THE EFFECT OF MEDITATION ON THE RELATION BETWEEN IMPLICIT AND EXPLICIT MEASURES OF SELF-ESTEEM

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the
Graduate School of The Ohio State University

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ABSTRACT

A puzzling finding in the self-esteem literature is that implicit, or indirect, and explicit, or direct, measures of self-esteem are frequently unrelated to each other. This dissociation may stem from the fact that individuals fail to integrate the affect they experience in thinking about the self into an overt judgment. The present work investigated whether meditation, or the practice of sustaining attention in a non-judgmental manner, leads individuals to rely on their affect towards the self in making a self-evaluation. In a series of four studies it was shown that meditation enhanced correspondence between implicit and explicit measures of self-esteem in both field and experimental settings. Meditation did not influence the mean levels of implicitly and explicitly assessed self-esteem, suggesting that participants responded congruently with their automatic self-evaluation, regardless of its valence. The present work contributes to the understanding of how affect and cognitive deliberation influence responding on implicit and explicit measures of self-esteem.
Присвячується моїм батькам

(Dedicated to my parents)
ACKNOWLEDGMENTS

First, I would like express my gratitude to Lisa Libby who welcomed me into her lab when I needed a new home and provided support and encouragement during my final year of graduate studies. I also wish to thank members of my dissertation committee, Robert Arkin and Hal Arkes, for their feedback on this work. Special thanks also go to Keith Payne, who contributed immensely to my development as a researcher, and to Marilynn Brewer for her professional and personal advice. I would also like to acknowledge my colleagues, Sander Koole, Russ Fazio, Clara Cheng, and Zlatan Krizan who furthered my understanding of meditation and self-esteem.

It would have been extremely difficult to accomplish this work without support of my colleagues and friends at the social psychology program. They are not only talented researchers, but also some of the most interesting and nicest people I have ever known. Without doubt, they are what makes OSU the top-ranking social psychology program, and I feel extremely honored to have been part of this group!

Finally, I would like to thank my parents and family for their love and encouragement. They believe that everything is possible if one sets one’s mind to it, and
this attitude has given me courage to persevere in the face of difficulties on the other side of the Atlantic. Last but not least, a deep thank you goes to my fiancé Jérôme Strauss, who has ALWAYS stood by my side. His love is my greatest inspiration and joy.
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CHAPTER 1

INTRODUCTION

With its origins in the spiritual traditions of the Orient, meditation is becoming increasingly popular in the West. Nearly ten percent of Americans report regularly engaging in Eastern techniques such as meditation and yoga (Shapiro, 1980). Additionally, more than six million Westerners have received training in Transcendental Meditation, including one and a half million individuals in the United States (Kennedy, 2001). Indicative of the popularity of meditation, a recent search on Amazon.com generated more than 9,000 book titles and 10,000 music titles dedicated to the practice of meditation. People are drawn to meditation for a number of reasons, such as stress reduction, better physical health, and more efficient self-regulation (Kabat-Zinn, 1990). For many beginning practitioners of meditation, however, a chief hope is finding inner peace, self-insight, and self-acceptance (Carrington, 1993; Gunaratana, 1992; Leary, 2004).

Does meditation indeed promote discovery of one’s inner self and put one in touch with one’s self-feelings? The present research will explore this question through examining the effect of meditation on coherence of a person’s self-esteem. Historically,
self-esteem has been researched with explicit measures (Blaskovich & Tomaka, 1991; Demo, 1985). As their name implies, explicit measures assess self-esteem directly, with a respondent being fully aware of the intent of the procedure. In the case of self-esteem, explicit measures ask respondents to deliberate on their self-evaluation and express it overtly (e.g., Rosenberg, 1965). The latest advances in social-cognitive research, however, introduced a new set of assessment tools, commonly referred to as implicit measures (e.g., Fazio, Jackson, Dunton, & Williams, 1995; Greenwald, McGhee, & Schwartz, 1998). Implicit measures assess attitudes indirectly, without participants knowing which attitudes are being tested. In contrast to traditional self-esteem measures, implicit measures of self-esteem do not require self-reflection or an intent to self-evaluate on the part of a respondent (Koole, Dijksterhuis, & Van Knippenberg, 2001; Krizan & Suls, 2006).

I conceptualize self-esteem coherence as the congruence between implicitly and explicitly assessed self-evaluation. Prior research has shown that the implicit and explicit measures of self-esteem are, at best, only moderately correlated (e.g., Bosson, Swann, & Pennebaker, 2000). In fact, a recent meta-analysis suggests that among implicit-explicit correlations in various attitude domains, the correlations between implicit and explicit measures of self-esteem are among the smallest (Hofmann, Gawronksi, Gschwendner, Le, & Schmitt, 2005). The dissociation between implicitly and explicitly assessed self-evaluation is not only a matter of theoretical interest but also of practical significance as such dissociation appears to be a marker of psychological maladjustment. For example, high scores on the implicit measure accompanied by low scores on the explicit measure
convey experiencing a recent personal setback (Zeigler-Hill, 2006), whereas the reverse pattern of scores is associated with defensiveness and narcissism (Bosson et al., 2003; Jordan et al., 2003). Congruent self-esteem may thus be seen as an indicator of psychological adjustment.

The focus of this work is on the effect of meditation on the relation between implicit and explicit measures of self-esteem. I expect that meditation will facilitate congruence between implicitly and explicitly assessed self-evaluations by promoting attention to and acceptance of self-feelings. In the sections to follow I will first discuss meditation and then outline my reasoning on how it is expected to impact responses on implicit and explicit measures of self-esteem.

Meditation

Definition

Meditation is associated with the Eastern religious traditions of Buddhism, Taoism, and Hinduism, although some researchers identify it as a component of all major religions (Gefen, 2000; Dwight, 1999; Scott, 1995). Meditation is also a secular practice whose aim is to induce relaxation and improve psychological and physical well-being (Kabat-Zinn, 1990). Existence of multiple meditative techniques makes it difficult to provide a general definition of meditation. However, the two common features of all meditative practices appear to be extended concentration and non-judgmental awareness of the perceptual input (Shapiro, 1980; Shapiro, Schwartz, & Santerre, 2002). As such, a meditator makes a conscious effort to fully experience each object of perception in a non-analytical, non-discursive, and non-emotional way (Gunaratana, 1992).
Mindfulness and concentrative meditation

Meditative practices can be further differentiated into mindfulness and concentrative meditation, depending on the method of focusing attention (Cahn & Polich, 2006; Shapiro, Schwartz, & Santerre, 2002). In concentrative meditation attention is focused on a single object which can reside either inside or outside the self (e.g., one’s breath, sound of a bell). Practitioners of concentrative meditation restrict their awareness to a single experience and attempt to ignore other stimuli in the environment. In contrast, practitioners of mindfulness meditation attend to all stimuli in their perceptual field. In both types of meditation practitioners are expected to acknowledge and experience the objects of perception, without evaluating or ruminating about them. The focus of the present research is mainly on mindfulness meditation: the initial field investigation encompasses both concentrative and mindfulness practices, whereas the three experimental studies utilize mindfulness meditation. The discussion will offer speculations on whether the findings obtained with mindfulness meditation can generalize to concentrative meditation.

Review of the effects of meditation

Despite its common perception as esoteric and mysterious, meditation has been extensively investigated with scientific methods. Some of the studies on meditation lack experimental rigor (cf., Cahn & Polich, 2006), yet as a whole the research paints a consistent picture of the effects of meditation on physiological and psychological processes. It is necessary to review the research findings on meditation in order to show that its purported effects have been empirically validated and to draw predictions about
the influence of meditation on self-evaluation. The review is grouped according to the main characteristics of meditation, concentration of attention and non-judgmental awareness.

Concentration of attention

A practitioner of meditation achieves self-insight through extended focusing on the self. This may seem paradoxical as in the minds of many meditation is not associated with alertness but with relaxation. And indeed, relaxation, evidenced by reductions in respiration rate, plasma lactate, blood cortisol, and increases in skin resistance, is one of the most pronounced effects of meditation (Alexander, Rainforth, & Genderloos, 1991; Jevning, Wilson, & Davidson, 1978).

In addition to inducing relaxation, however, meditation also facilitates alertness and concentration (Wallace, 1986). In terms of performance outcomes, meditation leads to heightened visual sensitivity and auditory acuity, improvements in reaction times and motor skills, and enhanced attention (Murphy, Donovan, & Taylor, 1997). Studies on physiological outcomes have shown that meditation increases cerebral blood flow (Herzog et al., 1990; Jevning et al., 1996; Jevning & O'Halloran, 1984), leads to enhanced alpha and theta EEG power and coherence in the frontal and central regions of the brain (Wallace, 1986), and causes shorter latencies of auditory evoked potential (O’Halloran et al., 1985; Orme-Johnson & Haynes, 1981). Additionally, the emerging neuroimaging studies demonstrate that frontal and prefrontal areas of the brain, implicated in planning complex cognitive behaviors, are more activated during meditation than in a resting state (Lazar et al., 2000; Ritskes et al., 2003).
Furthermore, meditation is associated with a greater synchronization in the workload of the two cerebral hemispheres (Banquet, 1973; Glueck & Stroebel, 1978). Specifically, the EEG activation pattern in meditators shows that they are more flexible in shifting between hemispheres in response to specific task demands (Bennet & Trinder, 1977). Other researchers have suggested that due to hemispheric synchronization, meditation may lessen the often dominant verbal and logical thinking, usually associated with the left hemisphere, and enhance the holistic and intuitive thinking, usually associated with the right hemisphere (Ornstein, 1972). Indeed, it has been hypothesized that the therapeutic effects of meditation may reflect this relative shift in balance between the two hemispheres (Carrington, 1993).

As a whole, the reviewed findings point to the unique pattern of physical and neurological activation associated with meditation. In relation to the focal prediction of this work about the effect of meditation on self-evaluation, it can be concluded that meditation may promote self-insight by leading individuals to focus on their self-feelings. Examining the self while meditating, however, may not be akin to a deliberate analysis of the self due to the greater weight accorded to intuitive and holistic experiences in meditation.

**Non-judgmental awareness**

Meditative practices cultivate acceptance of the thoughts and feelings one observes in oneself while meditating. Given that these may be negative or threatening, the attitude of acceptance appears to contradict the goal of meditation to improve psychological health. However, proponents of meditation suggest that acceptance is a
necessary precursor to positive change (Baer, 2003). As viewed by meditation practitioners, acceptance is a nonjudgmental observation of one’s thoughts and emotions, accompanied by recognition that they are a product of one’s mind, rather than reflections of truth or reality. This recognition is expected to facilitate coping responses and to curtail escape and avoidance behavior. For example, in the realm of depression meditation enables individuals to notice depressogenic thoughts as they appear and to then redirect attention to other aspects of the environment (Teasdale, 1999). In this manner awareness of one’s thoughts interferes with ruminative patterns that underlie depressive episodes. In the domain of eating disorders, the attitude of acceptance aids binge eaters to recognize urges to binge as well as satiety cues, preventing them from overeating (Kristeller & Hallett, 1999). Similarly, nonjudgmental observation of pain and anxiety-related thoughts reduces the intensity of the emotional reactions typically elicited by these symptoms and facilitates coping (Edwards, 1991; Miller, Fletcher, & Kabat-Zinn, 1995; Kabat-Zinn, 1982, 1990).

By promoting non-judgmental awareness of the self, meditation may also lead individuals to gain insight into their goals and aspirations, which may motivate personal growth and development. In fact, research shows that meditation is associated with self-actualization (Alexander, Rainforth, & Genderlos, 1991), moral maturity (Nidich et al., 1983), autonomy and independence (Penner et al., 1974), empathy (Shapiro & Schwartz, 1998), a sense of coherence and stress-hardiness (Tate, 1994), a sense of control (Astin, 1997), mindfulness (Brown & Ryan, 2003) and spirituality (Shapiro & Schwartz, 1998).
The extensive evidence of the positive effects of meditation on psychological functioning has led Shapiro, Schwartz, and Santerre (2002) to describe meditation as a catalyst of human potential.

