underlying processes. Indeed, when a person has conflicting levels of implicit versus explicit self-esteem, both types of esteem may reflect sincerely held evaluations of the self (cf. Wilson, Lindzey, & Schooler, 2000).

Dual-process models provide a systematic framework for understanding dynamic variations in the relation between implicit and explicit self-esteem. Generally, controlled, deliberative processing is more effortful than automatic, intuitive processing. Thus, deliberative processing should mainly influence explicit self-esteem when people possess sufficient motivation and cognitive resources for engaging in such processing. When people lack either the motivation or the cognitive resources to engage in deliberative information processing, explicit self-esteem should be driven by more automatic-intuitive processing. Assuming that implicit self-esteem is generally mediated by automatic-intuitive processing,

the association between implicit and explicit self-esteem should become greater with decreasing processing motivation or depleted cognitive resources.

In line with dual process models, Koole et al. (2001) hypothesized that self-evaluations rendered under high cognitive load would be more likely to be influenced by automatic self-evaluations, and thus demonstrate high congruence with a measure of implicit self-esteem (i.e., the name letter effect). By contrast, self-evaluations rendered under low cognitive load were expected to be more influenced by conscious processing and thus would demonstrate low congruence with implicit self-esteem. Consistent with these expectations, Koole et al. found that self-evaluations reported under high cognitive load correlated .48 with implicit self-esteem. In contrast, self-evaluations reported under low cognitive load were uncorrelated with implicit self-esteem. Koole et al. obtained similar findings in another study, which used variations in processing speed to operationalize cognitive load.

Dual-process models can also account for individual differences in congruence between implicit and explicit self-esteem. Individuals who are more inclined to rely on their intuitions about themselves should display greater congruence between implicit and explicit self-esteem, compared with individuals who are more inclined to rely on analytic reasoning in evaluating themselves. Relevant to this issue, Brown and Ryan (2003) examined the congruence between implicit and explicit self-esteem as a function of mindfulness. Mindfulness is a personality trait that refers to the ability to "live in the moment" and to refrain from ruminations about one's past or future selves. Individuals high in mindfulness are thus less inclined to engage in analytic reasoning about themselves. Consistent with a dual process perspective, individuals high in mindfulness had greater congruence between implicit and explicit self-esteem compared with individuals low in mindfulness.

Pelham et al. (2005) also used a dual process perspective to analyze gender differences in congruence between implicit and explicit self-esteem. From early childhood, men are

typically encouraged to be rational and ignore their feelings, whereas women are typically encouraged to attend to and trust their feelings and intuitions. Given these different socialization experiences, men may more easily lose touch with their intuitions, resulting in a dissociation between implicit and explicit self-esteem. By contrast, women may develop a greater sensitivity to their intuitive self-evaluations, so their implicit and explicit self-esteem are more likely to go hand in hand. In support of Pelham et al.'s reasoning, five studies showed that the correlation between implicit and explicit self-esteem was stronger for women than for men. Notably, these latter findings were obtained using two different measures of implicit self-esteem and in samples from the USA, the Netherlands, and Singapore.

Beyond Dual Processes. Dual process models are powerful and have been supported across many different domains in psychology (Chaiken & Trope, 1999; Smith & DeCoster, 2000). Nevertheless, dual process models may not be able to completely explain the relation between implicit and explicit self-esteem. As mentioned previously, dual process models have typically considered implicit processes to be relatively rigid and automatic, whereas explicit processes have been considered to be more flexible and subject to strategic control. Again, recent work suggests that this characterization may not capture the flexible and strategic nature of implicit self-esteem processes.

Evidence for the flexibility of implicit self-esteem stems from research on implicit self-defense processes. Studies by Dodgson and Wood (1998), and Jones et al. (2002) have shown that threats to the self increase the congruence between implicit and explicit self-esteem (as assessed by response latency measures and the name letter test). This increase in congruence was due to variations in implicit self-esteem. When the self was threatened, individuals with high explicit self-esteem displayed an increase in implicit self-esteem, whereas individuals with low explicit self-esteem displayed a decrease in implicit self-esteem. Analogous results were obtained by DeHart and Pelham (2005), who found that negative life

events were associated with drops in implicit state self-esteem (assessed by the name letter test) among individuals with low explicit self-esteem, but not among individuals with high explicit self-esteem. Finally, Koole (2004) found that individuals high on action orientation displayed more autonomous implicit self-evaluations under negative conditions, whereas individuals low on action orientation ("state-oriented" individuals) displayed less autonomous implicit self-evaluations under negative conditions. Together, these findings suggest that at least some people (i.e., those with high explicit self-esteem or action orientation) can flexibly and strategically manage their implicit self-esteem to defend against threats to the self.

