

## ABSTRACT

Title of Document: ATTACHMENT SECURITY, MINDFULNESS,  
PSYCHOTHERAPY: TESTING A MEDIATIONAL MODEL

Yueher Ma, Doctor of Philosophy, 2008

Directed by: Dr. Charles J. Gelso, Department of Psychology

Previous research shows theoretical and/or empirical support for the relation between attachment security and adaptive functioning, between mindfulness and adaptive functioning, as well as between attachment security and mindfulness. Besides, mindfulness is considered to be theoretically similar to several constructs that has been identified as significant mediators in the relation between attachment security and positive life adaptations (e.g., reflective functioning, affect regulation strategies). The present study mainly examined whether mindfulness mediated the relation between attachment security and adaptive functioning in a clinical sample that consisted of students from a large mid-Atlantic university ( $N = 90$ ,  $M_{\text{age}} = 20.96$ ,  $SD = 3.15$ ). According to the participants' retrospective pre-therapy and current post-therapy self-report ratings, significant associations were discovered between attachment security and adaptive functioning, between mindfulness and adaptive functioning, as well as between attachment security and mindfulness before and after therapy. Also, the results supported the mediating role of mindfulness in the link between attachment security and adaptive functioning both prior and subsequent to therapy. Limitations of this study, directions for future research, and implications for clinical practice were discussed.

ATTACHMENT SECURITY, MINDFULNESS, AND PSYCHOTHERAPY:  
TESTING A MEDIATIONAL MODEL

By

Yueher Ma

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Advisory Committee:  
Professor Charles J. Gelso, Chair  
Professor Mary Ann Hoffman  
Associate Professor Carl W. Lejuez  
Assistant Professor Christa Schmidt  
Assistant Professor Kathy P. Zamostny

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## Dedication

*To my father, 馬代世, and my sister, 馬月琴,  
Two of the most important people in my life.*

&

*To the “Here and Now.”*

## Acknowledgements

I would like to express my deepest gratitude to my advisor, Dr. Charles J. Gelso, who saw me through the challenges in completing this project and shared my joy as well as pain along the way. I would also like to thank Drs. Mary Ann Hoffman, Carl Lejuez, Kathy Zamostny, Ty Tashiro, David Petersen, Christa Schmidt, and Hung-bin Sheu for their timely support and thoughtful comments in the process.

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## Chapter 1 – Introduction

Attachment theory is one of the important areas of inquiry that have contributed a great deal to our understanding of normative as well as pathological human development and personality (Lopez, 1995; Lopez & Brennan, 2000). Attachment starts as part of the biologically adaptive system that ensures species survival. Yet, its influences on human life extend far beyond the behavioral and also include the neurological, cognitive, emotional, and interpersonal arenas (Bowlby, 1969/1982, 1973, 1979, 1980, 1988; Siegel, 1999, 2007). Paralleling the overt behavioral interacting patterns in the caregiver-child dyads are children's covert internal working models (IWMs) of self and others (Bowlby, 1969/1982; Main, Kaplan, & Cassidy, 1985). These IWMs, once formed, often become the relational templates that people utilize, consciously or unconsciously, to navigate their interpersonal worlds across the life span. Though not impossible to change, these IWMs tend to become gradually cemented through repeated confirmatory life experiences and are not easy to modify, let alone replace (Bowlby, 1979, 1988; Main et al., 1985).

An abundance of prior research has established a strong link between secure attachment in early childhood and positive adaptations later in life, as well as a substantial correlation between insecure attachment and maladjustments (e.g., Erickson, Sroufe, & Egeland, 1985; Grossmann & Grossmann, 1991; Grossmann et al., 1993; Zimmermann, Maier, Winter, & Grossmann, 2001). In other words, one's early attachment organization is often regarded as a strong predictor for one's later functioning in life. Secure adult attachment strategies were also shown to be correlated with optimal human functioning in terms of cognitive processes (e.g., Feeney, 1998; Hesse, 1999;

Mikulincer & Arad, 1999), affect self-regulation (e.g., Brennan & Shaver, 1995; Lopez et al., 1997), and relational behaviors (e.g., Feeney, 1995; Tidwell, Reis, & Shaver, 1996). Furthermore, one's attachment orientation is believed to have a great impact on therapy outcome. In three empirical studies (Fonagy et al., 1996; Meyer, Pilkonis, Proietti, Heape, & Egan, 2001; Mosheim et al., 2000), patients with secure attachment orientation, assessed at the beginning of treatment, were shown to evidence higher levels of functioning at the end of therapy compared to those with insecure attachment organization. This amalgam of empirical evidence seems to suggest that one's attachment patterns essentially predetermine one's actual and potential adjustments in life.

For those with secure attachment orientation, this surely is good news. For those with insecure attachment, however, this sadly sounds like nails in their coffins. But are the insecurely-attached people doomed? Based on a plethora of resilience research (e.g., Luthar, 1991; Masten & Coatsworth, 1998; Richardson & Waite, 2002; Werner & Smith, 1982), the answer is clearly "no." There are many people who have been exposed to great risks in their lives, yet still manage to not just survive but thrive under hazardous circumstances (Keyes & Haidt, 2003). Some of these individuals have been labeled "earned-secures," individuals who have risen above pathology-inducing parenting in childhood and broken away from the vicious cycle of intergenerational transmission of attachment insecurity (Pearson, Cohn, Cowan, & Cowan, 1994; Roisman, Padrón, Sroufe, & Egeland, 2002). These individuals serve as living proof that the fates of the insecurely attached people are not, and certainly do not have to be, sealed by their troubled pasts.

But what exactly is it about secure attachment that contributes to optimal human functioning? And how do those earned-secure individuals manage to overcome their

challenging childhood experiences and maintain resiliency? Questions like these are often left unanswered by studies that focus on the simple relations between attachment security and positive life adaptations. In order to capture the complexity that may be hidden by such simple direct links, some researchers (e.g., Fonagy et al., 1996, 1995/2000; Mallinckrodt & Wei, 2005; Wei et al., 2005) have gradually shifted their attention to investigating different underlying change mechanisms, or mediators. Identification of mediators in the relation between attachment security and psychological health not only heralds important theoretical and empirical advancements, but also has significant clinical implications (Frazier, Tix, & Barron, 2004). Since it is relatively difficult to modify one's attachment organization, especially in short-term therapy, targeting those "more modifiable" variables for counseling interventions seems like a viable alternative that may bring about more fruitful therapeutic results.

In recent years, a number of mediators have been identified in the link between secure attachment and positive life adaptations. Those pertinent to the current study include, but are not limited to, the following: reflective functioning (Fonagy et al., 1991, 1994, 1996, 2000; Slade, 2002), reflective capacity/observing ego (Ma, 2006), emotional awareness (Mallinckrodt & Wei, 2005); affect regulation strategies (i.e., emotional reactivity/cutoff, Wei et al., 2005). These mediators imply that attachment security seems to exert its influence on optimal human functioning through facilitation and enhancement of cognitive as well as affective balances in individuals, both of which happen to be the important functions of an ancient but nascent construct called "mindfulness" (Wallace & Shapiro, 2006). Therefore, the author proposed in the present study that mindfulness

would serve as a mediator in the link between attachment security and psychological well-being.