In sum, meditation appears to promote positive psychological outcomes despite its emphasis on acceptance, rather than change, of the potentially dysfunctional emotions and thoughts. In relation to self-evaluation, this review suggests that meditation may increase acceptance of activated self-feelings, regardless of their valence. By decreasing the motive to self-evaluate, meditation may also decrease self-presentation, resulting in self-evaluation unadulterated by one’s own or others’ expectations.

*Meditation as a tool of social-cognitive research*

Within the discipline of psychology, meditation has been extensively studied through the prism of clinical and health perspectives (Baer, 2003; Shapiro, Schwartz, & Santerre, 2002). Few social-cognitive investigations, however, have utilized meditation as a research tool. Specifically, I am only aware of the research by Brown and Ryan (2003) and Ortner and Zelazo (2006) who used meditation to study mindfulness and emotion regulation, respectively. Due to its focus on the self and non-judgmental awareness, meditation may prove to be particularly useful for the study of self-evaluation. Recall that the present investigation concerns self-evaluation coherence, conceptualized as congruence between implicitly and explicitly assessed self-esteem. If meditation increases self-focus and lessens the motive to self-evaluate and engage in discursive thought, would it lead to greater correspondence between implicit and explicit measures
of self-esteem? If so, would meditation affect responses on the implicit or the explicit self-esteem measure? Answering these questions requires a careful consideration of the assumptions that underlie implicit and explicit measures of self-esteem.

Self-esteem measures: Assumptions and findings

Similar to attitudes, self-esteem can be conceived of as an evaluation of the self that is stored in memory (Fazio, 1990; Greenwald & Banaji, 1995). Research has shown that being exposed to an attitude object activates associated evaluations in an automatic fashion (i.e., without effort or intention on the part of a respondent; e.g., Bargh, Chaiken, Govender, & Pratto, 1992; Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Automatic activation of attitudes is the underlying mechanism of most implicit attitude measures (Fazio & Olson, 2003). For example, in the evaluative priming task developed by Fazio and colleagues (Fazio et al., 1986) participants see pictures of liked and disliked objects followed by positive and negative words. The objective of the task is to disregard the pictures and to identify the words as either pleasant or unpleasant. The typical effect is that individuals are slower in responding on incongruent trials (where positive words are preceded by the disliked objects and negative words are preceded by the liked objects) than congruent trials (where positive words are preceded by the liked objects and negative words are preceded by the disliked objects). Fazio and colleagues proposed that the liked or disliked objects automatically activate the associated evaluation, which then facilitates identification of words with congruent valence and inhibits identification of words with incongruent valence. The degree of inhibition and facilitation produced by an attitude object can serve as an implicit indicator of the attitude that respondents hold
towards this object. More recently, the automatic activation of attitudes has been utilized in the development of another implicit attitude measure, the Affect Misattribution Procedure (Payne, Cheng, Govorun, & Stewart, 2005). The procedure shows that people unintentionally imbue the ambiguous stimuli that follow presentation of attitude objects with the affect associated with these objects (cf., Murphy & Zajonc, 1993). As a result, ambiguous stimuli take on the valence of the liked and disliked objects and serve as indirect indicators of attitudes.

**Automatic self-evaluations**

Just like other attitude objects, self-relevant stimuli automatically elicit self-evaluation (Bosson, Swann, & Pennebaker, 2000; Greenwald & Banaji, 1995). In fact, implicit measures of self-esteem attempt to capture the automatically activated self-evaluation by presenting participants with self-relevant objects and assessing the reaction they evoke. For example, Hetts, Sakuma, & Pelham (1999) adapted the evaluative priming procedure as an implicit measure of self-esteem. In this task participants are presented with self-relevant and non self-relevant primes and are asked to identify the words following the primes as good or bad. The degree of inhibition of negative words and facilitation of positive words following the self-relevant primes serves as an implicit indicator of self-esteem. Similarly, another implicit measure of self-esteem, the Name-Letter task (Koole, Dijksterhuis, & Van Knippenberg, 2001; Nuttin, 1985, 1987), assesses people’s liking of their initials, compared to other people’s preferences for these letters. It is believed that name-letters activate self-evaluation and thus reflect the degree of positivity or negativity associated with the self.
Awareness of automatic evaluations

Automatic evaluations, as assessed with implicit measures, are often presumed to be non-conscious (e.g., Greenwald & Banaji, 1995; Wilson, Lindsey, & Schooler, 2000). In fact, the assumption that explicit measures reveal conscious and deliberate evaluations and that implicit measures tap into evaluations that are not open to introspective awareness has become a “theoretical dictum” (Gawronski, Hofmann, & Wilbur, in press). The main argument in support of the non-consciousness of automatic evaluations is that implicit and explicit measures of attitudes are frequently dissociated (e.g., Blair, 2002; Karpinski & Hilton, 2001). Lack of implicit-explicit correspondence, however, could be attributed to a host of other factors, such as unwillingness to report an automatic evaluation or low reliability of implicit measures (Fazio & Olson, 2003; Gawronski, Hofmann, & Wilbur, in press). Additionally, research has identified a number of conditions that systematically enhance correspondence between implicit and explicit measures (e.g., Hoffman et al., 2005; Karpinski, Steinman, & Hilton, 2005), which makes the argument about the non-consciousness of the automatic evaluations less plausible. Several reviews of the literature thus suggest that it may be more justifiable to speak of implicit and explicit measures of attitudes, rather than of implicit and explicit attitudes (Fazio & Olson, 2003; Gawronski, Hofmann, & Wilbur, in press). It is important to note, however, that being aware of the automatically activated evaluation does not necessitate knowing how the evaluation originated or what effects it has on other psychological processes and behavior. Individuals may not be aware of these factors, yet be conscious of the activated evaluation.
Similar to the field of attitude research, a question concerning people’s awareness of their automatic self-evaluations is emerging in the self-esteem literature (Koole & DeHart, in press; Spencer, Jordan, Logel, & Zanna, 2005). Despite the widespread assumption that implicit measures of self-esteem reveal non-conscious self-evaluations, some researchers have suggested that people may consciously experience their automatic self-evaluation (Wentura, Kuljanek, & Greve, 2005; Spencer et al., 2005). For example, the defensiveness of individuals with discrepant high self-esteem (those scoring high on explicit self-esteem measures and low on implicit self-esteem measures) have been attributed to their insight into their unfavorable automatic self-evaluation (Spencer et al., 2005). Individuals with discrepant high self-esteem have been shown to compensate for the lack of positive self-associations by engaging in self-aggrandizement and other defensive behaviors (Bosson, Brown, Zeigler-Hill, & Swann, 2003; Jordan et al., 2003; Zeigler-Hill, 2006). Additionally, Pelham et al. (2005) have suggested that women may be more aware of their automatic self-evaluations than men due to their greater acceptance of their emotions and intuitions. Supporting this prediction, Pelham and colleagues found that implicit and explicit self-esteem scores were significantly positively correlated among women and were unrelated among men. The reviewed research shows that the assumption about non-consciousness of the automatic self-evaluation may not be warranted. Why are then implicit and explicit measures of self-esteem so often uncorrelated?
Sources of dissociation between implicit and explicit self-esteem measures

According to the models of cognition differentiating between associative and propositional processes (e.g., Gawronski & Bodenhausen, in press; Strack & Deutsch, 2004), an automatic evaluation is first experienced as an affective reaction and is then translated into the propositional, or rule-based, format (e.g., an immediate negative reaction to self-relevant stimuli is then translated into “I do not like myself”). Being conscious of the automatic evaluation has been compared to an experiential state of awareness wherein people cannot identify the origin of the feeling they are experiencing yet can describe it as positive or negative (Strack & Deutsch, 2004; cf., Hofmann et al., 2005). To be expressed, the automatic affective reaction needs to be evaluated as a valid basis for an overt judgment.

When either the motivation or capacity to deliberate on one’s feelings is low, people’s overt judgments are likely to reflect automatic evaluations (Fazio, 1990). In fact, research shows that when explicit self-evaluations are made under cognitive load, they are correlated with implicitly assessed self-evaluations (Koole, Dijksterhuis, & Van Knippenberg, 2001). However, under high capacity and motivation people may scrutinize their feelings in an effort to decide whether they are relevant and valid. As a result of this deliberation process, the initially activated self-evaluation may be diluted or replaced by other information that enters conscious awareness (Koole, Dijksterhuis, & Van Knippenberg, 2001; also Gawronski & Bodenhausen, in press). For example, people may deliberate whether the feelings they are experiencing are congruent with the knowledge they already have about themselves. Because parts of automatic self-evaluation stem
from early socialization experiences that may no longer be remembered (e.g., DeHart, Pelham, & Tennnen, 2006; Hetts, Sakuma, & Pelham, 1999; Bosson et al., 2003), people may disregard their feelings as having no basis in reality. Respondents may also be unwilling to admit negative feelings about the self (e.g., Paulhus, 1991) or tailor their self-evaluations to fit with social norms (Greenwald & Banaji, 1995). Thus, post hoc reasoning applied to affective reactions may lead people to provide responses on explicit self-esteem measures that differ from the initially activated affective reaction (see Nisbett & Wilson, 1977; Wegner & Bargh, 1998).

Meditation and the correspondence between implicit and explicit self-esteem measures

The present research will explore whether meditation leads to congruence between implicitly and explicitly assessed self-esteem. I propose that meditation will create such congruence by facilitating encoding of the automatic evaluation as relevant and enabling its expression in a propositional form. Indeed, meditation leads people to focus on their experiences, without attempting to avoid, analyze, or change them (Baer, 2003; Shapiro, Schwartz, & Santerre, 2002). In the context of self-esteem, I expect meditation to lessen the motive to deliberate on one’s immediate affective responses to the self. Meditation may thus reduce people’s attempts to consider additional information in providing an overt self-judgment and make the dilution of the activated feelings towards the self less likely (Koole, Dijksterhuis, & Van Knippenberg, 2001; Murphy & Zajonc, 1993). I therefore hypothesize that compared to those who do not meditate, meditators will be more likely to integrate the automatically activated self-evaluation into
the propositional form and express it when deliberately evaluating the self. As a result, they will show greater correspondence between implicit and explicit measures of self-esteem.

**The effect of meditation on implicit versus explicit measures**

The question of whether meditation increases congruence between implicitly and explicitly measured self-esteem is ultimately tied to the issue of which measure meditation is most likely to influence. The prediction tested in this research is that meditation will affect responses on the explicit measure and will not change responses on the implicit measure. Indeed, implicit measures do not require a purposeful evaluation of the self and are thus less likely to be affected by cognitive deliberation. Implicit measures are therefore expected to capture automatic self-evaluation even in the absence of meditation. Explicit measures of self-esteem, however, are further “downstream” from the automatically activated evaluation (Fazio & Olson, 2003), and are more influenced by cognitive deliberation. Meditation is hence expected to change the responses on explicit measures to make them more congruent with the automatic self-evaluation. To examine the above predictions, the present research will systematically vary the order of meditation and self-esteem measures.

**Overview of studies**

The main hypothesis of the present work is that meditation increases correspondence between implicit and explicit measures of self-esteem. This hypothesis was explored in four studies. Study 1 was conducted in the field and investigated the relation between implicit and explicit measures of self-esteem among inexperienced and
experienced meditators. Study 2 experimentally manipulated meditation in a laboratory setting to establish its causal effect on the implicit-explicit congruence. Study 3 explored whether meditation impacts the relationship between implicit and explicit self-esteem measures by affecting responses on the explicit measure. Finally, Study 4 employed a subliminal priming paradigm to create positive and negative affect that served as a proxy for self-relevant affect. This study explored whether meditation facilitated expression of the subliminally primed affect.