The strategic nature of implicit self-esteem fits with recent models that postulate automaticity of higher-order mental processes (Bargh & Ferguson, 2000; Kuhl & Koole, 2004). Many complex and sophisticated processes such as goal striving and decision making appear to be mediated by unconscious processes. These findings stand in contrast with traditional dual-process models, which have frequently characterized the unconscious as relatively crude and unsophisticated. Accordingly, traditional dual-process models may underestimate the resourcefulness of the implicit self.

The aforementioned findings that explicit self-reports can predict defensive changes in implicit self-esteem (e.g., Jones et al., 2002) suggest that people's explicit self-reports can to some degree tap into people's implicit associations about themselves. It is not yet clear how this comes about. There may exist some states of consciousness in which people possess greater access to their intuitions about themselves. "Mindfulness", or a state of "being in the moment", may be a psychological condition that facilitates such access to the implicit self (Brown & Ryan, 2003). Access to complex implicit self-representations may also be facilitated by low negative affect (Baumann & Kuhl, 2002, 2003) or vivid mental imagery (Schultheiss & Brunstein, 1999).

Interestingly, an alternative route through which people may acquire insight into their own implicit self-esteem is by avoiding introspection altogether. By carefully observing their own behavior, people may infer a great deal about their own psychological states (Bem, 1982). Self-perception may thus be an important route through which people learn about their implicit dispositions (Wilson & Dunn, 2004). The logic behind self-perception theory is apparent in the action orientation scale (Kuhl, 1994), which asks people to report on their behavioral responses to stressful situations. The action orientation scale has been found to be a reliable predictor of implicit processes (e.g., Jostmann, Koole, van der Wulp, & Fockenberg, 2005; Koole, 2004; Koole & Jostmann, 2004), suggesting that self-observation might provide useful insights into implicit processes. The role of self-perception is less obvious in measures of explicit self-esteem, which typically rely more on introspection. Even so, implicit self-esteem has observable behavioral consequences (DeHart, Tennen, Armeli, Todd, & Mohr, 2005; Pelham, Mirenberg, & Jones, 2002; Spalding & Hardin, 1990). Consequently, people might bring their explicit self-esteem in line with their implicit self-esteem by carefully observing their own behavior.

Consequences of Implicit Self-Esteem

Explicit self-esteem plays an important role in affect, cognition, and behavior (Baumeister et al., 2003; Brown, 1998; Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). It thus seems reasonable to ask whether implicit self-esteem can similarly be linked to important psychological outcomes. In addressing the consequences of implicit self-esteem, research has concentrated on four major outcomes: emotion regulation, self-defense, decision-making, and close relationships.

Implicit Self-Esteem and Emotion Regulation. Several theories have proposed that self-esteem helps to protect people against negative emotion (Leary & Baumeister, 2000; Pyszczynski et al., 2004; Tesser, 2000). This emotion regulation function has been supported

for explicit self-esteem (Baumeister et al., 2003). Could implicit self-esteem similarly promote emotion regulation? A relevant study by Spalding and Hardin (1999) examined the joint roles of implicit self-esteem (assessed by a subliminal implicit self-evaluation test) and explicit self-esteem in an anxiety-provoking situation (i.e., giving a presentation before an audience). The results showed that implicit self-esteem predicted lower non-verbal anxiety, but was unrelated to self-reported anxiety. Conversely, explicit self-esteem was unrelated to non-verbal anxiety, but predicted self-reported anxiety. Thus, Spalding and Hardin's findings suggest that implicit self-esteem has a distinct affect regulation function that may be particularly relevant to non-verbal expressions of negative emotion.