At this point, the readers may wonder what mindfulness is. Simply put, mindfulness means awareness of present-moment experience with acceptance and nonjudgment (Cardaciotto, 2005; Germer, 2005). The task of operationalizing and measuring the construct of mindfulness, however, has been quite a challenge for several reasons. For one, since mindfulness is deeply rooted in meditation practice, researchers often find it difficult to sort out whether to consider mindfulness as a technique, method, or skill (Bishop et al., 2004; Linehan, 1993); a state or trait (e.g., Brown & Ryan, 2004); a process or outcome (Baer et al., 2006; Cardaciotto, 2005). For another, given the experiential nature of this nebulous construct, researchers often find themselves stuck in their attempts to describe “the indescribable” (Gunaratana, 2002). Despite lack of consensus on the operationalizations of mindfulness, Baer and her colleagues (2006) recently managed to pool all the items from five of the existing mindfulness instruments and developed the most up-to-date mindfulness measure. In this measure, five latent facets of the mindfulness construct were identified. Hopefully, this latest measure may help move along research on the construct of mindfulness.

Mindfulness research is of great potential value not only due to its relations with psychological health, but also due to its potential to connect different schools of thought in psychotherapy (Germer, Siegel, & Fulton, 2005). Mindfulness is similar to the concept of consciousness-raising, one of the core change processes that Prochaska and Norcross (2006) identified in their transtheoretical analysis of diverse systems of psychotherapy. Also, mindfulness resembles another core change process called “self observation”

(Beitman & Soth, 2006), which is believed to be an effective common factor across different therapeutic approaches. Mindfulness, too, can be viewed as an attempt to balance the experiencing and observing ego in psychodynamic terms; as an experiential approach to life according to humanistic psychotherapy; as a way to help individuals establish healthy relationships with their thoughts and feelings and engage in adaptive behaviors, as proposed by cognitive-behavioral therapy. Germer (2005) also proposed that mindfulness has the potential to unite fields other than psychotherapy, for example, neuroscience, health psychology, positive psychology, etc. In short, mindfulness appears to be a common ground where Eastern tradition and Western psychology, as well as many different fields, may converge.

Now back to the author's earlier proposition that mindfulness may function as a mediator in the link between attachment security and optimal human functioning. Previous research shows that mothers' reflective functioning acted as a mediator in the relation between mothers' attachment security and their ability to stop the intergenerational transmission of insecurity to their infants (Fonagy et al., 2000; Slade, 2002). Also, emotional awareness and affect regulation strategies (i.e., emotional reactivity and cutoff) were found to serve as significant mediators in the link between attachment security and psychological distress in college students (Mallinckrodt & Wei, 2005; Wei et al., 2005). Finally, reflective capacity, as assessed by a modified version of the observing ego functions scale, was shown to function as a significant mediator in the relation between attachment security and personal resilience in college students (Ma, 2006). Since mindfulness is, in some ways, theoretically similar to both reflective functioning (Karlsson & Kermott, 2006) as well as reflective capacity/observing ego and

also has been shown to be related to affect regulation (Baer et al., 2006), the author proposed that mindfulness would partially mediate the relation between attachment security and optimal human functioning.

As mentioned above, prior research shows that constructs that are theoretically similar to mindfulness were found to mediate the relation between attachment security and adaptive functioning in nonclinical samples. Given the empirical support for the links between attachment security and therapy outcome (e.g., Fonagy et al., 1996) as well as between mindfulness and therapy outcome (e.g., Kabat-Zinn, 1990) and also the theoretical support for the link between attachment security and mindfulness (e.g., Siegel, 2007), in this current study, the author was interested in exploring whether mindfulness would play a mediating role in the link between attachment security and adaptive functioning in the therapeutic context. It was hoped that the present study may benefit research and practice in the field of psychotherapy in several aspects. First, it would help advance research on the construct of mindfulness and provide evidence for whether mindfulness played an important role in the process and outcome of psychotherapy. Second, this study would help build the existing research on identification of mediators in the link between attachment security and optimal human functioning if mindfulness is shown to act as a change mechanism underlying such a link. Third, the results of this study may inform clinical work. Research shows that the insecurely attached individuals comprised about 80-90% of the clinical samples (e.g., Fonagy, 1995/2000; van Ijzendoorn & Bakermans-Kranenburg, 1996). However, one's attachment organization is more difficult to change (e.g., Bowlby, 1969/1982) as compared to one's levels of mindfulness (e.g., Brown & Ryan, 2003; Baer et al., 2004; Cardaciotto, 2005), especially

in brief therapy. If mindfulness functions as a significant mediator between attachment security and optimal human functioning, clinicians may improve clients' functioning and therapy outcome through raising clients' levels of mindfulness. Finally, as a staunch believer in integrative psychotherapy, the author hoped, by incorporating this Eastern concept of mindfulness in Western psychotherapy, this present study would add to the movement toward psychotherapy integration.



## Chapter 2 – Literature Review

Perhaps the most difficult, yet intriguing part of research in social sciences is the attempt to make abstract constructs concrete through operationalization and measurement. In each process of concretization of the abstract constructs, researchers seem to move farther away from the nebulous abstractness inherent in these constructs. Nevertheless, it is also in each process of operationalization and measurement that researchers can come to understand a little more of the previously understood abstractness underlying these constructs and, little by little, approximate the truth, if there is any, in those constructs. In the present chapter, relevant literature will be reviewed to demonstrate where we stand in the approximation process of the following two abstract constructs: attachment and mindfulness and where we may go from there. Emphasis will be placed on the development of theoretical conceptualizations as well as measurement issues of each construct pertaining to this present study.

### Attachment

In this section, an overview of attachment will first be presented, beginning with Bowlby's theoretical formulation, followed by detailed discussions regarding infant attachment behavior, differences in attachment organization, and the concept and significance of internal working models of self/other (IWMs). Next, discussions will center on theoretical conceptualization and measurement issues surrounding adult attachment research as well as the rationale for choosing to investigate romantic relationships in adult attachment in this current study. Finally, the relations between attachment security and optimal life functioning will be provided.

#### *Overview of Attachment Theory*

John Bowlby (1969/1982, 1973, 1980) drew on diverse existing theories such as ethology, control systems theory, evolutionary theory, information processing theory, Piaget's theory of cognitive development, and psychoanalytic theory, and put forth his attachment theory as an alternative model to explain both normative and pathological human personality development. According to Bowlby, attachment behavior starts as biologically-based behavior infants use to seek and keep proximity to their caregivers for protection and survival, especially in times of distress. He believed children's interactions with their primary caregivers in early years of life not only influence their overt attachment behavioral strategies, but also impact their covert internal representations of themselves (as loveable/unloveable) and of their attachment figures or the world in general (as trustworthy/untrustworthy). He further proposed these internal working models of self/other function as templates for how individuals navigate their interpersonal relationships with other people later in life. And once shaped, these relational templates, though not set in stone for life, tend to appear impervious to questioning, modification, or replacement.