In sum, meditation is expected to shed an important light on conditions that are conducive to the overt expression of the automatic self-evaluation. The significance of this research is three-fold. First, it will add to the understanding of the role that self-feelings and deliberation play in self-evaluation. Second, it will add to the knowledge of implicit and explicit measures of self-esteem and their commonalities and differences. Finally, this research will help answer the question of whether meditation, as it is often claimed, helps individuals get in touch with their self-feelings.
A staple and puzzling finding in the self-esteem research is that implicit and explicit measures of self-esteem show low correspondence, despite both tapping into self-evaluation (e.g., Bosson, Swann, & Pennebaker, 2000). The implicit-explicit dissociation may stem from the fact that the automatic self-evaluation, assessed by implicit measures, is not integrated into the deliberate self-evaluation, assessed by explicit measures. In fact, according to the associative-propositional models of information processing (Gawronski & Bodenhausen, 2006; Strack & Deutsch, 2004), the automatic self-evaluation is first experienced as an affective reaction (e.g., I feel good/bad) and is then integrated into propositional, or rule-based, format (e.g., I like/dislike myself). At the integration stage individuals may fail to encode the affect they are experiencing as self-relevant if they perceive it as vague, inconsistent with their self-knowledge, or inappropriate. As a result, the explicitly assessed evaluation will be based on information other than the automatically activated self-evaluation, creating the proverbial dissociation between implicit and explicit measures of self-esteem. It is important to note that people engage in the deliberate evaluation of their feelings only when they have an opportunity and
motivation to do so (Fazio, 1990). When people’s cognitive capacity is taxed or when their motivation to engage in additional processing is low, individuals tend to express their immediate affective reactions (Koole, Dijksterhuis, & Van Knippenberg, 2001).

The goal of the present research is to test whether meditation leads individuals to rely on their automatically activated self-evaluations in responding to explicit measures of self-esteem, thereby increasing their congruence with implicit measures. Meditation is expected to have this effect because it fosters a non-evaluative attitude towards the experienced thoughts and emotions (Kabat-Zinn, 1990; Shapiro, 1980; Shapiro, Schwartz, & Santerre, 2002). As such, meditators are expected to carefully observe their feelings and thoughts, yet refrain from judging them as valid or invalid. In the context of self-esteem, meditation should lessen the motive to self-evaluate and hence lead individuals to rely on their automatically activated feelings towards the self in providing an explicit judgment. If both implicit and explicit measures of self-esteem reflect automatic self-evaluation, one would expect to find a positive correlation between them. In this manner meditation is expected to facilitate correspondence between the two measures of self-esteem.

Study 1 investigated the hypothesis about the impact of meditation on the relation between implicit and explicit measures of self-esteem with practitioners of meditation. It was hypothesized that the relation between implicit and explicit measures of self-esteem will increase the longer individuals have been practicing meditation.
Method

Participants

Several meditation centers in Columbus, OH were contacted by email to solicit participation in the study. Two centers, Zen Columbus and Columbus KTC (Karma Thegsum Choling), agreed to participate. Both organizations espouse the principles of Buddhism and teach meditation as part of their practices. Overall, 36 individuals responded to the survey. Sixteen participants failed to complete some of the measures and were not included in the data set. Thus, 20 participants composed the final sample (7 women and 13 men; mean age = 42).

Procedure

In both locations the author administered the surveys on an agreed date, after participants completed group meditation. Participants were told that the investigation dealt with how meditation affects people’s preferences and their views of themselves. Participants responded to the surveys individually. They first completed the implicit self-esteem measure (Name-Letter task) followed by the explicit self-esteem measure (Rosenberg Self-Esteem scale). This order was chosen because responses on implicit measures are less likely to influence responses on explicit measures than vice versa (Bosson, Swann, & Pennebaker, 2000; Krizan & Suls, 2006). Next participants reported in an open-ended format the years and months they have been practicing meditation at least once per week (years practicing meditation). Meditating at least once per week is a minimum requirement for being considered a practitioner of meditation in most meditative schools (cf., Kabat-Zinn, 1990). Additionally, participants reported the
number of times they meditate per week (*frequency*) and the duration of each meditative session (*duration*). Participants then described the types of meditative techniques they used and indicated their initials, age, and gender. After each participant completed the survey, the group was probed for suspicion and debriefed about the purpose of the study. No participant was suspicious of the cover story or any measure in the study.

**Materials**

*Name-Letter Task*

The measure was described as dealing with simple preferences. Participants were asked to rate how much they liked each of the letters in the English alphabet on a scale from 1 (*Dislike Very Much*) to 7 (*Like Very Much*). In evaluating the letters, participants were instructed to rely on their intuitions. The measure is presented in Appendix A.

Implicit self-esteem scores were computed based on participants’ ratings of their first and last initials adjusted for the ratings of these letters by other participants. Specifically, name-letter preferences were computed by (1) calculating an average preference for each letter based on the ratings of individuals who did not have these letters as their initials; (2) subtracting the average preference from participants’ ratings of their initials; (3) averaging the adjusted ratings of the two initials for each participant. This procedure is frequently used for computing implicit self-esteem scores (e.g., Koole, Dijksterhuis, & Van Knippenberg, 2001).

The name-letter preferences were used as an implicit measure of self-esteem because people generally lack awareness that they engage in self-evaluation when rating their name-letters (e.g., Jones, Pelham, Mirenberg, & Hetts, 2002).
preferences show stable test-retest reliabilities and high internal consistency (e.g., Bosson, Swann, & Pennebaker, 2000; Koole, Dijksterhuis, & Van Knippenberg, 2001). In the current sample, internal consistency of the measure (computed as correlation between participants’ preferences for their first and last initials) was high, $r = .64$, $p < .001$. Additionally, the Name-Letter task shows good predictive validity. For example, similar to explicit self-esteem scores, higher name-letter scores are associated with the tendency to self-enhance (Bosson, Brown, Zeigler-Hill, & Swann, 2003). The measure also demonstrates theoretically predicted effects, such as an increase in name-letter liking following a consistent pairing of the self with positive stimuli (Baccus, Baldwin, & Packer, 2004; Dijsterhuis, 2004).

*Rosenberg Self-Esteem Scale*

The scale consists of 10 items assessing people’s global feelings of self-worth. Sample items include “I feel that I am a person of worth, at least on an equal basis with others” and “All in all, I am inclined to feel that I am a failure” (reverse scored). The response scale ranges from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The measure is presented in Appendix B.

Rosenberg self-esteem scale was chosen because it is one of the most well-validated and reliable explicit self-esteem measures (Blaskovich & Tomaka, 1991; Demo, 1985). In the current sample, the internal consistency of the measure was high, $\alpha = .82$. 
Results

Preliminary analyses

Gender did not modify any findings and thus will not be discussed further. Participants reported regularly engaging in various forms of mindfulness (e.g., vipassana) and concentrative (e.g., mantra yoga) meditation.

Effect of meditation

Overall, participants reported a wide range of engagement with meditation (Min = 1 month, Max = 20 yrs, Mean = 4 yrs). Years practicing meditation were non-significantly positively related to implicit self-esteem scores, $r(20) = .37, p = .10$, and to explicit self-esteem scores, $r(20) = .29, p = .20$. To examine the effect of meditation on the relation between implicit and explicit self-esteem, explicit self-esteem scores were regressed on implicit self-esteem scores, years practicing meditation, and their interaction term. For the purpose of these analyses all continuous predictor variables were z-transformed (Aiken & West, 1991). This analysis revealed a significant Implicit self-esteem by Years practicing meditation interaction, $\beta = .81, t(17) = 2.73, p = .014$. The interaction was decomposed according to the recommendations by Aiken and West (1991). The relation between implicit and explicit self-esteem scores was examined among inexperienced and experienced meditators, or those scoring one standard deviation above and below the mean on Years practicing meditation, respectively. These analyses showed that for inexperienced meditators, implicit and explicit self-esteem
scores were significantly negatively related, $\beta = -1.08$, $t(17) = -3.36$, $p < .01$, but that for experienced meditators implicit and explicit self-esteem scores were non-significantly positively related, $\beta = .74$, $t(17) = 1.63$, $p = .12$ (see Figure 1).

**Figure 1.** The relation between implicit and explicit self-esteem scores among less experienced and more experienced meditations.

*Note.* The actual range of explicit self-esteem scores is 30-55.

In addition to years practicing meditation, weekly meditation time was also computed by multiplying how often participants meditated per week (*frequency*) by the average duration of meditation session (*duration*). This measure exhibited significantly less variability than years practicing meditation, with most participants reporting meditating 90 minutes per week. Further, this measure was not associated with years practicing meditation, $r(20) = .15$, $p = .50$. To investigate whether weekly meditation
time moderated the relation between the self-esteem measures, explicit self-esteem scores were regressed on implicit self-esteem, weekly meditation time, and their interaction term. Results revealed no significant main effects or interactions, all $p_s < .18$. It is possible that weekly meditating time did not produce the same effect as years practicing meditation due to its limited range.

**Effect of age**

Participants’ years of practicing meditation are confounded with age: indeed, more experienced meditators are also older than less experienced meditators. To investigate the effect of age, explicit self-esteem scores were regressed on implicit self-esteem scores, age, and their interaction term. This analysis revealed a marginally significant Implicit self-esteem by Age interaction, $\beta = .39$, $t(17) = 2.05$, $p = .06$. The interaction had a similar pattern to that of Implicit self-esteem by Years practicing meditation presented in Figure 1. Although age produced an effect similar to the effect of years practicing meditation, the model fit with age was worse (16 percent of explained variance) than that with years practicing meditation as a predictor (35 percent of explained variance). Additionally, controlling for the effect of age in the regression with implicit self-esteem and years practicing meditation and, conversely, controlling for the effect of years practicing meditation in the regression with implicit self-esteem and age did not reduce the significance of either interaction term, $p_s < .01$. This fact speaks to the relative independence of the effects of age and years practicing meditation. Regressing
explicit self-esteem scores on implicit self-esteem scores, age, years practicing meditation, and their interaction terms did not produce any significant effects ($p$s > .15). Given the small sample size, however, this analysis was likely to have very low power.

**Discussion**

This study provided initial evidence that meditation may lead individuals to rely on their automatically activated self-evaluations in responding to implicit and explicit measures of self-esteem, as evidenced by greater congruence between the measures. Specifically, compared to beginners, individuals who consistently practiced meditation showed more correspondence between their implicitly and explicitly assessed self-esteem. This suggests that the practice of meditation leads individuals to base their overt self-evaluations on the automatically activated affect towards the self.

Several aspects of the study deserve further discussion. First, a negative correlation between implicit and explicit measures of self-esteem among beginners of meditation is a rather unusual finding. To my knowledge, only a study by Bosson, Brown, Zeigler-Hill, & Swann (2003) reported a significant negative correlation between implicit and explicit self-esteem scores. Because of its rarity, I attempted to replicate this finding in a different sample. I specifically targeted students who were and were not practitioners of meditation. In the study 84 college students completed the Name-Letter task and Rosenberg Self-Esteem scale, and indicated whether or not they regularly engaged in meditation. A significant negative correlation between implicit and explicit self-esteem scores was once again obtained for participants who indicated practicing meditation, $r(14) = -.56, p = .04$, whereas participants not involved in meditation showed
the usual lack of relationship between the two measures, \( r(70) = .11, \text{ns} \). Given that the mean age of participants who identified themselves as practicing meditation was 19, they were likely to be beginners of meditation. Thus, a significant dissociation between implicit and explicit self-esteem measures seems to characterize individuals who begin practicing meditation.