Individuals with high explicit self-esteem take negative feedback less to heart than individuals with low explicit self-esteem (Brown & Dutton, 1995). Greenwald and Farnham (2000) speculated that implicit self-esteem might have a similar buffering function, and examined how implicit self-esteem (assessed by an IAT) and explicit self-esteem predict cognitive reactions to success and failure. Following failure feedback, individuals with high implicit self-esteem were found to be less inclined to lower their perceptions of the importance of the task and their future aspirations than individuals with low implicit self-esteem. The effects of explicit self-esteem were similar but weaker than those of implicit self-esteem. In addition, Dijksterhuis (2004) examined how conditioning implicit self-esteem influenced mood and task persistence after success and failure. The results showed that participants with high conditioned implicit self-esteem had less negative mood and greater persistence after failure than unconditioned participants. Finally, two studies using an experience sampling methodology have shown that people's implicit self-esteem (independent of their explicit self-esteem) predicts their spontaneous reports of negative affect (Conner & Feldman Barrett, in press). Taken together, these results indicate that implicit self-esteem facilitates affect regulation.

Implicit Self-Esteem and Self-Defense. Many studies have examined the role of explicit self-esteem in self-defense processes (for reviews, see Brown, 1998; Pyszczynski et al., 2004). However, the results of this research have remained inconclusive. In some studies, for instance, explicit self-esteem predicted less defensiveness, such as less dissonance reduction (Steele, Spencer, & Lynch, 1993) and less worldview defense in response to mortality salience (Harmon-Jones et al., 1997). In other studies, explicit self-esteem predicted more defensiveness, such as greater dissonance reduction (Gibbons, Eggleston, & Benthin, 1997) and more worldview defense in response to mortality salience (Baldwin & Wesley, 1996). In view of these inconsistent findings, it could be that the effects of explicit self-esteem on self-defense are moderated by other factors.

Jordan, Spencer, Zanna, Hoshino-Browne, & Correll (2003; see also Spencer et al., 2005) have proposed that implicit self-esteem moderates the effects of explicit self-esteem on defensiveness. More specifically, these authors suggest that implicit feelings about the self are likely to "seep" into consciousness now and then. When individuals with low implicit self-esteem experience threat, their nagging doubts about themselves may be activated and become vaguely conscious (see Zeigler-Hill, in press). Among individuals with low explicit self-esteem, these nagging self-doubts are unlikely to have much impact, given that these doubts are compatible with their explicit self-views. Among individuals with high explicit self-esteem, however, nagging self-doubts will conflict with their explicit self-views. As a result, having low implicit self-esteem may lead people with high explicit self-esteem to respond defensively to threatening situations, leading to increased self-esteem maintenance strivings.

A number of studies have examined whether implicit self-esteem indeed moderates the effects of explicit self-esteem on defensiveness. Jordan et al. (2003; see also Sedikides & Gregg, 2005) found that individuals with high explicit and low implicit self-esteem scored

especially high on narcissism, a personality trait that is closely related to defensiveness (Morf & Rhodewalt, 2001). In a related vein, other research has shown that individuals with high explicit and low implicit self-esteem are more likely to engage in dissonance reduction, in-group-bias, defensive attitude bolstering, and various other self-enhancement tactics (Bosson, Brown, Zeigler-Hill, & Swann, 2003; Jordan et al., 2003; McGregor & Marigold, 2003). Although these findings are correlational, they are consistent with the idea that low implicit self-esteem may lead to lingering self-doubts and corresponding defensive behavior among individuals with high explicit self-esteem.

Low implicit self-esteem may even be undermining when people encounter positive events. On the basis of self-verification theory (Swann, 1992), Shimizu and Pelham (2004) reasoned that positive life events may be threatening to the implicit self-views of individuals with low implicit self-esteem, leading to identity disruption and psychological distress. In line with this reasoning, the researchers found that implicit self-esteem moderated the relation between positive life events and self-reported health. Whereas people high in implicit self-esteem reported being healthier when they experienced more positive life events, people low in implicit self-esteem reported being healthier when they experienced fewer positive life events. Explicit self-esteem was found to moderate the relation between positive life events and self-reported health in a similar fashion as implicit self-esteem (see also Brown & McGill, 1989), but the effects of implicit and explicit self-esteem were statistically independent. The results by Shimizu and Pelham suggest that implicit self-esteem can fuel self-verification motives when individuals receive feedback that is at odds with their implicit feelings about themselves.