*Attachment behavior.* Adopting Bowlby's theoretical framework, Ainsworth and her colleagues (1978) set out to observe infant attachment behavior at home and use the Strange Situation procedure to study parent-child interactions in the laboratory. Their study provided compelling empirical support for Bowlby's theory of infants' innate tendency to seek and maintain proximity to their attachment figures for protection, particularly in times of stress. Also, their seminal work unexpectedly shed light on the different patterns of attachment behavioral strategies infants displayed with their primary caregivers. These researchers identified three major attachment behavioral patterns of

infants. Group A (later labeled “anxious-avoidant”) infants tended not to show interest in the presence or absence of their mothers while at play. They displayed little distress at separation from mothers, inhibited play behavior in mothers’ absence and might ignore or even avoid mothers upon reunion. These infants were said to employ “minimizing” behavioral strategies to keep proximity to their attachment figures. Group B (later termed “secure”) babies tended to be very active in play in mothers’ presence and often checked in with mothers while at play. They showed distress and reduced play behavior at separation from mothers, but were easily comforted by mothers upon reunion and quickly resumed play in mothers’ presence. Group C (later called “anxious-ambivalent”) infants’ tendency to cling to mothers intensified after separation from mothers. They were inhibited at play, not easily comforted by mothers upon reunion, and became hypervigilant regarding mothers’ whereabouts after reunion. In contrast to Group A, Group C babies were said to adopt “maximizing” behavioral strategies to achieve proximity to their attachment figures. After reviewing the unclassified babies in Ainsworth’s study, Main and Solomon (1990) added a fourth type, the Group D (“disorganized/disoriented”) babies. These infants often displayed unorganized and contradictory attachment behavioral strategies in maintaining proximity to their mothers upon reunion. They often exhibited both yearning and frightened behavior in seeking and keeping contact with their mothers.

Ainsworth and colleagues (1978) also identified the corresponding maternal caregiving behavioral patterning that led to the different infant attachment behavior patterns. Group B (secure) infants tended to have mothers who were sensitive and responsive to their communication signals. For these babies, their mothers serve as a

secure base from which they can freely and confidently explore the world and also as a safe haven to which they can return for care and comfort in times of distress. The insecurity of attachment behavior in infants usually resulted from the insensitive maternal responsiveness to their signals and communication. Mothers of Group A (anxious-avoidant) infants either rejected their babies' attachment needs or responded to them in an aversive way, which made these infants automatically turn off attachment-eliciting cues in times of stress. On the other hand, mothers of Group C (anxious-ambivalent) infants usually responded to their babies' needs in such an inconsistent way that these babies tended to react toward even the mildly stressful situations with hypervigilance and constantly demanded their mothers' attention and care. Main and Solomon (1990) found out that the Group D (disorganized/disoriented) infants tended to have mothers who were both frightened and frightening to their babies. This might explain the contradictory disorganized behavioral strategies such infants adopted in times of distress to deal with their mothers who were supposed to be the safe haven they ran to and yet, at the same time, who happened to be the source of alarm they had to run away from. These empirical data showed that differences in infant attachment behavior organization were closely tied to differences in maternal behavioral sensitivity.

*Internal working models of self/other (IWMs).* Bowlby (1969/1982, 1973, 1980) proposed that one's IWMs are first shaped by the behavior, emotion, and cognition arising from one's interactions with attachment figures early in life. These initial relational templates, in turn, become consolidated or even cemented by the emotion, cognition, and behavior in one's interactions with significant others later in life. Bowlby stated that "no form of behavior is accompanied by stronger feelings than is attachment

behavior” (1969/1982, p. 209). An individual experiences a wide array of intense feelings regarding attachment relationships: feelings of security and joy when attachment figures are available, feelings of anxiety and anger when separated from attachment figures, and feelings of sorrow and depression at the loss of attachment figures. Also, he argued that one’s IWMs affect what information one attends to, what memories one keeps, what attributions and interpretations one makes about life events. The IWMs can be compared to one’s mental “schemata” of attachment, the filters through which one screens incoming information and the lenses with which one sees the world. Once formed, one’s IWMs mostly operate on the unconscious level and have the tendency to self perpetuate through the repeated reinforcement of one’s emotion, cognition, and behavior in one’s interpersonal relating processes. When certain aspects of these IWMs become maladaptive at any given point in life, unless those aspects are brought into one’s awareness and under careful examination, modifications of the IWMs may seem extremely difficult or even impossible.

Drawing upon Bowlby’s views (1969/1982, 1973, 1980) of internal working models of self/other (IWMs), Main, Kaplan, and Cassidy (1985) conceptualized one’s attachment organization as being under great influence of one’s IWMs and operationalized the IWMs as a set of conscious and unconscious rules that affect one’s emotion, cognition, and behavior. Main et al. conducted a study to assess such mental representations of attachment through discourse fluency and language coherence in older children and adults. They hypothesized that the attachment behavioral strategies found in infants and younger children could be regarded as an outward manifestation of their mental representations of attachment. This hypothesis was confirmed by one of their

research results indicating that six-year-old children's verbal attachment organization was significantly correlated with their behavioral attachment orientation previously assessed in infancy. Moreover, these researchers also discovered the significant association between adult and child attachment in terms of their IWMs, which set the stage for later studies on intergenerational transmission of attachment organization. The seminal work of Main and her collaborators was deemed as a watershed in the history of attachment research because, prior to their study, most of attachment research was focused exclusively on the behavioral aspect of attachment. These researchers departed from the predominant form of studies during that time and blazed a trail for research on internal representations of attachment organization.

While Ainsworth and others (1978) believed that the behavioral aspect of maternal sensitivity played a crucial role in infant attachment orientation, Main (1991) proposed that the mental representational aspect of maternal sensitivity, especially metacognitive control in parents, might be an even stronger predictor of infant attachment security. Main's notion of maternal metacognition inspired other researchers (e.g., Fonagy et al., 1991, 1994, 1995/2000, 1996; Slade, 2002) who conducted a series of relevant studies on the moderating and mediating effects of parental reflective functioning in the relation between adult and child attachment. In short, this line of research inquiries initiated by Main et al.' 1985 influential work provided valuable empirical evidence for Bowlby's theoretical construct of the IWMs, advanced attachment research on intergenerational transmission of attachment organization, and also helped push attachment research beyond infancy and childhood into adolescence and adulthood.

#### *Adult Attachment*

Bowlby theorized attachment as a vital component of human experience “from the cradle to the grave” (Bowlby, 1969/1982, p. 208) and wrote extensively on the subject of attachment in adulthood (Bowlby, 1969/1982, 1979, 1980, 1988). Ainsworth (1985, 1989) also called for research attention to attachment beyond infancy and across the life span. Nonetheless, it was not until the mid-1980s that research on adult attachment began to flourish and gradually take the center stage in attachment-related research (Simpson & Rholes, 1998). Due to the complexity involved in the theoretical conceptualization and measurement issues of attachment in adults, research on adult attachment has always been laden with challenges and difficulties.