Research indicates that a discrepancy in scores on implicit and explicit measures of self-esteem is associated with psychological maladjustment. High scores on the explicit measure and low scores on the implicit measure may reflect defensiveness and narcissism (Bosson et al., 2003; Jordan et al., 2003) whereas high scores on the implicit measure and low scores on the explicit measure may reflect current psychological distress (cf., Zeigler-Hill, 2006). If discrepancies in implicit and explicit self-esteem scores are signs of maladjustment, this maladjustment may be the driving force for individuals to become involved with meditation.

It also needs to be noted that experienced meditators who possessed unfavorable automatic self-evaluations also scored lower on the explicit self-esteem measure. The decrease in scores on the explicit measure could be interpreted as a negative effect of meditation yet it may also signal authenticity and lack of defensiveness (Kernis, 2003). In fact, optimal self-esteem may be primarily associated with self-acceptance and self-kindness and not high self-regard (Neff, 2003).

Another noteworthy finding of the study is that age produced an effect similar to yet independent of the effect of meditation. Age may be akin to meditation in that it may lead individuals to rely on their automatically activated self-evaluation in responding to
implicit and explicit self-esteem measures. The effect of age may be due to the diminished ability of older individuals to deliberate on their responses and their tendency to go along with automatic reactions (von Hippel, Silver, & Lynch, 2000) or to their lower likelihood to engage in self-presentation (Mueller, Johnson, Dandoy, & Keller, 1992; Reifman, Klein, & Murphy, 1989). Both of these possibilities deserve further consideration.

Limitations and future directions

The correlational nature of the study precludes drawing a causal link between meditation and the relationship between implicit and explicit self-esteem measures. In fact, a variety of other causal agents could be accountable for the findings. For example, inexperienced and experienced meditators may differ on a number of important personality characteristics, related to expression of automatic self-evaluation. Experience with meditation may also be confounded with a steady social network and greater spirituality, all of which may facilitate implicit-explicit congruence. Experimental replication of the effect of meditation was therefore necessary to make causal claims.

Another reason for replicating the findings of Study 1 is to show that meditation indeed enhances the correspondence between implicit and explicit self-esteem measures. Recall that the relation between implicit and explicit measures was significantly negative for inexperienced meditators yet was non-significantly positive for experienced meditators. Study 2 intended to show that meditation, when manipulated experimentally, increases correspondence between implicit and explicit self-esteem measures.
CHAPTER 3

STUDY 2

Study 1 found that implicit and explicit self-esteem measures became more congruent as a function of years participants had been practicing meditation. This finding serves as initial evidence that meditation may lead individuals to rely on their automatic self-evaluation in explicit self-judgments. The aim of Study 2 is to replicate the effect found in Study 1 experimentally. It is hypothesized that meditation will create a state of non-judgmental awareness, which will lead individuals to express their automatically activated feelings towards the self. A short meditation exercise conducted in a laboratory setting may not be comparable to the regular involvement with meditation, yet it may temporarily induce the mindset of perceiving one’s feelings in a non-judgmental fashion. An experimental replication of the moderating role of meditation will lend credence to the causal effect of meditation on the congruence between implicit and explicit measures of self-esteem.
Method

Participants

Participants were 130 introductory psychology students (76 women and 54 men; mean age = 19). They completed the study on individual computers in groups of 2 to 5.

Procedure

Participants were told that the study involved a meditation exercise and several unrelated tasks dealing with preferences and self-views. The study manipulated whether meditation was presented first or last. In the meditation-first condition, participants listened to the meditation audio and then completed implicit and explicit measures of self-esteem (Name-Letter task and Rosenberg Self-Esteem scale). In the meditation-last condition, participants first completed the two self-esteem measures and then listened to the meditation audio. In both conditions the implicit measure preceded the explicit measure. As in Study 1, this order was chosen because responses on implicit measures are less likely to influence responses on explicit measures than vice versa (Bosson, Swann, & Pennebaker, 2000; Krizan & Suls, 2006). At the end of the experiment, participants answered several filler questions about the meditation exercise and reported their initials, gender, and age. They were then probed for suspicion, debriefed, and dismissed. Participants reported enjoying the meditation exercise and were not suspicious of the cover story or any of the measures.
Materials

Name-Letter Task

This measure was identical to that used in Study 1. The internal consistency of the measure was computed as a correlation between liking of the first-name and last-name initials; in the present sample it was $r = .47, p < .001$.

Rosenberg Self-Esteem Scale

This scale was identical to that used in Study 1. In the current sample, the internal consistency of the measure was high, $\alpha = .87$.

Meditation exercise

Participants listened to an 11-minute body scan exercise developed and recorded by Overman (1999). Participants were instructed to sit in a relaxed and wakeful posture with eyes closed and focus on their breathing. Participants were then directed to observe sensations in each area of their body in a careful and nonjudgmental fashion. The exercise was narrated by a male voice and was accompanied by relaxing music. Body scan exercises are frequently used to introduce beginners to mindfulness meditation. Due to clear and frequent instructions, body scans are easier to follow than some of the more advanced meditation practices (e.g., prolonged focusing of attention without guidance; cf., Kabat-Zinn, 1990). It was important to utilize a meditation exercise that was easy to complete to avoid frustration and fatigue among participants.
Results

Preliminary analyses

Gender did not modify any of the findings and thus will not be discussed further. Additionally, baseline evaluations of letters in the Name-Letter scale were not impacted by meditation (all $p$s > .12). Baseline liking for letters was thus aggregated across the two conditions to compute the name-letter preferences.

Effect of meditation

To examine the focal prediction that the relation between implicit and explicit self-esteem scores will only attain significance in the meditation-first condition, explicit self-esteem scores were regressed on implicit self-esteem scores, condition, and their interaction term. For the purpose of regression, implicit self-esteem scores were z-transformed and the condition variable was effects-coded as -1 (meditation last) and 1 (meditation first). This analysis revealed only a significant Condition by Implicit self-esteem interaction, $\beta = .34, t(126) = 1.94, p = .05$. Further analyses showed that the implicit self-esteem measure was significantly related to the explicit self-esteem measure in the meditation-first condition, $\beta = .27, t(126) = 2.17, p = .03$, and was non-significantly negatively related to the explicit self-esteem measure in the meditation-last condition, $\beta = -.07, t(126) = -.58, p = .56$. These findings confirmed the prediction that meditation leads to greater congruence between implicit and explicit self-esteem measures.

It was important to examine whether the effect was due to changes in the mean levels and/or variances of the implicit and explicit self-esteem measures. A repeated-measures analysis of variance (ANOVA) was conducted with the type of self-esteem
measure as a within-participant factor and the condition as a between-participant factor. Neither the main effect of Condition nor the interaction of Condition and the Type of self-esteem measure was significant, both $F$s < .04, $p$s > .79. This indicates that meditation did not increase the mean values of implicit and explicit self-esteem scores. Further, as indicated by Levene’s test for equality of variances, the variances of the implicit and explicit self-esteem measures did not differ across conditions, both $F$s < 2.33, $p$s > .13. These findings suggest that meditation did not impact the mean levels and distribution of scores on the implicit and the explicit measures.

Recall that the implicit measure did not require participants to engage in self-evaluation and thus was not expected to be impacted by meditation. Instead, meditation was predicted to impact the deliberate, or explicit, self-evaluation. A drop in explicit self-esteem scores following meditation would serve as evidence of decreased defensiveness and willingness to express an unfavorable self-evaluation. However, the data did not bear out this prediction: participants’ explicit self-esteem scores were not lower in the meditation first condition. It can be concluded that participants were not simply less defensive in responding to the explicit self-esteem measure following meditation; instead, they were more likely to go along with their automatic self-evaluation, regardless of whether it was positive or negative.

Another possibility was that the meditation manipulation increased the speed of participants’ responses on the implicit and explicit self-esteem measures. Indeed, faster responding would indicate less deliberation and greater reliance on the automatic self-evaluation (Fazio, 1990; Koole et al., 2001). Due to equipment failure, only reaction
times associated with the Rosenberg self-esteem scale were recorded. To remove skew in the distribution, the reaction times associated with each item were log-transformed and then averaged for the entire scale. ANOVA revealed that the reaction times associated with the explicit self-esteem measure did not differ between conditions, \( F = .23, p = .63 \). However, the tendency to respond faster on the explicit self-esteem measure following meditation may have been cancelled out by the relaxation that meditation induced. Thus, in the present context the speed of responding may not be a fitting indicator of a decrease in deliberation.

Discussion

The current study provided experimental evidence that meditation enhances the correlation between implicit and explicit self-esteem. Specifically, implicit and explicit measures were positively correlated when mindfulness meditation preceded these measures, and were uncorrelated when mindfulness meditation followed these measures. The study suggests that like regular practice, a short exposure to mindfulness meditation may put participants into a non-evaluative mindset, leading them to express their automatic self-evaluation. In the absence of meditation, however, participants may fail to express the affect they are experiencing when thinking about the self because they may perceive it as an insufficient basis for judgment. Notably, Study 2 showed that meditation did not decrease the scores on the explicit self-esteem measure, suggesting that participants were not simply less defensive in their responses. Instead, participants’ explicit self-evaluations became more closely related to their automatic self-evaluations, no matter how positive or negative those were.
The findings of Study 2 may seem contradictory to those of Study 1, where inexperienced meditators showed a large discrepancy between their implicitly and explicitly assessed self-esteem. Indeed, if a short meditation exercise increased implicit-explicit congruence among college students, why did inexperienced meditators, who were regularly engaging in meditation, not show a similar effect? This may be the case due to a different baseline of implicit-explicit scores among inexperienced meditators and college students. Individuals may be motivated to start meditating due to possessing a discrepant self-esteem, which is associated with psychological maladjustment (e.g., Jordan et al., 2003). Recall that a significant negative correlation between implicit and explicit self-esteem was also replicated with a sample of college students who were beginning meditators. Thus, novice meditators are likely to start with a larger implicit-explicit discrepancy than college students and may require more meditative sessions to overcome it. Due to a smaller initial discrepancy in the implicitly and explicitly assessed self-evaluations, a sample of college students may be more responsive to the meditation manipulation. To further investigate this possibility, future studies may involve longitudinal designs where individuals’ self-esteem is assessed at different points of their involvement with meditation. Replicating the findings of Study 1, it is likely that individuals who begin meditating will show a large implicit-explicit discrepancy. As their degree of experience with meditation increases, implicitly and explicitly assessed self-evaluations are likely to first become less discrepant and gradually more coherent.

Another issue is that the interpretation of the findings is based on the assumption that meditation only affects participants’ responses on the explicit measure of self-
esteem. Indeed, implicit measures in general and the Name-Letter task in particular do not require that participants evaluate the self and deliberate on their responses (cf., Krizan & Suls, 2006; Zeigler-Hill, 2006). Thus, they are expected to produce the same outcome whether preceded by meditation or not. In contrast, explicit measures, such as Rosenberg self-esteem scale, require that participants think about their self-evaluation (Blaskovich & Tomaka, 1991). Because meditation is expected to lessen the motive to question the validity of one’s experiences, it is expected to affect responses on the explicit measure by making participants more willing to go along with their automatic self-evaluation.

However, the assumption about the differential impact of meditation on implicit and explicit measures of self-esteem remains a working hypothesis and needs to be tested experimentally.

Study 3 was designed to examine the effect of meditation on each of the self-esteem measures by varying whether the meditation manipulation preceded the implicit or the explicit measure. Additionally, another goal of Study 3 was to replicate the moderating effect of meditation with a different manipulation. The audio used in Study 2 may have had idiosyncratic features (such as relaxing music) that could be responsible for the obtained results. Replicating the findings with a different meditation manipulation would speak to the generalizability of the effect.
CHAPTER 4

STUDY 3

The initial set of studies showed that meditation increases congruence between implicit and explicit measures of self-esteem. Specifically, experienced practitioners of meditation in Study 1 had greater correspondence between implicit and explicit self-esteem measures than novice practitioners. Study 2 replicated the finding in an experimental setting by showing that implicit and explicit self-esteem measures became more congruent when they were preceded by meditation.