Whereas low implicit self-esteem may reflect a person's hidden vulnerabilities, high implicit self-esteem may reflect a person's hidden strengths. Indeed, according to Spencer et al. (2005), high implicit self-esteem may provide individuals with low implicit self-esteem

with a "glimmer of hope", a vague intuition of their implicit positive feelings about themselves. Accordingly, having high implicit self-esteem might lead individuals with low explicit self-esteem to be less cautious and more optimistic than their explicit self-views would otherwise suggest. Consistent with this, some studies found that, among individuals with low explicit self-esteem, high implicit self-esteem is associated with greater persistence (Jordan et al., 2003; cited in Spencer et al., 2005) and optimism (Bosson et al., 2003).

Implicit Self-Esteem and Decision-Making. Implicit self-esteem is a common and pervasive influence in judgment and behavior under well-controlled laboratory conditions (Greenwald & Banaji, 1995; Koole & Pelham, 2003). Recently, Pelham and associates have stepped outside of the lab to determine the influence of implicit self-esteem in people's decisions in everyday life (Pelham, Carvallo, & Jones, 2005). Because implicit self-esteem is positive for most people, it should typically lead people to gravitate toward people, places, and things that resemble the self, a tendency that Pelham et al. have called *implicit egotism*.

Pelham, Mirenberg, and Jones (2001) explored whether implicit egotism might lead people to prefer places whose names happen to share their own name letters. In an initial test of this idea, Pelham et al. found that people were disproportionately likely to live in states that strongly resembled their first names. These findings were not an artifact of ethnic confounds (e.g., French women named Louise living in Louisiana) or age confounds (e.g., older women named Florence living in Florida). In addition, because the effect was also found among people who had moved to these states, it was unlikely that name-state matching was due to parents naming their children after their home states. Moreover, people have been shown to disproportionately inhabit cities whose names feature their birthday numbers (e.g., people born on February 2 disproportionately inhabit cities like Two Harbors), and people whose surname is Street live disproportionately often at addresses like Lincoln street (Pelham, Carvallo, DeHart, & Jones, 2003). Finally, implicit egotism has been found for career choices.

People named Dennis are disproportionately likely to become dentists, whereas people named Laura are disproportionately likely to become lawyers (Pelham et al., 2001).

Implicit egotism appears to be a robust factor in people's major life decisions such as choosing where to live and what career to pursue. But does implicit egotism also influence more mundane attitudes towards common objects? Hodson and Olson (2005) investigated whether implicit egotism influences attitudes towards common objects in the categories of food, animals, leisure activities, national groups, and brand names. For instance, do people named Diederik or DeHart have a disproportionate liking for donuts, dogs, driving, Dutch people, and Dove soap? Although their participants displayed a reliable preference for own name letters, Hodson and Olson found no evidence for implicit egotism in attitudes towards food, animals, leisure activities, or national groups. The only common attitude category that did show evidence of implicit self-esteem was brand names. Participants displayed a small but highly reliable preference for brand names that started with their name initials over brand names not starting with their initials.

To account for the occurrence of implicit egotism in brand names but not other common attitude objects such as food or animals, Hodson and Olson (2005) suggested that brand names are more likely to serve a value-expressive function than other common attitude categories. Brand names may thus be more strongly associated with the self than the names of other attitude objects. Consistent with this account, other research has found that implicit egotism is more pronounced for rare names than for common names (Pelham et al., 2005). Rare names are more distinctive than common names and thus rare names are likely to become more strongly associated with the self. Thus, the extent to which the self is involved in decision-making is likely to moderate implicit egotism. When the self is only weakly involved, such as when people are choosing which donut to eat, implicit egotism may exert a relatively small influence in decision-making. By contrast, when the self is strongly involved,

such as when people are choosing where to live or what career to pursue, implicit egotism may exert a much greater influence in decision-making. Notably, self-involvement may increase not just by the association between the self and the attitude object, but also by external conditions, such as threats to the self (Jones et al., 2002).