*Theoretical conceptualization.* One of the challenges facing adult attachment researchers involves the complexity of multiple attachment relationships in adulthood. Unlike child attachment which is composed mainly of parent-child relationships, adult attachment is the result of the dynamic interplay of diverse significant attachment relationships across the life span, including individuals’ relationships with their parents in childhood, peer relationships in adolescence, romantic relationships in adulthood, and relationships with their own children in adulthood (Ainsworth, 1985, 1989; Shaver & Mikulincer, 2002). While adult attachment studies that focus on any specific attachment relationships seem to miss the holistic picture of what adult attachment constitutes, studies that can capture the complexities involving all of these relationships in adulthood are yet to be designed. Therefore, before deciding on how to assess adult attachment in their studies, researchers need first to deliberate on which adult attachment relationships they plan to assess in their studies.

Another challenge comes from how to accurately assess individuals' internal working models of self and other (IWMs). Attachment in adulthood, unlike that in infancy or childhood, usually does not lend itself to direct behavioral observation. In one naturalistic study by Fraley and Shaver (1998), the researchers did attempt direct observation of couples' separation behaviors at airports. However, in most studies on adult attachment, given the covert and abstract nature of the internal representations, researchers usually chose to measure adults' IWMs indirectly through participants' narratives or perceptions regarding their attachment relationships using interview or self-report measures.

*Measurement issues.* Perhaps the greatest challenge lies in the measurement issues regarding adult attachment research (Jacobvitz, Curran, & Moller, 2002). In selecting an appropriate instrument for their studies, attachment researchers are first faced with an important question: Which types of measures can best capture adult attachment, interviews or self-reports? While developmental psychologists argue strongly for the orthodoxy of interviews, social psychologists advocate just as strongly for the validity of self-report measures. Both approaches have their merits and deficits. For example, the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996) is purported to be capable of tapping into interviewees' unconscious and also of measuring interviewees' attachment organization with their attachment systems being fully activated (Simpson & Rholes, 1998). The AAI, however, requires extensive training for administration, time-consuming work in scoring, and the ratings are susceptible to the variance of raters' subjective judgment or bias (Simpson & Rholes, 1998; Jacobvitz, Curran, & Moller, 2002). In comparison, the self report measures, such as the Experiences in Close Relationships



Scale (ECRS; Brennan, Clark, & Shaver, 1998), are much easier to administer and score, yet, more susceptible to self-report bias or deception (Simpson & Rholes, 1998; Jacobvitz, Curran, & Moller, 2002).

Although interviews and self-report measures both suffer from the tendency to yield oversimplified categorization of complex individuals (Crowell, Fraley, & Shaver, 1999; Hesse, 1999; Jacobvitz, Curran, & Moller, 2002), self-report measures have evolved through many processes of modification and refinement to deal with this problem (Crowell, Fraley, & Shaver, 1999; Simpson & Rholes, 1998). Take romantic attachment measures for example. Being the first to create a self-report measure for adult attachment and to conceptualize romantic love as an attachment process, Hazan and Shaver (1987) translated Ainsworth's three infant attachment patterns (i.e., avoidant, secure, and ambivalent) into the three-paragraph forced-choice categorical Attachment Style Questionnaire (ASQ). In the ASQ, participants are asked to choose one out of the following three paragraphs that best captures how they experience romantic relationships: (a) Avoidant: "I am somewhat uncomfortable being close to others. I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close and often others want me to be more intimate than I feel comfortable being." (b) Secure: "I find it relatively easy to get close to others and am comfortable depending on them and having them depend on me. I don't worry about being abandoned or about someone getting too close to me." (c) Ambivalent: "I find that others are reluctant to get as close as I would like. I often worry that my partner doesn't really love me or won't want to stay with me. I want to get very close to my partner, and this sometimes scares people away." Later, other researchers tried to modify the ASQ by

asking participants to respond to each paragraph using continuous rating scales (e.g., Levy & Davis, 1988) and/or by breaking these multi-sentence paragraphs into separate items (e.g., Simpson, Rholes, & Philips, 1996).

Expanding on Bowlby's concept of the internal working models of self and other, Bartholomew and Horowitz (1991) proposed a new two-dimensional (i.e., positive and negative models of self, or the "dependency" dimension, versus positive and negative models of other, or the "avoidance" dimension) four categorical model (i.e., secure, preoccupied, dismissing, and fearful) of adult attachment styles. The "secure" type in this new model corresponds conceptually to the secure group in Main et al.'s AAI categorization as well as Hazan and Shaver's ASQ, the "preoccupied" to the ambivalent group, and the "dismissing" and "fearful" to the avoidant group. Using these four categories, Bartholomew and Horowitz (1991) later refined the ASQ and added a fourth paragraph in their categorical Relationship Questionnaire (RQ). In 1994, Griffin and Bartholomew combined the content from the ASQ as well as the RQ and developed a 30-item inventory, called the Relationship Styles Questionnaire (RSQ). In the RSQ, individuals are not only assigned each of the four attachment patterns but also scaled on two dimensions, model of self and model of other (Crowell, Fraley, & Shaver, 1999). The most recent refinement of the self-report romantic measures was attempted by Brennan and colleagues in 1998. Following the two-dimensional four-category conceptual framework of the RSQ, Brennan et al. (1998) screened and factor analyzed the items in all the existing self-report attachment measures and created the Experiences in Close Relationships Scale (ECRS). The two dimensions in the ECRS, anxiety and avoidance, were based on the two dimensions underlying Ainsworth's infant attachment typology.

In sum, from single-item to multi-item, from three to four categories, from discrete to continuous scale, from one category to four categories for each individual, from categories to dimensions, researchers keep refining existing self-report measures of romantic relationships to better capture the construct of adult romantic attachment (Crowell, Fraley, & Shaver, 1999). With each attempt researchers make to refine the operationalization and measurement of adult romantic attachment, we are getting one step closer in approximating this construct.

*Rationale for studying adult romantic attachment.* According to Bowlby's (1969/1982) concept of "monotropy," although children usually become attached to more than one person, these attachment relationships are not of equal importance to them. Children are biologically biased to form a hierarchy of attachment figures, so that, in times of possible danger, they can quickly run to one particular attachment figure on such hierarchy to secure immediate care and protection. Not only do individuals' attachment relationships expand and change across the life span, but their attachment hierarchies shift as well. While, in childhood, the primary caregivers are usually placed on top of such hierarchies, in adulthood, such particular attachment figures often tend to be the romantic partners (Ainsworth, 1985, 1989; Hazan & Shaver, 1987). Therefore, the focus of the present study will be placed on romantic relationships in adult attachment. The ECRS will be employed, since this is currently the most refined self-report instrument of romantic attachment, to assess adult attachment in the present study.