In demonstrating the moderating effect of meditation, the studies also posed a question of whether meditation influences responses on one or both of the measures. It is assumed that meditation enhances correspondence between implicit and explicit self-esteem measures by bringing responses on the explicit measure more in sync with the implicit measure. In other words, if meditation leads people to go along with the automatically activated self-evaluation, then only the measure that involves deliberation and typically precludes expression of the automatic self-evaluation should be affected. Study 3 was designed to test this assumption by presenting meditation in-between the two self-esteem measures. It was predicted that meditation will enhance correspondence
between the self-esteem measures when it was followed by the explicit measure. No
significant relation was expected when meditation was followed by the implicit measure.
The secondary goal of the study was to test the generalizability of the effect of
meditation. Specifically, Study 3 used a different audio to ensure that the effect obtained
in Study 2 was not due to the idiosyncratic features of the meditation manipulation.

Method

Participants

Seventy four introductory psychology students (49 women and 25 men; mean age
= 20) participated in exchange for course credit. Participants completed the study on
individual computers in groups of 4 to 8.

Procedure

Participants were told that the study included a relaxation exercise and several
unrelated tasks dealing with preferences and self-views. Participants completed the
meditation exercise in-between the two self-esteem measures (Name-letter task and
Rosenberg self-esteem scale). Half of the participants completed the implicit self-esteem
measure before and the explicit self-esteem measure after the meditation (Implicit-
Meditation-Explicit order), and the other half completed the self-esteem measures in the
reverse order (Explicit-Meditation-Implicit order). At the end of the experiment,
participants answered several filler questions about the exercise and reported their
initials, age, and gender. Participants were then probed for suspicion, debriefed, and
dismissed. Participants reported having no suspicions about the measures or the cover
story.
Materials

Name-Letter Task

This measure was identical to the one used in Studies 1 and 2. In the current sample, the internal consistency of the measure, computed as the correlation between participants’ liking for the first- and last-name initials, was $r = .29$, $p < .05$.

Rosenberg Self-Esteem Scale

This measure was the same as in Studies 1 and 2. In the current sample, the internal consistency of the measure was in the acceptable range, $\alpha = .60$.

Meditation

The meditation exercise was a 21-minute guided body scan developed and recorded by Weiss (2001). Participants were instructed to sit in a relaxed yet wakeful position. They were then guided to focus on their breath followed by observing their bodily sensations, thoughts, and feelings, attempting not to evaluate them as good or bad. In contrast to the exercise used in Study 2, the audio did not contain any music accompaniment and was recorded by a female voice. Once again, the body scan was chosen because it is an easy technique for novices to follow (cf., Kabat-Zinn, 1990). Using a more advanced meditative technique could have produced frustration and fatigue among participants.
Results

Preliminary analyses

Gender did not modify any findings and thus will not be discussed further. Additionally, baseline evaluations of letters in the Name-Letter scale were not impacted by the manipulation (all $p$s > .10). Baseline liking for letters was thus aggregated across the two conditions to compute the name-letter preferences.

The effect of meditation

To examine whether meditation enhances the relation between the self-esteem measures only in the Implicit-Meditation-Explicit condition, explicit self-esteem scores were regressed on implicit self-esteem scores, condition, and their interaction term. A significant interaction would reveal a differential impact of meditation in the conditions. For the purpose of the analysis, implicit self-esteem scores were z-transformed and the condition variable was effects-coded as -1 (Implicit-Meditation-Explicit) and 1 (Explicit-Meditation-Implicit). This analysis revealed a significant main effect of Implicit self-esteem, $\beta = .37$, $t(70) = 3.19$, $p < .01$, showing that implicit self-esteem scores were reliably positively associated with explicit self-esteem scores. Contrary to the focal prediction, this effect was not qualified by Condition, $t(70) = -.17$, ns.

Further investigation of the relation between implicit and explicit self-esteem measures in the two presentation orders revealed that in both cases the implicit measure was positively related to the explicit measure, Explicit-Meditation-Implicit order: $\beta = .39$, $t(70) = 2.69$, $p < .01$; Implicit-Meditation-Explicit order: $\beta = .35$, $t(70) = 1.93$, $p = .05$.

The absence of the control condition precludes a conclusion that meditation enhanced the
correlation between implicit and explicit self-esteem measures in both presentation orders. However, in light of numerous findings showing the lack of relationship between implicit and explicit measures of self-esteem, this possibility is quite likely.

As in Study 2, it was important to examine whether meditation impacted mean levels of the implicit and explicit self-esteem scores. A repeated-measures analysis of variance (ANOVA) with the type of measure as a within-participant factor and the condition as a between-participant factor was conducted. Neither the effect of Condition nor the Condition by Type of self-esteem measure interaction reached significance, $F$s < 1.56, $p$s > .22. Further, Levene’s test for equality of variances failed to produce significant results for both implicit and explicit self-esteem scores, $F$s < 3.00, $p$s > .10. In sum, these analyses indicate that meditation did not impact the mean levels and the variability of the implicit and explicit self-esteem scores.

Reaction times associated with responses on implicit and explicit self-esteem measures were also examined. In this analysis, the reaction times were log-transformed for each item and were then averaged for each of the measures. A repeated-measures ANOVA with the type of measure as a within-participant factor and the condition as a between-participant factor showed that neither the effect of Condition nor the Condition by Type of self-esteem measure interaction reached significance, $F$s < .15, $p$s > .68. These analyses indicate that meditation did not impact the latency of responding on either of the self-esteem measures.
Discussion

Study 3 demonstrated that implicit and explicit measures of self-esteem were correlated regardless of whether meditation was followed by the explicit or the implicit measure. The fact that the study did not include a control condition precludes a conclusion that meditation enhanced correspondence between the self-esteem measures; however, given that multiple studies failed to show a reliable relationship between implicit and explicit self-esteem measures (for review see Krizan & Suls, 2006), it seems likely that meditation was the causal agent behind the observed correlations.

The finding that the self-esteem measures were related regardless of the order of presentation was contrary to the original prediction that the two measures will show correspondence only when meditation preceded the explicit self-esteem measure. Indeed, meditation was supposed to impact the measure that involved elaboration and make it more congruent with the implicit self-esteem measure. A significant relation between implicit and explicit self-esteem in the condition when meditation preceded the explicit measure is in line with this prediction. It is very surprising, however, that the explicit and implicit measures of self-esteem were correlated when meditation preceded the implicit measure. It may be the case that by virtue of completing the explicit self-esteem measure first participants activated their self-knowledge and that it remained activated during the meditative experience. Participants may have then relied on the activated self-evaluation in responding to the implicit measure. For example, if participants were elaborating on a negative aspect of themselves in completing the explicit self-esteem measure, this activated aspect of the self may have led them to be also less favorable in evaluating.
name-letters. This explanation introduces another possibility to the present theorizing, that in completing the implicit measure of self-esteem individuals may be basing their responses on their cognitively elaborated self-evaluation, especially when the explicit measure precedes the implicit measure. This explanation is consistent with the meta-analysis by Krizan and Suls (2006) who found greater correspondence between implicit and explicit self-esteem measures if the explicit measure appeared before the implicit measure. Future studies should further address the issue of whether self-knowledge activated as a result of elaborating about the self may influence the affective reactions individuals experience towards self-related stimuli and change participants’ responses on the implicit measures.

Additionally, Study 3 replicated the finding that meditation did not impact the mean levels of the implicit and explicit self-esteem measures. This suggests that meditation did not simply lead to a decrease in defensiveness, as participants did not evaluate themselves less positively in the meditation condition. Further, lack of differences in the self-esteem levels argues against a demand characteristic to report a more favorable self-evaluation following meditation. This suggests that meditation promotes greater reliance on one’s self-feelings regardless of their valence and leads to a more authentic self-evaluation.

*Self-evaluation as a mystery mood*

Meditation is proposed to enhance correspondence between implicit and explicit measures of self-esteem by making individuals more likely to express their automatic self-evaluation. Experiencing the affect induced by self-relevant stimuli is comparable to
a mystery mood (Chartrand & Kay, 2006). Specifically, an individual may feel good or bad but may not have an insight into the origin of his or her feelings. Study 4 attempted to recreate the experience of automatic self-evaluation by subliminally priming participants with positive or negative words. Prior research has shown that such priming leads individuals to experience positive or negative mood without being able to identify its origin (Chartrand & Kay, 2006). It is expected that meditation will magnify the mood priming effect by leading individuals to be less judgmental of the feelings they are experiencing. As a result, participants will be more likely to express their affect following meditation than a control manipulation. These predictions were investigated in Study 4.
Prior studies have shown that meditation enhances correspondence between implicit and explicit measures of self-esteem. Specifically, Study 1 has demonstrated that experienced meditators have greater correlation between implicit and explicit self-esteem scores than inexperienced meditators. Study 2 has shown experimentally that meditation creates correspondence between implicit and explicit measures of self-esteem. Study 3 provided evidence that implicit and explicit self-esteem measures are correlated regardless of whether meditation precedes the explicit or the implicit measure. The remaining question concerns the mechanism through which meditation creates congruence between implicitly and explicitly assessed self-evaluations. I propose that the effect of meditation is due to its ability to make individuals more receptive to the automatically activated affect towards the self. Indeed, meditation leads people to focus on their experiences and observe them in a non-judgmental and non-analytical fashion. Meditation may thus lessen the motive to critically appraise one’s immediate emotional reactions and make individuals more likely to rely on these reactions in making an overt judgment. Study 4 was designed to test the hypothesis that meditation enhances people’s
responsivity to the automatically activated affect. This study relied on the subliminal priming procedure to create an affective reaction that served as a proxy for automatic self-evaluation. The typical finding in the priming literature is that subliminal presentation of positive or negative concepts creates congruent affect, without participants being aware of the origin of their feelings (Chartrand & Kay, 2006). It was predicted that meditation will amplify the effects of priming by leading individuals to rely on their affect to a greater extent when making an overt judgment.

Method

Participants

Participants were 113 introductory psychology students (41 women and 70 men, mean age = 20). Participants completed the study on individual computers in groups of 2 to 5.

Procedure

The experiment had a 2 (Meditation: Meditation vs. Control) by 2 (Prime valence: Positive vs. Negative) between-participant factorial design.

Participants were informed that the experiment dealt with auditory and visual perception. First, participants listened to either a meditation or control recording of similar duration. Later, under the pretext of assessing perceptual skills, participants completed a subliminal priming task where they were exposed to either positively or negatively valenced words. Following the priming task, participants completed a mood measure, demographics questionnaire, and a funneled debriefing form. Finally, participants were debriefed and thanked for their participation.
Materials

*Meditation and control recordings*

The meditation recording was identical to the one used in Study 2. The control recording was a narration of encyclopedia entries about 5 cities. The recording was made by a male graduate student who was requested by the author to speak with the pace and tone similar to that in the meditation recording. The city descriptions provided factual information and were rather neutral in content. They are presented in Appendix C.

*Subliminal priming task*

The subliminal priming task was described as examining the speed and accuracy with which people could judge the location of stimuli that appeared on the computer screen. To signal the beginning of each trial, an asterisk appeared at the center of the computer screen for any duration between 2 and 7 s, as randomly determined by the computer. Participants were instructed to focus on the asterisk prior to each trial. Following the asterisk, a stimulus word was presented in the parafoveal region of the participants’ visual field in one of the four quadrants of the computer screen, at angles of 45°, 135°, 225°, and 315° from the center of the screen. The stimulus words were presented for 60 ms, which is too rapid for conscious processing in the parafoveal visual field (Bargh & Chartrand, 2000). In fact, due to the speed of the presentation, participants reported seeing “flashes” rather than words. Each stimulus word was followed by a backward mask consisting of a string of random letters, which served to erase the stimulus word from iconic memory. The backward mask stayed on the screen for 60 ms. The stimulus words presented at any given trial and their location were
randomly determined by the computer. Participants’ task was to indicate, as quickly and accurately as possible, which side of the screen the flash appeared on. The subliminal priming task included 8 stimulus words and 72 trials, where each word was presented 9 times. The examples of negative stimulus words used in the study were war, cancer, and death; the examples of positive stimulus words were music, friends, and party. The primes were matched on extremity, frequency, and length, based on the ratings provided by Bargh, Chaiken, Govender, & Pratto (1992). The complete list of primes can be found in Appendix D.