Implicit egotism in preference for brand names, or "name letter branding", has been investigated more systematically by Brendl, Chattopadhyay, Pelham, and Carvallo (2005). More specifically, Brendl et al. conducted an experimental investigation of potential moderators of name letter branding. The investigators found that name letter branding was most pronounced under conditions of self-threat (see Jones et al., 2002) and when participants were focusing on their feelings (see Koole et al., 2001). In addition, Brendl et al. found that name letter branding was influenced by product-specific needs. For instance, when participants were moderately hungry, their preference to assign name letter brands to a food item were larger relative to when participants were not hungry. Notably, name letter branding for food items was not related to thirst. To explain these findings, Brendl et al. (2005) proposed that the positive valence of the name letters transfers to specific product attributes. In sum, the research by Brendl et al. indicated that name letter branding -and perhaps other forms of implicit egotism as well- is a complex phenomenon that interacts with self-defense motives, processing style, and product-specific needs.

Implicit Self-esteem and Close Relationships. The need to belong is a fundamental human motivation (Baumeister & Leary, 1995; Bowlby, 1973), and therefore people's interactions with their relationship partners play an important role in psychological and physical well-being. Given the social origins of people's beliefs about the self, it is no surprise that people's implicit self-esteem plays an important role in their close relationships. In fact, implicit self-esteem is associated with who people affiliate with, their implicit

evaluations of their significant others, and their alcohol consumption in response to interpersonal interactions.

Implicit egotism plays a role in interpersonal attraction (Jones et al., 2004). Across both archival and lab studies Jones and colleagues demonstrated that people are attracted to others whose names or birthdates resemble their own. That is, people's positive associations toward the self may spill over to people that resemble the self, even on arbitrary dimensions such as the letter of one's first name. For example, Serena and Sander may be friends because they both like the letter S and the positive associations they have for themselves spill over into their evaluations of one another. In addition, Jones et al. provided evidence that these findings do indeed reflect an implicit bias by showing that people showed a preference for numbers that their full names had been subliminally paired with. In sum, people's implicit feelings about the self appear to influence their attraction to others.

Not only do people's implicit self-evaluations influence who they form relationships with, but they also influence their implicit evaluation of people they are in close relationships with (even if they do not share name letters). Research on close relationships suggests that people include close others in their sense of self (Aron, Aron, Tudor, & Nelson, 1991). Consistent with this idea, DeHart and colleagues demonstrated across 5 different types of close relationships that people who have higher implicit self-esteem have a higher implicit evaluation of their significant others (DeHart, Pelham, Carvallo, Gabriel, & Kudo-Murata, 2005). More specifically, people who liked their own first name initials also liked their significant others' first name initials (this held for relationship partners who did not share first or last name initials; see DeHart, Pelham, & Murray, 2004, on the partner initial letter effect). Importantly, the relation between implicit self-esteem and implicit evaluation of close others was evident even after controlling for people's own explicit self-esteem and how much they like non-name letters.

Finally, people's implicit self-esteem is related to health related behaviors in response to interpersonal interactions. A 30-day daily internet diary study examined the relations among implicit self-esteem, interpersonal interactions, and alcohol consumption in college students (DeHart et al., 2005). On days college students with high implicit self-esteem reported more (versus fewer) positive interpersonal interactions, they drank more that evening. In contrast, on days college students with low implicit self-esteem experienced more (versus fewer) negative interpersonal interactions they drank more that evening. Moreover, students with high implicit self-esteem intended to drink on evenings they experience more positive interpersonal interactions during the day. However, drinking appeared to be an unintended consequence for people with low implicit self-esteem spending more time interacting with friends/acquaintances. Presumably, people with low implicit self-esteem drank more on days they experienced more negative interpersonal interactions as a way to seek acceptance from others. These findings are consistent with research demonstrating that high explicit self-esteem is related to enhancing positive affect (Wood, Heimpel, & Michela, 2003) and that people with low explicit self-esteem seek acceptance from others after feeling rejected (Vohs & Heatherton, 2004).