#### *Adult Attachment and Optimal Human Functioning*

*Attachment security and adaptive functioning.* In Lopez and Brennan's (2000) comprehensive review of adult attachment and optimal human functioning, they

presented empirical evidence that people with secure attachment tended to function better than those with insecure attachment in terms of cognitive processes, affect regulation, and relational behaviors. First, compared to people with insecure attachment, people with secure attachment appeared to demonstrate more flexible and benign cognitive processes. For example, they made more positive and accurate attributions for partner behaviors (Feeney, 1998); had better memories of early childhood events (Hesse, 1999); appeared more flexible in information processing (Mikulincer & Arad, 1999), etc. Second, people with secure attachment appeared to demonstrate better coping strategies in dealing with stress and negative emotions (e.g., Brennan & Shaver, 1995); better abilities to distinguish different emotions (e.g., Lopez et al., 1997); better capacity to appropriately express and manage negative emotions (Sharpsteen & Kirkpatrick, 1997), etc. Third, people with secure attachment are better able to balance their dialectic needs for self definition and connection and form secure and interdependent relationships with others (e.g., Feeney, 1995; Tidwell, Reis, & Shaver, 1996).

*Attachment security and therapy outcome.* In clinical situations, patients with secure attachment orientation, assessed at the beginning of treatment, were shown to evidence higher levels of functioning at the end of therapy compared to those with insecure attachment organization. Fonagy and colleagues (1996) discovered that among the 82 patients who were diagnosed with mood disorders and severe personality disorders and underwent psychoanalytic therapy, the securely attached patients functioned much better at discharge than the insecurely attached patients. Meyer and others (2001) found that among the 149 patients at a psychiatric hospital, patients' secure attachment style acted as a predictor of better therapy outcome. In Mosheim and colleagues' (2000) study,

among 65 patients with eating disorders, mood disorders, or anxiety disorders, patients with the secure attachment style tended to benefit more from treatment than those with insecure attachment styles. In these three empirical studies, the securely attached patients were shown to function best at the end of therapy.

### Mindfulness

In this section, an overview of mindfulness will first be presented, beginning with historical roots of this construct, followed by discussions regarding how it has been introduced into the western psychology and finally incorporated in the psychotherapy. Next, discussions will center on theoretical conceptualization and measurement issues surrounding recent mindfulness research. Finally, the relations between mindfulness and optimal human functioning as well as attachment security will be discussed.

#### *Overview of Mindfulness*

*Historical roots in Buddhism.* The notion of mindfulness, usually embedded in the meditation practice, originated from ancient Eastern spiritual movements of Buddhism. Buddhism was founded in northern India by Siddharta Gautama Buddha about 2,500 years ago as a way to cope with the inevitable human sufferings in life (Kurmar, 2002). As Buddhism began to spread to other areas in Asia, it split into two sects: Theravada and Mahayana Buddhism, the latter of which spread more rapidly and became popular in such countries as China, Korea, and Japan owing to its more liberal interpretation of the original teachings. Zen Buddhism, a sect of Mahayana Buddhism, was first introduced to Japan in the 9<sup>th</sup> century and later became popular there around 1200 A.D. The Japanese word “Zen” can be roughly translated into “meditation.” The concept of mindfulness was

introduced to Western psychology and psychotherapy mainly through Japanese Zen Meditation during the mid-twentieth century (Cardaciotto, 2005).

*Introduction to Western psychology.* During the 1960s and 1970s, meditation first caught the research attention in the field of experimental psychology and was found to produce an altered state of consciousness (e.g., Tart, 1972), which could be objectively measured through electroencephalogram (EEG). Most Zen teachers, however, considered meditation as a “consciousness-raising” process (Smith, 1986). Two types of meditative states were detected by experimental psychologists at that time: one associated with concentrative approaches (Anand et al., 1961); the other with mindfulness approaches (Kasamatsu & Hirai, 1966). The experimental psychologists provided physiological evidence of the effect of mindfulness and helped separate this construct from its historical Buddhist roots in the field of psychology (Cardaciotto, 2005). Later, mindfulness found its way into the field of social psychology. Langer (1989, 1992) defined mindfulness as one’s propensity to actively draw novel distinctions, which increases one’s awareness of different perspectives and alternative meanings of the same object or event. Also, she extended the applications of this construct to different fields, such as health, business, and education (Langer & Moldoveanu, 2000).

*Incorporation into psychotherapy.* Buddhist psychology or meditation practice was first incorporated in the psychoanalytic world. Many psychoanalytic therapists included or discussed concepts of Buddhist psychology in their writings (e.g., Jung, 1939/1992; Horney, 1945). However, two opposing views were held regarding the effect of meditation by the psychoanalytic therapists (Bohart, 1991). While some worried that meditation might foster regression and dissociation and ignore the unconscious (e.g.,

Alexander, 1931), others believed in its transformative power in promoting psychological health (e.g., Fromm, Suzuki, & DeMartino, 1960; Epstein, 1995). During the 1960s, many practicing therapists started to meditate to improve their own lives and also try to connect meditation practice with their clinical work (Germer, 2005). Seeing the burgeoning research studies on meditation during the 1960s and 1970s, the American Psychiatric Association pointed out the need for research efforts to investigate the clinical effectiveness of meditation in 1977. Most journal articles at that time were focused on concentration meditation. But in the last ten years, research attention has shifted to mindfulness meditation (Smith, 2004). Currently, research evidence of the mindfulness-based therapeutic approaches abounds. Mindfulness-based treatments are even called the “third wave” of evidence-based therapy. Mindfulness is either embedded in the meditation training in the treatment programs (e.g., Mindfulness-Based Stress Reduction programs, Kabat-Zinn, 1990; Mindfulness-Based Cognitive Therapy, Teasdale, Segal, & Williams, 1995) or incorporated as a key component in the treatment protocols (e.g., Dialectical Behavior Therapy; Linehan, 1993; Acceptance and Commitment Therapy; Hayes, Strosahl, & Wilson, 1999). In the book *Mindfulness and Psychotherapy*, Germer (2005) advocated for integration of mindfulness in the therapeutic process to help shape a more unified model of psychotherapy.

*Theoretical conceptualization.* What is mindfulness? To answer this seemingly simple question, several questions regarding its theoretical conceptualization need to be addressed. First, is mindfulness a method, technique, or a skill that can be taught and learned? Mindfulness has been traditionally embedded in meditation practice and used interchangeably with the phrase “mindfulness meditation,” which often confuses the

construct of mindfulness with the practice of mindfulness meditation. A clear distinction needs to be drawn between the two terms in order for us to better able to conceptualize, operationalize, and measure the construct of mindfulness. Mindfulness meditation is a practice in which individuals regularly set time to practice being mindful—attending to one’s breath and immediate inner experiences, such as thoughts, feelings, bodily sensations with an attitude of acceptance (Robins, 2002). Such practice is believed to be able to help individuals increase their psychological states called mindfulness (Goldstein, 2002). Also, while individuals’ levels of mindfulness can be improved by acquisition of mindfulness skills (Kabat-Zinn, 2000; Linehan, 1993), the construct of mindfulness should not be considered as equivalent to a certain set of skills.