_Affect-Arousal Scale_

Affect was assessed with the Affect–Arousal Scale (Salovey & Birnbaum, 1989). Participants reported how they felt at the moment by rating their affect and arousal on an 11-point scale (with the anchors of “-5” corresponding to negative mood/low arousal and “+5” corresponding to positive mood/high arousal). The examples of mood items were bad–good and sad–happy; the examples of arousal items were calm–excited and sedate–aroused. Mood items were the primary measure of interest; arousal items were included for exploratory purposes. The Affect-Arousal scale is presented in Appendix E.

Results

_Preliminary analyses_

During funneled debriefing 2 participants reported seeing words that corresponded to the primes. Removing these individuals from the analyses did not change the pattern of findings. None of the participants was able to articulate the link between different parts of the study.
Affect and arousal scores

Affect and arousal subscales showed high reliability (both $\alpha$s > .78). First, a 2 (Meditation: Meditation vs. Control) by 2 (Prime Valence: Positive vs. Negative) Analysis of Variance (ANOVA) was conducted on the affect scores. Results only yielded a significant Meditation by Prime Valence interaction, $F(1,109) = 3.86, p = .05$. This interaction is depicted in Figure 2. Simple main effect analyses indicated that among those exposed to negative primes, participants in the meditation condition reported significantly more positive mood ($Mean = 3.12, SD = 5.78$) than their counterparts in the control condition ($Mean = .00, SD = 5.52$), $t(52) = -2.02, p = .05$. Participants who were exposed to positive primes reported the same level of positive affect in both the control ($Mean = 2.38, SD = 7.08$) and meditation ($Mean = .80, SD = 6.74$) conditions, $t(57) = .88, p = .38$. Further, affect scores did not differ as a function of prime valence in either the control or meditation conditions, both $ps = .17$. These analyses do not support the original predictions and may indicate that participants were attempting to correct their mood if they were exposed to negative primes following meditation.
Figure 2. Mood as a function of Meditation and Prime Valence Condition

Note. Mood scale range is from -5 (negative mood) to 5 (positive mood).

An ANOVA identical to the analysis reported above was also conducted on the arousal scores. Results revealed no significant main effects or interactions, all $F$s < 1.52, all $p$s > .22. Participant sex did not moderate any of the reported findings.

Discussion

Results of Study 4 did not support the original prediction that meditation amplifies the effects of priming. Instead, the findings showed that among those who were exposed to negative primes, participants who meditated reported more positive affect than their counterparts in the control condition. This may indicate that participants in the meditation condition were engaging in conscious correction of their mood. In fact,
participants who were primed with negative words following meditation reported feeling as positively as participants in the control condition who were primed with positive words.

How do these findings reconcile with the results of previous studies? It may be the case that meditation, as originally hypothesized, indeed makes individuals more attuned to and accepting of their feelings. To express these feelings, however, individuals may need to have at least minimal justification and be able to attribute them to a certain stimulus. Such justification may be easier in the case of self-evaluation than subliminal priming. Let us first consider self-evaluation. Self-esteem measures present participants with self-relevant stimuli that elicit an automatic affective response. If not attended to, this initially felt affect towards the self is likely to be diluted by other processes such as cognitive deliberation (Koole, Dijksterhuis, & Van Knippenberg, 2001). Meditation may counteract this dilution by rendering individuals more aware and less judgmental of the affect they are experiencing. In making a self-evaluation, individuals may feel justified in relying on their affect because they interpret it as relevant to the task. In other words, a respondent’s logic may be as follows, “If these questions make me feel positive/negative, this must be how I truly feel about myself”. Thus, following meditation, people may be more likely to rely on the activated affect in providing a self-evaluation.

In the case of subliminal priming, meditation may also enhance awareness of the affect elicited by the primes. In fact, in the present research participants in the meditation condition may have been more acutely aware of the affect generated by the primes than participants in the control condition. However, participants may not have been willing to
express their strong emotional reactions due to not being able to justify them. Indeed, the
data from the funneled debriefing indicates that participants could not discern the purpose
of the priming task and link it to any other measure in the study. Without an identifiable
source of their rather intense negative or positive affect, participants may have attempted
to correct for it. The findings indicate that following meditation, participants exposed to
negative primes reported more positive mood than those exposed to negative primes in
the control condition, suggesting a conscious mood correction. Among participants
exposed to positive primes, there was also a non-significant trend for participants in the
meditation condition to report less positive affect than in the control condition, which
once again speaks to the possibility of correction.

Admittedly, the proposed explanation of the findings is highly speculative. To get
at the suggested mechanism, future studies may examine consequences of being in a
positive or negative mood rather than rely on participants’ self-reports of their affective
experiences. Participants may engage in correction when directly reporting their mood,
but show the effects of being in a positive or negative mood if they do not perceive that
mood influences their behavior and do not monitor their actions. For example, a distinct
consequence of mood is the quality of information processing, with positive mood
leading to heuristic processing and negative mood leading to systematic processing (e.g.,
Bless, Bohner, Schwarz, & Strack, 1990). If meditation does induce individuals to
experience the primed affect with greater intensity, then following meditation participants
will be more likely to demonstrate the differences in information processing. Examining consequences of positive and negative mood may thus provide insight into whether meditation accentuates affective priming.

In this line of research it may also be of interest to condition positive self-evaluation through a repeated pairing of self-relevant information with positive stimuli (e.g., Baccus, Baldwin, & Packer, 2004; Dijksterhuis, 2004). For example, Baccus and colleagues found that a repeated exposure to smiling faces following self-relevant stimuli led to increases in scores on the implicit measure of self-esteem but not on the explicit measure. The researchers explained the absence of the effect on the explicit measure by its insufficient sensitivity to the changes in evaluative associations. However, it may be the case that participants did not express the affect they were experiencing on the explicit measure because they failed to interpret it as self-relevant. Meditation may be able to counteract this tendency by leading individuals to be less critical of their affective reactions and to encode them as relevant to self-evaluation. Thus, adding a meditation manipulation to a design by Baccus and colleagues is likely to show that pairing positive stimuli with the self increases scores on both implicit and explicit measures of self-evaluation. In sum, studies aiming to create affect similar to automatic self-evaluation may shed an important light on the mechanism through which meditation influences self-feelings.
CHAPTER 6

GENERAL DISCUSSION

In a classic textbook The Principles of Psychology, William James (1890) noted in discussing the self that “there is a certain average tone of self-feeling which each of us carries about him” (p. 306). Following James’ observation, researchers attempted to capture people’s self-feeling, or self-esteem, with the use of first explicit and later implicit measures. Investigations employing both types of measures generated a surprising finding: Despite tapping into self-feeling, implicit and explicit assessments of self-esteem rarely correlated with each other.

What may explain this dissociation? A possible account is provided by the model of cognition as an associative-propositional network (Gawrosnki & Bodenhausen, in press). According to this model, self-esteem is stored in memory as an evaluative association that is automatically activated upon exposure to self-relevant stimuli. Individuals retrieve their self-evaluation in the form of affect. A person may thus feel good or bad when thinking about the self or self-relevant objects, with the experience being similar to having a gut reaction or an intuition (Koole & DeHart, 2006;
Pelham et al., 2005). The immediate affective reaction to the self is believed to be captured by implicit measures of self-esteem, as they allow for responding that is unmitigated by deliberation.

To be expressed, affective associations need to be translated into a propositional, or rule-based, format. In other words, the immediate “I feel good/bad” needs to be expressed as a proposition “I like/dislike myself”. At this stage, people may fail to express their affect if they consider it irrelevant to the judgment. Because some evaluative associations may not be open to introspection and remembering (i.e., early experiences with caregivers; DeHart, Pelham, & Tennen, 2006), thinking critically about them may convince individuals that such associations have little basis in reality and are inconsistent with their current self-knowledge. Deliberation may thus lead people to discard their affect and respond based on other sources of information such as their expectations and beliefs (cf., Wilson, Lindzey, & Schooler, 2000). Given that explicit measures of self-esteem require respondents to reflect on their self-evaluations, these measures may assess reactions that are significantly different from the immediate affective responses tapped into by implicit measures. It thus appears that the dilution of self-relevant affect in the process of deliberation may be responsible for the lack of relation between implicitly and explicitly assessed self-evaluations.

Summary of the present research

The present research concerned the question of whether meditation helps individuals get in touch with their self-feelings and be more likely to use them in self-evaluation. Meditation is defined as a practice of sustaining attention on the objects of
perception, be they internal or external to the self (Shapiro, 1980). A common characteristic of meditative techniques is non-judgmental awareness and acceptance of the contents of perception. Research in clinical and health psychology has demonstrated beneficial effects of meditation for a variety of aspects of human functioning (for comprehensive reviews see Cahn & Polich, 2006, and Murphy & Donovan, 1997). For instance, meditation has been shown to promote coping by facilitating awareness of one’s dysfunctional thoughts and behaviors (Teasdale, 1999). Meditation has also been linked to greater psychological well-being and growth (Alexander, Rainforth, & Genderlos, 1991; Brown & Ryan, 2003). Not surprisingly, meditation continues to be widely used as a tool for improving physical and mental health.

The current research was among the first to use meditation with the goal of elucidating processes involved in self-evaluation. The central prediction was that meditation creates congruence between implicit and explicit measures of self-esteem by focusing respondents on their self-feelings and fostering acceptance of these reactions in evaluating the self. The effect of meditation was examined in four studies. Study 1 was conducted in the field and had a correlational design. It showed that congruence between implicit and explicit self-esteem measures increased as a function of the number of years individuals have been habitually practicing meditation. Study 2 investigated the effect of meditation experimentally. It found that participants who completed a meditation exercise prior to responding to self-esteem measures showed a significant positive
relation between implicit and explicit self-esteem scores; in contrast, participants who
completed the meditation exercise after the measures evidenced the usual lack of
association between implicitly and explicitly assessed self-esteem.

The subsequent set of studies was aimed at elucidating the mechanism underlying
the effect of meditation. Study 3 showed that implicit and explicit self-esteem measures
were correlated regardless of which measure meditation preceded. The absence of a
control condition in the study precludes a conclusion that meditation enhanced
correspondence between the measures in both presentation orders. However, in light of
numerous studies documenting the non-significant relation between implicit and explicit
measures of self-esteem (see Krizan & Suls, 2006), this inference seems plausible.

The finding that the two self-esteem measures were related regardless of the
presentation order was contrary to the prediction that meditation would primarily impact
the explicit measure. It may be the case that elaborating on the self while completing the
explicit self-esteem measure activated a particular subset of self-knowledge, which then
changed the way participants responded on the implicit measure. In other words, the
affective reactions that participants experienced in response to self-relevant stimuli on the
Name-Letter task may have been influenced by the self-knowledge activated by the
explicit self-esteem measure. This possibility needs to be investigated as it may elucidate
when responses on the implicit measure are driven by the automatic and over-learned
self-evaluations and when they are influenced by the activated self-knowledge.
Finally, Study 4 implemented subliminal priming to experimentally induce positive or negative affect as a proxy for self-related affect. It was hypothesized that meditating prior to the priming task would lead participants to be less critical of their feelings and rely on them more, resulting in an increase in the typical priming effect. The measure of interest was the mood participants reported following priming. Contrary to the predictions, it was found that participants who meditated showed the reversal of the priming effect compared to participants in the control condition. In attempting to explain this unusual pattern of findings, I proposed that meditation may have intensified the experience of positive or negative affect but that participants may not have felt justified in expressing their feelings because they could not identify their origin. Lack of justification may have led participants to correct their mood reports and attempt to return them to the normal level. I also suggested that in responding to self-esteem measures participants may have felt more justified because they could attribute their affect to self-referent questions. These explanations are highly speculative and need to be examined in future studies.