Summary, Conclusions, and Future Directions

Self-esteem is one of psychology's most popular and well-investigated constructs (Baumeister et al., 2003; Brown, 1998; Tesser, 2000). Nevertheless, until recent years, virtually everything psychologists knew about self-esteem was based on people's explicit self-reports. This has changed with the study of implicit self-esteem. As we have seen in the present chapter, researchers have developed several valid procedures to measure implicit self-esteem. These new implicit measures allow researchers to probe into people's intuitive associations about themselves without relying on introspection. The name letter test, the IAT, and the implicit self-evaluation test have emerged as the most widely used measures of

implicit self-esteem. Using this new methodology, research on implicit self-esteem has rapidly moved forward and addressed the origins of implicit self-esteem, its relation to explicit self-esteem, and the consequences of implicit self-esteem both within and outside the laboratory.

The origins of implicit self-esteem are increasingly understood. Implicit self-esteem in adulthood has been linked to early socialization and cultural learning experiences, suggesting that the foundations of implicit self-esteem become shaped by social interactions in early childhood and are slow to change. Experimental research has found that implicit self-esteem can be altered through evaluative conditioning, i.e., by repeatedly pairing the self with positive or negative stimuli. Evaluative conditioning provides a model for social influences on implicit self-esteem. Specifically, the social environment may shape the person's implicit self-esteem by consistently associating the person's self with rewards or punishments. Once formed by such early socialization experiences, however, implicit self-esteem is not necessarily fixed for life. Indeed, several studies have found that implicit self-esteem can be changed in adulthood, either through relatively elementary conditioning experiences, or through more complex forms of self-related information processing such as social comparison or self-affirmation. Thus, implicit self-esteem has both enduring ("trait") and fleeting ("state") components.

The relation between implicit and explicit self-esteem may be analyzed in terms of dual processes. According to dual-process models, human cognition is regulated by the interplay between automatic-intuitive versus more controlled-deliberative processes. Automatic-intuitive processes may underlie implicit self-esteem, whereas controlled-deliberative processes may be more influential in explicit self-esteem. Dual process models have successfully predicted that explicit self-esteem matches more with implicit self-esteem under high cognitive load or when people are evaluating themselves very quickly. Moreover,

dual process models can explain individual differences in congruence between implicit and explicit self-esteem. For instance, the congruence between implicit and explicit self-esteem is greater among individuals high in mindfulness (who are less likely to engage in analytic self-reflection) and women (who are presumably socialized to be more attuned to their intuition). The relation between implicit and explicit self-esteem may also be influenced by self-defense processes, in that implicit self-esteem becomes boosted among individuals with high explicit self-esteem when the self is threatened.

Research has linked implicit self-esteem to four major outcomes. First, implicit self-esteem moderates negative responses to stress or negative feedback, suggesting that implicit self-esteem promotes emotion regulation. Second, implicit self-esteem moderates the role of explicit self-esteem in self-defense processes. The combination of low implicit and high explicit self-esteem predicts greater defensiveness, whereas the combination of high implicit and low explicit self-esteem predicts less cautious responding and greater optimism. Third, positive implicit self-esteem presumably fosters implicit egotism in major life decisions, leading people to prefer residences, careers, and marriage partners that resemble their own names and other arbitrary self-attributes. Fourth and last, implicit self-esteem may serve important functions in interpersonal relationships. Implicit egotism influences people's choice of marital partners, and implicit self-esteem is linked with implicit evaluations of one's significant others and to health-related behaviors in response to interpersonal interactions.

Implicit self-esteem plays a pervasive role in the functioning of the self. Consequently, it seems important to develop a deeper understanding of the cognitive representations that underlie implicit self-esteem. Most researchers have assumed that implicit self-esteem is based on associations between the self and (positive) evaluations. Indeed, this associative model explicitly guided the development of important empirical measures of implicit self-esteem, such the IAT and the implicit self-evaluation test. The presumed importance of

evaluative associations in implicit self-esteem is bolstered by a number of empirical findings. In particular, associative models are consistent with the link between implicit self-esteem and early socialization experiences and findings that implicit self-esteem can be changed through evaluative conditioning. Associative models are also compatible with dual process models, given that associative processes are presumed to be elementary and automatic (De Houwer et al., 2001). Taken together, evaluative associations seem to play an important role in implicit self-esteem.