Second, is mindfulness a state or trait? Different researchers hold different views on this issue. Some appear to consider it as a “state” that can be achieved and needs to be assessed immediately after a meditation exercise (e.g., Bishop et al., 2003). Some seem to view it as a relatively stable trait-like quality that individuals possess (e.g., Baer et al., 2004; Hayes and Feldman, 2004). The author in the current study concurs with other researchers who view mindfulness as a quasi-trait: while individuals may have the innate tendency to be mindful, their levels of mindfulness are also susceptible to change (e.g., Brown & Ryan, 2003; Buchheld et al., 2001).

Third, is mindfulness a process or outcome? There is lack of consensus on this issue (Hayes & Wilson, 2003). Some proposed that it should be viewed as a psychological process (e.g., Cardaciotto, 2005). Some considered certain components of mindfulness as the outcomes of mindfulness practice (e.g., Bishop et al., 2004; Brown & Ryan, 2004). There are also some who regard mindfulness as both process and outcome



(e.g., Siegel, 2007). In the current study, mindfulness is regarded as a process that contributes to optimal human functioning.

Last but not least, should mindfulness be regarded as a unidimensional, bidimensional, or multidimensional construct? There are supporters for all. Brown and Ryan (2004) argued that mindfulness should be conceptualized as a unidimensional construct. Cardaciotto (2005) proposed a bidimensional model of mindfulness. In the most recent mindfulness measure developed by pooling items from five existing mindfulness measures, Baer and colleagues (2006) identified five latent factors underlying the construct of mindfulness, three of which were found to show incremental validity in predicting psychological symptoms. Therefore, these researchers recommended that mindfulness should be viewed as a multifaceted construct.

*Measurement issues.* Lack of consensus on theoretical conceptualization of mindfulness is often manifested in the diverse operational definitions and measures different researchers come up with. So far, there exist at least eight mindfulness measures. For instance, in the Freiburg Mindfulness Inventory (FMI; Buchheld, Grossman, & Walach, 2001), mindfulness was viewed as a unidimensional construct and operationalized as one's nonjudgmental present-moment observation and openness to negative experience. Besides, the FMI was specifically designed for use with experienced meditators. In the Mindfulness Attention Awareness Scale (MMAS; Brown & Ryan, 2003), mindfulness was regarded as a unidimensional quasi-trait and defined as one's attention to and awareness of present-moment experience in daily life. In the Kentucky Inventory of Mindfulness Scale (KIMS; Baer, Smith, & Allen, 2004), mindfulness was considered as a four-factor construct that is reflected in four sets of skills and

operationalized as one's tendency to be mindful in daily life regardless of meditation experience. As can be seen from the three examples discussed above, each measure seems to be an attempt to capture certain aspects of mindfulness depending on the different angle(s) the researchers adopted in their theoretical conceptualization of this construct.

Given the growing and often compelling empirical evidence linking mindfulness-based treatments to positive therapy outcomes, many researchers have started to recognize the dire need to refine the existing operationalizations and measures of this intriguing construct to help push forward this line of research. In terms of operationalization, after reviewing relevant literature and different existing measures, Cardaciotto (2005) pointed out two essential components of mindfulness: (a) present-moment awareness with (b) acceptance and nonjudgment. This operationalization concurs with how Germer (2005) defined the term: "awareness of present experience with acceptance" (p.7). Simply put, mindfulness is a way of relating to experience in the moment in a nonjudgmental and accepting manner. This operationalization consists of three major components. First, one needs to "be aware of", or to "observe," one's experience; to be able to step back or keep a healthy distance from one's experience. Second, "how" one observes one's experience often affects how one responds to it. The attitude of acceptance and nonjudgment does not lead to one's detachment or removal from one's immediate experience, but, on the contrary, will help one more fully and intimately experience one's body and mind in the present moment. Third, being mindful of the present moment means attending to the here-and-now in one's immediate experience—seeing things as they are and experiencing things as they come and go.

In terms of refinement of mindfulness measures, Baer and colleagues (2006) recently pooled all the items from five of the existing mindfulness instruments and developed the most up-to-date mindfulness measure called the Five Facet Mindfulness Questionnaire (FFMQ). The five latent factors identified in the FFMQ include (a) nonreactivity to inner experience (being able to observe inner experiences without reacting to them); (b) observing, noticing, and attending to sensations, perceptions, thoughts, and feelings; (c) acting with awareness, avoiding being on automatic pilot, concentration and nondistractedness; (d) describing and labeling experience with words; and (e) nonjudging of inner experience. Since this is the most up-to-date mindfulness measure with sound initial psychometric properties, the author in this present study plans to use the FFMQ to assess the construct of mindfulness.

*Mindfulness as a unifying construct.* Germer (2005) proposed that integration of mindfulness in the therapeutic process may help shape a more unified model of psychotherapy. Mindfulness is similar to the concept of consciousness-raising, one of the core change processes that Prochaska and Norcross (2006) identified in their transtheoretical analysis of diverse systems of psychotherapy. Also, mindfulness resembles another core change process called “self observation” (Beitman & Soth, 2006), which is believed to be an effective common factor across different therapeutic approaches. Furthermore, mindfulness appears to be a construct that connects different schools of thought in the field of psychotherapy.

Mindfulness is comparable to several important concepts in the psychoanalytic/psychodynamic therapy. The aim of mindfulness is to help individuals maintain healthy relationships with their disruptive patterns of thinking and feeling

through the relief of experiencing the moment-to-moment awareness. This is similar to the concept of “observing ego,” the ability to step back from immediate experience and reflect on it non-judgmentally (Hartmann, 1950); to maintain proper distance from one’s problems to increase self-understanding (Sterba, 1934); to reflect on oneself without losing the ability to experience feelings (Bellak & Meyers, 1984); to reflect on inner thoughts, feelings, and impulses without blindly acting out on them (Sterba, 1934); and to examine one’s inner world realistically (Sterba, 1934). Also, Fonagy’s (2000) notion of “mentalization,” or “reflective functioning,” the capacity to think about one’s own mental states or those of others, is considered a mindfulness skill (Germer, 2005; Siegel, 2007). In the book *The Present Moment in Psychotherapy*, Stern (2004) discussed the importance of implicit processes and the present moment happening in the intersubjective field in the dynamic process of therapy.

Mindfulness has much in common with humanistic psychotherapy. Mindful awareness helps alleviate the inevitable human sufferings, many of which are the human conditions discussed in existential psychotherapy. Mindfulness is about maintaining healthy relationships with the immediate experience, which is similar to Gendlin’s (1996) concept of “focusing”—finding a middle process in experiencing the bodily felt sense as opposed to being so close as to be overwhelmed by or so detached as to be removed from the immediate experience. Also, mindfulness is defined as present-moment awareness of experience with acceptance (Germer, 2005). This coincides with many important concepts being stressed in Gestalt therapy. Fritz Perls (1969), the founder of Gestalt therapy, considered “awareness” to be “the” curative factor in therapy. Moreover, he believed that the aim of effective therapy is to help clients experience the here and now,

without which therapy is just some meaningless intellectual exercise, or “mind-fucking.” Also, Gestalt therapists emphasized the practical and experiential approach to life and would rather do than talk about therapy (Stallone, 1976).