In sum, these studies suggest that meditation may promote access to one’s self-feelings. It is important to note that across studies meditation did not impact the mean levels of implicitly or explicitly assessed self-esteem. This suggests that meditation did not create a demand effect (participants reporting feeling more positive) or reduce defensiveness (participants reporting feeling less positive). Instead, meditation led individuals to respond in accordance with their automatic self-evaluation regardless of its valence.
Limitations and future directions

Generalizability to other self-esteem measures

The present research demonstrated the effect of meditation on two measures of self-esteem, the Name-Letter task (Nuttin, 1985, 1987) and the Rosenberg self-esteem scale (Rosenberg, 1965). These measures were chosen because of their superior psychometric properties such as reliability and predictive validity (see Blaskovich & Tomaka, 1991; Demo, 1985; Koole, Dijksterhuis, & Van Knippenberg, 2001). The use of identical measures also facilitated meaningful comparisons of findings across studies. However, it would be desirable to show generalizability of the effect of meditation with other self-esteem assessments. Specifically, it would be of interest to examine whether meditation affects responses on implicit measures of self-esteem other than the Name-Letter task. Recall that in the present research meditation had an impact on participants’ responses on the implicit measure. However, meditation may not affect an implicit measure that does not rely on self-report, such as the Implicit Association Test (Greenwald & Farnham, 2000) or the Affect Misattribution Procedure (Payne, Cheng, Stewart, & Govorun, 2005). Thus, meditation may not impact a relation between implicit and explicit measures of self-esteem if it precedes the implicit measure that allows for more spontaneous responding than the Name-Letter task.

Additionally, it may be informative to examine the effect of meditation with a different type of explicit measure, a state measure of self-esteem. The Rosenberg self-esteem scale is considered a trait measure because it requires an evaluation of the self across time. In contrast, state assessments of self-esteem ask respondents to report their
feelings about themselves at the moment. To my knowledge, the relation between state measures and implicit measures of self-esteem has not been systematically researched. The only exception is the study by Baccus, Baldwin, and Packer (2004) where the implicit and state self-esteem measures were used to examine the effect of positive classical conditioning on self-regard. In the study the two self-esteem measures were not associated but this outcome may have been due to the fact that the manipulation affected the two measures differently. Under regular circumstances a state measure of self-esteem may show an association with implicit measures due to its focus on current feelings about the self. Meditation may be capable of further enhancing this relationship by leading respondents to be more accepting of their affective reactions.

*Generalizability to other types of meditation*

Future research should also employ more diverse manipulations of meditation. One of the present studies was conducted with practitioners of meditation who used a variety of meditative techniques, whereas the remaining studies were done with non-practitioners who completed short meditative exercises. To further explore generalizability of the findings future studies may involve longitudinal research designs that would follow individuals throughout their involvement with meditation. For example, meditation retreats or yoga classes may provide an excellent opportunity for this type of research. It is likely that implicit and explicit measures of self-esteem will show greater correspondence as a function of involvement with meditation.
Another question concerns generalizability of the present findings to other types of meditation. The focus of the present research was chiefly on mindfulness meditation and, more specifically, body scan exercises which drew participants’ attention to their inner sensations. However, other types of mindfulness meditation and most types of concentrative meditation focus participants’ attention outside the self. It would be of theoretical interest to examine whether the effects of meditation are due to attending to one’s inner experiences or to the more general ability to focus one’s attention on an object of perception and observe it without judgment. It seems likely that individuals who cultivate the ability to sustain awareness and suspend judgment in any meditative tradition will be receptive to the experience of self-relevant affect. Thus, concentrative meditation and non self-focused mindfulness meditation are expected to produce results similar to those of body-scan techniques.

Generalizability to other attitudes

An interesting question concerns applicability of the present findings to other attitude domains. The implicit-explicit dissociation is not unique to the field of self-esteem research; in fact, the lack of correspondence between implicit and explicit measures has been observed in a majority of attitude domains (Gawronski & Bodenhausen, in press; Hofmann, Gawronksi, Gschwendner, Le, & Schmitt, 2005). If meditation facilitates access to the automatically activated evaluation of the attitude object and leads to its acceptance, then one would expect to find that meditation also creates congruence between other attitude measures. Acceptance of the socially undesirable attitudes such as prejudice may be experienced as difficult and, consequently,
such attitudes may be expressed only if individuals perceive themselves to have the ability to control and modify their responses. Whether meditation can create implicit-explicit congruence in other attitude domains deserves further exploration, as this question may advance understanding of how individuals express their affective reactions.

**Gender differences**

The present research did not replicate the finding by Pelham et al. (2005) that implicit and explicit measures of self-esteem are more congruent for women than for men. Recall that the argument advanced by Pelham and colleagues was that women rely on emotions and intuitions in making a self-evaluation more than men due to being socialized to “wear their hearts on their sleeves”. As such, this argument is similar to the hypothesized effect of meditation. Specifically, in terms of awareness and acceptance of affective reactions, women respond in a fashion characteristic of meditators. The absence of gender differences in the present set of studies may be attributed to the fact that participants were not recruited based on their sex, leading to an unequal number of males and females. Further, the sample sizes in the present research were not as large as those examined by Pelham and colleagues. These factors may have decreased the statistical power to detect the effects of gender. Future studies may include gender as a factor to systematically explore its effects in the context of meditation.

**The proposed mechanism**

Another important set of questions concerns the specific mechanism that underlies the effect of meditation. The central thesis of the present work is that meditation leads to greater congruence between implicit and explicit measures of self-esteem by making
individuals more attuned to and less analytical of their self-feelings. Future studies may compare the effect of meditation to that of deliberating on one’s self-evaluation. If deliberation does dilute the automatically activated self-affect with other, potentially incongruent information, then implicit and explicit measures of self-esteem will be uncorrelated or perhaps even negatively correlated for those individuals who elaborate on their self-feelings. Existing research seems to support this prediction. For example, Florack, Scarabis, & Bless (2001) demonstrated that individuals who tend to elaborate on their judgments show lower correlations between explicitly and implicitly assessed attitudes than individuals who are less likely to engage in such elaboration. Similarly, a meta-analysis by Hofmann et al. (2005) showed that implicit-explicit correlations tend to increase as a function of the spontaneity of explicit measures. These findings suggest that analyzing one’s feelings towards the self may obscure the relation between implicit and explicit measures of self-esteem.

Further, it would be of interest to compare the effect of meditation to that of self-focus (Carver & Scheier, 1981; Fazio et al., 1982; Wicklund & Eckert, 1982). The present work is based on the assumption that meditation leads individuals to rely on the experienced affect due to a non-evaluative mindset. However, focusing on oneself may be sufficient for the congruence between implicitly and explicitly assessed self-esteem to emerge. If so, then a manipulation of self-focus such as exposing individuals to a mirror may produce an effect similar to that of meditation. If in addition to self-focus one also needs to adopt a non-evaluative attitude towards the self, then only meditation is expected to facilitate congruence between implicitly and explicitly assessed self-evaluation.
Self-focus is unlikely to enhance implicit-explicit relation for several reasons. First, a recent review of the literature concluded that there is little support for the claim that self-focus leads to accurate self-perception and non-defensive processing (Silvia & Gendolla, 2001). This suggests that self-focus may not be sufficient for individuals to obtain insight into their internal states. Second, some of the preliminary data that I have collected points to the joint influence of being aware of one’s feelings and having a non-evaluative attitude on the implicit-explicit congruence. Specifically, I conducted a correlational study where I examined the relationship between implicit and explicit measures of self-esteem and the two components of the Kentucky Mindfulness Scale (Baer, Smith, & Allen, 2004), *acting with awareness* and *acceptance without judgment*. The first component assesses the extent to which individuals are aware of their inner experiences and their surroundings, and the second examines how accepting individuals are of their thoughts and emotions. Both components contribute to mindfulness, or the ability to direct attention non-judgmentally, which has been shown to be enhanced by meditation (Baer et al., 2004; Brown & Ryan, 2003). Analyses revealed that the awareness and acceptance components of the scale produced a marginally significant interaction in predicting the implicit-explicit relationship, such that individuals high in both awareness and acceptance showed most congruence between their implicit and explicit self-esteem scores. These data provide initial evidence that awareness of one’s feelings needs to be accompanied by acceptance in order to lead to the expression of automatic self-evaluation. Future studies will need to examine the independent contributions of awareness and acceptance in greater detail.
Significance of the present research

The lack of correspondence between implicit and explicit measures of self-esteem has led some to argue for the existence of non-conscious and conscious self-evaluation. The former is ostensibly tapped into by implicit measures, whereas the latter is assessed by explicit measures of self-esteem. The present work argues against such conceptualization; instead, it proposes that individuals are conscious of their spontaneous self-feelings, yet may evaluate them as an invalid basis for self-evaluation. As a result, people may attempt to “dig deeper” by elaborating on their feelings. Such deliberation may lead individuals to dilute the self-related affect with other information, leading to the proverbial dissociation between implicit and explicit measures. The present work shows that when individuals focus their attention inward and approach their self-feelings in a non-evaluative manner, the affect assessed by implicit measures of self-esteem is overtly expressed. Thus, this research suggests that self-related feelings can be more accurately described as “unattended to” rather than “non-conscious”.

Additionally, the present work is the first to explore the effect of meditation on self-evaluation. It suggests that meditation leads individuals to approach self-affect with open-minded curiosity and facilitates its expression. This research also speaks to the utility of meditation as a social-cognitive investigative tool. Specifically, meditation may provide insight into the origins of implicit-explicit dissociation in various attitude domains and suggest ways for individuals to acknowledge and express their automatic evaluations.
This research also points to a possible way in which meditation may enhance psychological well-being. Past studies have shown that incongruent self-esteem (low explicit/high explicit and high explicit/low implicit) is associated with psychological maladjustment (Bosson et al., 2003; Jordan et al., 2003). Although self-esteem congruence has not been shown experimentally to lead to greater well-being, it is a likely marker of self-acceptance and self-compassion (Neff, 2003). It is thus plausible that meditation promotes psychological health by facilitating individuals’ insight into their self-feelings and leading to a more congruent self-evaluation. In the case of positive self-esteem, this may not be surprising. In fact, revealing positive self-evaluation may be seen as acknowledging one’s strengths. In contrast, expressing negative self-evaluation may seem maladaptive. It could be argued, however, that such expression is beneficial because it allows individuals to come to terms with their self-evaluation instead of suppressing or avoiding it. In this sense embracing one’s self-feelings may be the first step towards achieving a desired psychological state. In the present sample, as in most samples with college students, “low” self-esteem scores were in the moderate range. Consequently, expressing such evaluation may not be particularly distressing. If, however, individuals become concerned about harboring negative feelings towards the self, they may attempt to attain a more positive self-view by changing their behavior or thought patterns. In some cases, individuals may seek out counseling if they appraise themselves to have insufficient resources to deal with the problem. Thus, expressing one’s self-feelings in the course of meditation may be beneficial for one’s psychological well-being.
Conclusion

As suggested by James, each individual has an average tone of self-feeling. At times, it may be muffled by the chatter of the mind that rationalizes, justifies, and evaluates one’s experiences. The current work shows that meditation helps individuals listen to their tone of self-feeling, leading to a more congruent self-view.
LIST OF REFERENCES