However, there may be more to implicit self-esteem than evaluative associations. Indeed, a number of findings on implicit self-esteem cannot easily be explained in terms of an associative network model. First, several studies have shown that implicit self-esteem is responsive to dynamic contextual changes, suggesting that implicit self-esteem is not a static mental habit, as associative models might lead one to believe. Second, implicit self-esteem is influenced by complex forms of self-related information processing, such as self-affirmation, social comparison, and self-regulation. Third, an associative network model cannot easily explain the complex interactions between implicit and explicit self-esteem in self-defense processes. Fourth, an associative network model cannot explain why implicit self-esteem-- at least in brand names-- may interact with non-self-related needs such as hunger and thirst.

Implicit self-esteem processes appear to be much more dynamic, complex, and strategic than one might assume on the basis of an associative network model. Accordingly, it seems worthwhile to consider more sophisticated representational models of implicit self-esteem. One promising class of models incorporates notions of parallel-distributed processing in their conception of the implicit self (Kuhl, 2000; Kuhl & Koole, 2004). Parallel-distributed processing models are not incompatible with associative network models. Indeed, one major model of implicit self assumes that parallel-distributed processing networks operate in tandem with associative processes (Kuhl, 2000). Nevertheless, parallel-distributed processing models

can accommodate more complex computational phenomena, and are thus more powerful than associative networks.

Parallel-distributed processing models can provide an elegant explanation for how implicit self-esteem may be both stable and changeable over time (see Smith, 1998; Van Overwalle & Siebler, 2005, for applications in social cognition and attitude research). In a parallel-distributed processing network, implicit self-esteem may be represented by a pattern of activation across a set of processing elements or nodes that each represent some sub-symbolic micro-aspect of implicit self-esteem. Habitual patterns in implicit self-esteem can be modeled as the strength of the connections between nodes. Variations in state implicit self-esteem can be modeled as variations in the level of activation of the nodes. Parallel-distributed processing models are thus very suitable for explaining long-term and short-term variations in implicit self-esteem within a dynamically changing environment. Nowak et al. (2000) demonstrated that a parallel-distributed processing model can model dynamic self-esteem maintenance processes. Parallel-distributed processing principles may thus be similarly useful in understanding the dynamics of implicit self-esteem.

One important implication of parallel-distributed processing models is that the implicit self may be a lot smarter than has often been assumed. Associative models are mediated by very simple computational processes. Accordingly, the intelligence and flexibility of the implicit self will be inherently inferior to that of the explicit self. By contrast, the computational power of parallel-distributed processing networks is much greater than that of a sequential processing architecture. The intelligence and flexibility of the implicit self may thus exceed that of the explicit self. Indeed, Kuhl and Koole (2004) have suggested that the flexibility and resourcefulness that characterize human action control are largely based on the computational powers of the implicit self. The implicit self may simultaneously consider many parallel constraints (e.g., motives, needs, personal experiences, and a multitude of other

self-aspects) in action control, whereas the limited capacity of the explicit self restrict the system to a much more limited subset of goals or perceptions. From this perspective, implicit self-esteem may be based on a richer and more complex combination of different self-relevant processes than explicit self-esteem.

Parallel-distributed processing models of implicit self-esteem could have profound implications for the scientific understanding of the self. Consciousness has long been regarded as a defining feature of selfhood (Baumeister, 1998; Brown, 1998; Leary & Tangney, 2003). Associative models of implicit self-esteem did little to challenge the theoretical status of consciousness, given that most self researchers have studied phenomena that are much more complex than simple associations, such as self-handicapping, self-affirmation, and self-narratives. Given that implicit self-esteem may be mediated by more sophisticated cognitive processes, however, the role of consciousness to the self has become debatable. To the extent that even complex and context-sensitive cognition can be performed on implicit levels, researchers can no longer assume by default that complex self processes are performed by the conscious mind. Thus, parallel-distributed processing models of implicit self-esteem challenge some very basic notions about the nature of selfhood.

Given that systematic research on implicit self-esteem only began some ten years ago (Greenwald & Banaji, 1995), many important issues remain for future research. One issue that deserves more attention is formed by possible asymmetries between positive versus negative implicit self-evaluations. Implicit self-esteem is generally positively biased in the name letter task, the IAT, and the implicit self-evaluation test (note that the IAT provides an index of evaluations of self relative to other and thus strictly speaking provides no direct information about the positivity of self, Karpinski, 2004). Indeed, the name letter effect appears to be reduced when individuals are asked to rate the ugliness rather than the attractiveness of alphabet letters (Nuttin, 1985, 1987), suggesting that this measure is predominantly driven by

positive evaluations. However, positive and negative self-evaluations are not necessarily each other's mirror image (Hoorens, 1996). Some authors have suggested that negative associations about the self are typically experienced as "intrusions" or negative ruminations, presumably because the structure of the implicit self resists infiltration by negativity (Baumann & Kuhl, 2003). Thus, negative associations towards the self might be more likely to be consciously experienced than positive associations towards the self. These and other asymmetries between positive versus negative implicit self-evaluations await further research.