As mentioned earlier, mindfulness-based treatments are considered the “third-wave” of behavioral therapy. Currently, the construct of mindfulness is being embraced by several cognitive behavioral therapeutic approaches. These include, but are not limited to, the following: the Mindfulness-Based Stress Reduction program (MBSR; Kabat-Zinn, 1990), Mindfulness-Based Cognitive Therapy (MBCT; Segal et al., 2002), Acceptance and Commitment Therapy (ACT; Hayes et al., 2005), and Dialectical Behavior Therapy (DBT; Linehan, 1993).

Mindfulness also appears to unite fields other than psychotherapy. In neuroscience, researchers are exploring the relation between mindfulness practice and neuroplasticity (Davidson, 2003; Schwartz & Begley, 2002). Several health benefits of mindfulness have been noted in health psychology (e.g., Reibel, Greeson, Brainard, & Rosenzweig, 2001). Mindfulness is also believed to be associated with many positive characteristics emphasized in positive psychology, such as well-being, wisdom, contentment, etc. (Styron, 2005). In a nutshell, the construct of mindfulness appears to have the potential to unite the Eastern tradition and Western psychology as well as many different fields. Mindfulness may act as a unifying construct that can draw clinical theory, research and practice closer together (Germer, 2005). Since psychotherapy integration is considered as one of the important future trends (J. C. Norcross, personal communication, October 26, 2006), incorporating this unifying construct in the field of psychotherapy may also add to the integration movement.

*Mindfulness as a unique construct.* Even though mindfulness seems to share some similarities with several existing concepts in the field of psychotherapy, as mentioned above, it is distinct from these concepts in some ways. As Beitman and Soth (2006) pointed out, whereas mindfulness and self-observation are both aimed at aiding individuals to disentangle from their disruptive patterns of thoughts and feelings, they differ in two aspects. On the one hand, mindfulness is about helping individuals to experience and then let go of disturbing thoughts and emotions as they emerge and then disappear in awareness, rather than scrutinize those moment-to-moment experiences. In comparison, one important purpose of self-observation is to help individuals to be able to observe and process their problematic patterns in thinking, feeling, and behaving and to create more adaptive patterns in the future. On the other hand, mindfulness practice is mainly a “solo activity,” whereas the activation of self-observation in clients in psychotherapy often depends on the “co-observation inherent in the interpersonal psychotherapeutic relationship” (Beitman & Soth, 2006, p. 389).

Although reflective functioning can be viewed as a mindfulness skill (Germer, 2005; Siegel, 2007), Karlsson and Kermott (2006) drew attention to three fundamental differences between these two constructs. First, mindfulness is about awareness of mental processes in self, whereas reflective functioning focuses on understanding of mental processes both in self and in others. Second, mindfulness is about “present-moment” awareness, while reflective functioning includes understanding of mental states related to the past, present, and future. Third, unlike mindfulness that can be learned through meditation or skill training and practiced alone, reflective functioning usually happens

outside the realm of consciousness through intimate interpersonal interaction, for instance, in attachment relationships.

Refinement of awareness, which is a key component of mindfulness, has been regarded by many clinicians as an important process in effective psychotherapy, especially in humanistic approach. Rogers defined the fully functioning person as one who can allow “awareness to flow freely in and through their experiences” (Raskin & Rogers, 1995, p. 146). Nonjudgmental, present-moment awareness of one’s immediate experience also receives particular attention in Gendlin’s (1978/1981) notion of “focusing” or “experiencing.” In Gestalt therapy, Perls (1970) once emphatically stated, “To me, nothing exists except the now. Now = experience = awareness = reality. The past is no more; the future not yet.” However, each discussed “how” this nonjudgmental present-moment awareness may be achieved in a way slightly different from what is proposed in the concept of mindfulness. Rogers (1957) believed that achievement of this free flowing present-moment awareness often depends on the facilitative attitudes and conditions provided by the therapists in the therapeutic relationship. As discussed above, mindfulness practice is often considered as mental training that can be practiced alone. Gendlin (1978/1981) delineated the six steps of focusing to engage clients in deeper levels of experiencing. Also, Perls (1969) often instructed clients to maintain contact with their immediate experiences until their stuck energies were fully expended and receded into the background. In both cases, clients would be engaged in prolonged contact with certain experiences, rather than let their moment-to-moment experiences come and go in awareness, as emphasized in mindfulness practice.

In sum, despite the similarities between mindfulness and the above-mentioned concepts in psychotherapy, mindfulness also has its unique features that are not subsumed under these existing concepts. Therefore, the author of the present study believes that mindfulness should not be regarded as “some old wine in a new bottle,” but a distinctive construct that may make unique contributions to the field of psychotherapy.

#### *Mindfulness and Optimal Human Functioning*

*Mindfulness and adaptive functioning.* Mindfulness appears to enhance general well-being (e.g., Brown & Ryan, 2003). Specifically, studies show that it is related to neuroplasticity (Davidson, 2003); neural integration (Siegel, 2007); increased capacity to regulate emotions, improve negative thinking, and enrich interpersonal relationships (Siegel, 2007); enhanced bodily functioning, such as healing, immune response, physical well-being (Davidson et al., 2003); mental clarity and reduction of body tension (Reibel, Greeson, Brainard, & Rosenzweig, 2001); just to name a few.

*Mindfulness and therapy outcome.* As mentioned before, mindfulness has been incorporated in several cognitive behavioral treatment programs. Over the past decade, there emerged an abundance of empirical evidence of the effect of these mindfulness-based treatments (Baer et al., 2006; Cardaciotto, 2005; Germer et al., 2005). For example, the Mindfulness-Based Stress Reduction program (MBSR; Kabat-Zinn, 1990) has been shown to be successful in improving the physical and psychological symptoms in individuals with chronic pain (Kabat-Zinn, 1982), generalized anxiety and panic disorders (Kabat-Zinn, Massion, Kristeller, & Peterson, 1992), binge eating disorder (Kristeller & Hallet, 1999), and cancer (Specia, Carlson, Goodey, & Angen, 2000). The Mindfulness-Based Cognitive Therapy (MBCT; Segal et al., 2002) has been found to be



particularly effective in treating individuals with depression. The Acceptance and Commitment Therapy (ACT; Hayes et al., 1999) is shown to demonstrate clinical success in individuals with depression (Zettle & Hayes, 1986), anxiety disorders (Block, 2002), chronic pain (Geiser, 1992), and substance abuse (Hayes et al., 2002). The Dialectical Behavior Therapy (DBT; Linehan, 1993) is reported to be an effective treatment program for patients with borderline personality disorder and has also shown success for bulimia (Telch, Agras, & Linehan, 2000) and substance abuse (Linehan et al., 1999). However, since mindfulness, among all the other components, is embedded in the whole treatment programs, the effect of mindfulness on treatment outcomes cannot be teased out from the whole treatment packages. The author hopes to investigate the specific relation between mindfulness and therapy outcome in this current study by utilizing a specific measure assessing mindfulness.