APPENDIX A

NAME-LETTER TASK
Please tell us how much you like each letter or symbol that appear in the set below. Simply trust your intuitions, work quickly, and report your gut impressions. Using the following scale, place your rating of each symbol in the box containing that symbol:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dislike</td>
<td>Dislike</td>
<td>Dislike</td>
<td>Neither</td>
<td>Like</td>
<td>Like</td>
<td>Like</td>
</tr>
<tr>
<td></td>
<td>Very</td>
<td>Moderately</td>
<td>Slightly</td>
<td>Nor</td>
<td>Slightly</td>
<td>Moderately</td>
<td>Much</td>
</tr>
<tr>
<td></td>
<td>Much</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

A | B | C | D | E | F | G
H | I | J | K | L | M | N
O | P | Q | R | S | T | U
V | W | X | Y | Z |   |   |
APPENDIX B

ROSENBERG SELF-ESTEEM SCALE
On each line below, indicate the extent to which you agree or disagree with each statement using the scale below:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree Extremely</td>
<td>Disagree Moderately</td>
<td>Disagree Slightly</td>
<td>Neither Agree nor Disagree</td>
<td>Agree Slightly</td>
<td>Agree Moderately</td>
<td>Agree Extremely</td>
</tr>
</tbody>
</table>

1. On the whole, I am satisfied with myself. ___
2. At times, I think I am no good at all. ___
3. I feel that I have a number of good qualities. ___
4. I am able to do things as well as most other people. ___
5. I feel I do not have much to be proud of. ___
6. I certainly feel useless at times. ___
7. I feel that I’m a person of worth, at least on an equal plane with others. ___
8. I wish I could have more respect for myself. ___
9. All in all, I am inclined to feel that I am a failure. ___
10. I take a positive attitude toward myself. ___
APPENDIX C
CITY DESCRIPTIONS USED IN STUDY 4
SEATTLE, UNITED STATES

Curved around the shore of Elliott Bay, with Lake Washington behind and the snowy peak of Mount Rainier hovering faintly in the distance, SEATTLE has a magnificent setting. The insistently modern skyline of glass skyscrapers gleams across the bay, an emblem of three decades of aggressive urban renewal.

Seattle's beginnings were inauspiciously muddy. Flooded out of its first location on the flat little peninsula of Alki Point, in the 1850s the town shifted to what's now Pioneer Square, renaming itself after the Native American Chief Sealth (hence Seattle). This was soggy ground, and the small logging community built its houses on stilts. As the surrounding forest was gradually felled and the wood shipped out, Seattle grew slowly until the Klondike Gold Rush of 1897 put it firmly on the national map. World War I boosted shipbuilding, and the city was soon a large industrial center. Trade unions, based around the shipworkers, grew strong, and the Industrial Workers of the World, or "Wobblies," coordinated the US's first general strike here on February 6, 1919.

Since the beginning of the twentieth century, the Boeing airline corporation was crucial to the city's wellbeing, booming during World War II and employing one in five of Seattle's workforce by the 1960s. The prosperity that Boeing and more recent success stories such as Microsoft and internet shopping site Amazon.com have brought the city is obvious, reflected in a restored old center, a nationally acclaimed arts scene with vibrant movie and music industries, and a flood of coffee houses and excellent seafood restaurants. No longer overshadowed by the two big California metropolises, Seattle now regularly tops magazine surveys of desirable places to live, attracting migrants across the social and economic spectrum, which has led to both exponential growth and increasingly nightmarish traffic jams. As if to round out the turbulent decade, a February 2001 earthquake shook Seattle's foundations, and reminded its residents that they're just as prone to Pacific Rim tremors as their southern counterparts in the Golden State.

Despite the dizzying expansion, the city's more established neighborhoods remain distinctive, and Seattle has a pleasantly down-to-earth ambience. However, its new-found affluence jars uncomfortably with a visible street community of teenage runaways and homeless people – as well as a growing radical scene that splashed across the world's newspapers and TV screens with the WTO trade conference in 1999, an event that saw black-clad anarchists rioting amidst peaceful protesters in turtle outfits.
SAN SEBASTIAN, SPAIN

Sandwiched between imposing steep-sided headlands, the busy transport hub of SAN SEBASTIÁN was the first Spanish settlement on the island and has grown to be far and away La Gomera's largest town, though with a population of 5000 and a waterfront that runs to just 400 meters, it's hardly hectic or huge. Central to the functional little town's role as the island capital is its good sheltered harbor, home to many yachts and docking point for ferries from Tenerife. The harbor was also party to La Gomera's most famous hour, on September 6, 1492, when Christopher Columbus led three small caravels out of the bay on his first voyage west to the Americas.

Over the years the harbor has drawn the attentions of other seafarers, including English, French, Portuguese and Dutch pirates. Gomerans became well used to doggedly defending their patch, fleeing to caves in the hills with their possessions and fighting fiercely from there; as a 1599 Dutch raiding party found: "Canaria is by interpretation, dogs kind, for they ran as swift as dogs, and were as tyrannical and bloodthirsty as the ravening Wolfe". Losing over a hundred men in skirmishes further up the valley, the Dutch contented themselves with setting the town ablaze. English pirates had even less luck; Sir Francis Drake's attack of 1585 was successfully repulsed, as was Charles Windham's in 1743, as is celebrated in murals in the town's major church.

The harbor mostly turned itself to less dramatic events after this, as San Sebastián busied itself with the island's agricultural exports, first silk and rum and later cochineal dyes. But when the boom and bust cycles of these monocultures hit the island's economy, the port was host to tearful goodbyes as many of the islanders left for South America.

There is still something of a rural atmosphere in San Sebastián, and though most visitors tend to see it as a noisy transport hub, high-tailing to quieter parts of the island as soon as bus timetables allow, there are plenty of attractions here and these days the little place is emerging as a good base in itself. Away from the cliques of tourists in Valle Gran Rey it is a fine place to retire to after a day in the mountains, with plenty of bars and restaurants. If you only have a couple of days on the island and no car, you'd do well to base yourself here, from where all the island bus services radiate.
WINNIPEG, CANADA

With 667,000 inhabitants, WINNIPEG accounts for roughly two-thirds of the population of Manitoba, and lies at the geographic centre of the country, sandwiched between the American frontier to the south and the infertile Canadian Shield to the north and east. The city has been the gateway to the prairies since 1873, and became the transit point for much of the country's transcontinental traffic when the railroad arrived twelve years later. From the very beginning, Winnipeg was described as the city where "the West began", and its polyglot population, drawn from almost every country in Europe, was attracted by the promise of the fertile soils to the west. But this was no classless pioneer town: as early as the 1880s the city had developed a clear pattern of residential segregation, with leafy prosperous suburbs to the south, along the Assiniboine River, while to the north lay "Shanty Town". The long-term effects of this division have proved hard to erase, and today the dispossessed still gather round the cheap dorms just to the north of the business district, a sad rather than dangerous corner near the main intersection at Portage Avenue and Main Street. Winnipeg's skid row is only a tiny part of the downtown area, but its reputation has hampered recent attempts to reinvigorate the city centre as a whole: successive administrations in the last twenty years have refurbished warehouses and built walkways along the Red and Assiniboine rivers, but the new downtown apartment blocks remain hard to sell, and most people stick resolutely to the suburbs.

That apart, Winnipeg makes for an enjoyable stopover, and all of the main attractions are within easy walking distance of each other. The Manitoba Museum of Man and Nature has excellent displays on the history of the province and its various geographic areas; the Exchange District, recently declared a National Historic Site, features some good examples of Canada's early twentieth-century architecture; the Winnipeg Art Gallery has the world's largest collection of Inuit art; and, just across the Red River, the suburb of St Boniface has a delightful museum situated in the house and chapel of the Grey Nuns, who arrived here by canoe from Montréal in 1844. Winnipeg is also noted for the excellence and diversity of its restaurants, while its flourishing performing-arts scene features everything from ballet and classical music through to C&W and jazz.

Finally, the city makes a useful base for exploring the area's attractions, the most popular of which – chiefly Lower Fort Garry – are on the banks of the Red River as it twists its way north to Lake Winnipeg, 60km away. On the lake itself, Grand Beach Park has the province's finest stretches of sandy beach, just two-hours' drive from the city centre.
MANILA, PHILIPPINES

The capital of the Philippines, a grouping of twelve cities and five municipalities, is technically known as Metro Manila but usually referred to simply as MANILA, home to 9.5 million people. Manila will never be a serious tourist destination until the authorities deal with the twin evils of traffic and pollution; most tourists are in the capital because they have a day or two to kill either at the beginning or the end of a trip to the rest of the country. In its favor, Manila has friendly people, some excellent nightlife, a few historical sights that are worth the effort, plus some of the most cavernous shopping malls in Asia. At first sight, the city may seem clamorous, unkempt and rough around the edges, but what it lacks in architectural sophistication it makes up for with an accessible chaotic charm. The way to enjoy it is to step into the fray and go with the flow, which is exactly what Manileños have learned to do.

Manila started life as a tiny settlement around the banks of the Pasig River. The name comes from the words may ("there is") and nilad (a type of plant that grew near the Pasig). With Spanish colonization, it grew into an important port. King Philip II of Spain called Manila Insigne y Siempre Leal Ciudad (Distinguished and Ever Loyal City). Images of the city in the eighteenth century show grand merchants' houses and schooners moored in the Pasig. The area around Binondo, later to become Chinatown, was alive with mercantile activity. Nineteenth-century travelers arriving in Manila were enchanted. Manila's population was 150,000 and there had been one murder in five years.

But it was a doomed city. At 7pm on June 3, 1863, an earthquake struck and Manila crumbled, burying hundreds in its ruins. The new Manila that grew in its stead was thoroughly modern, with streetcars, steam trains and American-style public architecture. This was one of the most elegant and cosmopolitan cities in the Orient, but when the smoke cleared at the end of Japanese occupation in March 1945, it was once again in ruins, having undergone relentless shelling from American howitzers and been set alight by retreating Japanese troops. The Battle of Manila lasted 29 days and claimed 100,000 civilian lives. Rebuilding was slow and plagued by corruption and government inertia. As a consequence, the city that greets visitors today is one of emotional counterpoints, with areas of extreme poverty encroaching on frothy mansions, glass skyscrapers and designer boutiques.
VERONA, ITALY

With its wealth of Roman sites and streets of pink-hued medieval buildings, the easy-going city of VERONA has more in the way of sights than any other place in the Veneto except Venice itself. Unlike Venice, though, it's not a city overwhelmed by the tourist industry, important though that is to the local economy. Verona is the largest city of the mainland Veneto, its economic success largely due to its position at the crossing of the major routes from Germany and Austria to central Italy and from the west to Venice and Trieste.

Verona's initial development as a Roman settlement was similarly due to its straddling the main east–west and north–south lines of communication. A period of decline in the wake of the disintegration of the Roman Empire was followed by revival under the Ostrogoths, who in turn were succeeded by the Franks: Charlemagne's son, Pepin, ruled his kingdom from here. By the twelfth century Verona had become a city-state, and in the following century approached the zenith of its independent existence with the rise of the Scaligers. Ruthless in the exercise of power, the Scaligers were at the same time energetic patrons of the arts, and many of Verona's finest buildings date from their rule.

With the fall of their dynasty a time of upheaval ensued, Gian Galeazzo Visconti of Milan emerging in control of the city. Absorption into the Venetian Empire came in 1405, and Verona was governed from Venice until the arrival of Napoleon. Verona's history then shadowed that of Venice: a prolonged interlude of Austrian rule, brought to an end by the Unification of Italy in 1866.
APPENDIX D

POSITIVE AND NEGATIVE PRIMES USED IN STUDY 4
Negative primes
War
Cancer
Death
Bombs
Hell
Funeral
Cockroach
Virus

Positive primes
Music
Friends
Party
Friday
Baby
Flowers
Sunshine
Stereo
APPENDIX E

AFFECT-AROUSAL SCALE USED IN STUDY 4
Please rate yourself according to how you feel at the moment, using the following scales.

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