Future work may also address the embodiment of implicit self-esteem. As discussed earlier, implicit self-esteem has been linked to various bodily processes, including non-verbal behavior, physical health, alcohol consumption, and non-self-relevant need states such as hunger and thirst. These embodied effects of implicit self-esteem are inconsistent with traditional associative network models, which assumed that associations are disembodied, abstract mental representations. Recent parallel-distributed processing models of social cognition, however, have incorporated the embodied nature of cognitive processing (Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005). A more systematic analysis of embodied information processing could generate important new insight into the nature of implicit self-esteem. For instance, it is conceivable that socialization processes may attain their enduring influence on implicit self-esteem by leading individuals to adopt habitual physical postures that are associated with positive versus negative feelings towards the self (e.g., assuming an upright versus slumped posture, Riskind, 1984). If the latter is correct, then achieving long-term changes in implicit self-esteem may require not only changes in mental associations but also changes in the physical states that are integral to representations of implicit self-esteem.

Future work on implicit self-esteem may benefit from methodologies that are better able to capture dynamically unfolding processes. As mentioned above, the implicit self is

likely based on context-sensitive processes and may be a more complex combination of different self-relevant process than explicit self-esteem. Therefore, the influence of implicit self-esteem on psychological functioning may only be detected under certain circumstances, and may not be well suited to between-person cross-sectional designs that are frequently used when examining explicit self-esteem. That is, the impact of implicit self-esteem on important outcomes may only be evident when people are asked to spontaneously report their behavior or feelings. For example, people's retrospective reports of negative affect are unrelated to implicit self-esteem, however their spontaneous reports of negative affect using an experience sampling methodology is related to people's implicit self-esteem (independent of their explicit self-esteem; Conner & Feldman Barrett, in press). Therefore, diary methodologies that repeatedly capture people's in situ behaviors as well as within-person contingencies between different situations and behavior may be well suited to assess the impact of implicit self-esteem on psychological functioning (see DeHart et al, 2005).

Future research on implicit self-esteem is likely to significantly broaden in scope. Most work to date has focused on the causes or consequences of high versus low implicit self-esteem (often in relation to explicit self-esteem). This somewhat narrow focus might have been motivated by the theoretical assumption that implicit self-esteem is entirely based on elementary evaluative associations about the self. However, as we have seen, implicit self-esteem may also involve considerably more sophisticated cognitive processing. Thus, the time seems ripe to consider a broader array of theoretical questions. For instance, do implicit self-evaluations vary on other dimensions than evaluation? (see Wentura et al., in press, for some initial evidence relevant to this question). How does implicit self-esteem relate to other personality variables that are known to influence automatic evaluation, such as neuroticism and extraversion (Robinson, Vargas, & Crawford, 2003)? Finally, recent work indicates that

subliminally priming the self can promote self-regulation (Macrae, Bodenhausen, & Milne, 1988) and affect regulation (Koole, 2005). Future work is needed to examine the role of implicit processes in these active, executive functions of the self.

Concluding Thoughts

At the beginning of this chapter, we noted how people's feelings towards themselves often have an irrational and yet highly compelling quality. As we have seen, implicit self-esteem research offers a potential explanation for the intuitive nature of self-esteem. Self-esteem does not just operate on conscious, explicit levels, but on unconscious, implicit levels as well. Implicit self-esteem may thus provide people with powerful intuitions about their self-worth, even when people are incapable of logically explaining the basis of their implicit self-esteem. By studying implicit self-esteem, psychologists can obtain insights into the self that have remained hidden even from people's own inward view. The study of implicit self-esteem may thus uncover a deeper logic that underlies people's seemingly irrational and inexplicable feelings towards themselves.

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