#### *Mindfulness and Attachment Security*

*Cognitive and affective balances.* Two of the important functions of mindfulness are to facilitate cognitive as well as affective balances in individuals (Wallace & Shapiro, 2006; Siegel, 2007). Development of discerning mindfulness is believed to be able to help individuals address such cognitive imbalances as cognitive deficit (being absent-minded), hyperactivity (confusing perceived realities with fantasies), and dysfunction (misapprehending events). Also, cultivation of mindfulness is believed to be able to help individuals address such affective imbalances as affective deficit (emotional deadness or indifference), hyperactivity (excessive emotional reactivity), and dysfunction (inappropriate emotional responses to events). According to Germer's (2005) operationalization, mindfulness is awareness of present moment experience with

acceptance. It is about bringing individuals' attention to their moment-to-moment experiences, expand their awareness levels, and develop healthy relationships with their disruptive patterns of thinking and feeling. These two functions happen to be two important functions of attachment security—to help individuals develop more flexible and benign cognitive processes and enhance their capacities of emotional self-regulation (Lopez & Brennan, 2000).

*Neurological balance.* In addition to reflection in thinking and flexibility of feelings in individuals, Siegel (2007) pointed out one more correlate that secure attachment and mindfulness share—neural integration. He further proposed that secure attachment, or “interpersonal” attunement, seemed to promote mindfulness, or “intrapersonal” attunement. Since the mind is relational in nature, Siegel believed that the interpersonal attunement in the secure attachment relationships may help individuals better attune to their internal worlds, which may, in turn, further enhance these individuals' capacities to attune to others in interpersonal relationships. Also, he stated that the concept of reflective functioning, identified by Fonagy et al. (1995/2000), can be compared to the noting and describing facets of mindfulness found in Baer et al.'s (2006) mindfulness measure. Mindful awareness, Siegel believed, may be one of the important factors that helps the earned-secure individuals break away from the outdated negative patterns they learned from their troubled pasts and more flexibly interact with significant others in their current interpersonal relationships.

#### Attachment Security, Mindfulness, and Adaptive Functioning

Previous research provided strong theoretical and/or empirical support for the direct link between attachment security and optimal human functioning (Lopez, 1995;

Lopez & Brennan, 2000). But what exactly is it about secure attachment that contributes to optimal human functioning? How can we help the insecurely attached people achieve more adaptive functioning despite their troubled pasts? These questions are often left unanswered by studies that focus on the simple relations between attachment security and positive life adaptations. In order to capture the complexity in such simple direct links, several researchers (e.g., Fonagy et al., 1996, 1995/2000; Mallinckrodt & Wei, 2005; Wei et al., 2005) have gradually shifted their attention to investigating different underlying change mechanisms, or mediators. Identification of mediators in the relation between attachment security and psychological health not only heralds important theoretical and empirical advancements, but also has significant clinical implications (Frazier, Tix, & Barron, 2004). Since it is relatively difficult to modify one's attachment organization, especially in short-term therapy, targeting those "more modifiable" mediators for counseling interventions seems like a viable alternative that may bring about more fruitful therapeutic results.

In recent years, a wide range of mediators have been identified in the link between secure attachment and positive life adaptations. Those pertinent to the current study include, but are not limited to, the following: (a) Reflective functioning. Fonagy et al. (1991, 1995/2000) discovered that "reflective self functioning" could help mothers with deprived childhoods to better cope with the challenging task in parenting and stop the intergenerational transmission of attachment insecurity to their infants. Later, Slade (2002) added emotional richness to Fonagy's notion of reflective capacity and started to investigate this construct as a mediator, applying it in clinical situations to help mothers with insecure attachment organization to better relate to their infants. (b) Emotional

regulation. In two correlational studies, emotional awareness (Mallinckrodt & Wei, 2005) and affect regulation strategies (i.e., emotional reactivity and cutoff; Wei et al., 2005) were found to serve as significant mediators in the link between attachment security and psychological distress among college students. (c) Observing ego. In another correlational study, reflective capacity, as assessed by a modified version of the Observing Ego Functions Scale, was shown to function as a significant mediator in the relation between attachment security and personal resilience in college students (Ma, 2006).

As discussed before, mindfulness is theoretically similar to the above-mentioned mediators found in the relation between attachment security and psychological well-being. For example, reflective functioning is viewed as a mindfulness skill (Germer, 2005; Siegel, 2007). Quite a few descriptions of the “observing ego” seem to overlap with the notion of mindfulness. Also, mindfulness has been found to be associated with enhanced capacity for emotional regulation (e.g., Baer et al., 2006; Wallace & Shapiro, 2006). It seems to make logical sense that mindfulness may also serve as a mediator in the link between attachment security and psychological health.

Prior research shows that constructs that are theoretically similar to mindfulness were found to mediate the relation between attachment security and adaptive functioning in nonclinical samples. Given the strong empirical support for the links between attachment security and therapy outcome as well as between mindfulness and therapy outcome and also the theoretical support for the link between attachment security and mindfulness, the author would like to use this current study to explore whether

mindfulness may play a mediating role in the link between attachment security and adaptive functioning in the therapeutic context.

### Methodological Considerations

In the following section, two salient methodological issues related to this current study will be raised and discussed. One involves the use of follow-up data as post-therapy data. The other pertains to the use of retrospective pretest data. Justifications for both approaches will be presented.

#### *Use of Follow-up Data as Post-therapy Data*

Since the participants recruited for this study will be those who terminated therapy within the past six months, some may argue that the data collected from many clients will actually be “follow-up” data, rather than post-therapy data. Quite a few meta-analytic studies have shown that clients generally maintain their treatment gains after therapy (e.g., Nicholson & Berman, 1983), especially within one year of termination (e.g., Sherman, 1998; Taylor, 1996), which means that generally there are no significant differences between post-therapy and follow-up data within one year of termination of therapy. To err on the cautious end, though, the author of this current study decided to take a more stringent approach and include only those who ended therapy within the last six months. This may further narrow the differences that could possibly exist between the post-therapy and follow-up data, which may provide a stronger rationale for using follow-up data as post-therapy data for this current study. Moreover, all the participants in this study will be asked to report the lapses between the time of termination and that of current testing for further investigation, just in case irregular ratings do occur.

#### *Use of Retrospective Pretest Data*

Participants in this present study will be asked to recall their states of functioning in the first sessions of their most recent therapy. Participants' retrospective ratings of their attachment security, mindfulness, and adaptive functioning will be used as the pre-therapy data. These data will be compared with their post-therapy data to determine the changes that these clients experienced in these three areas through therapy. In other words, in the present study, the retrospective pretest data, rather than the actual pretest data, will be collected and used as pre-therapy data.

The use of the retrospective pretest (RPT) is not new. However, its use has often stirred up strong emotional reactions from researchers, especially those adhering to the philosophical view of logical positivism. Despite continued research findings that provided empirical support for the RPT, its validity and usefulness is still under serious suspect (Howard, 1980). For example, the RPTs, as compared to the pretests, are often deemed as less reliable due to possible contamination by response style bias (e.g., subject compliance, memory distortion, and social desirability). However, drawing on the empirical support from a series of studies, Howard (1980) argued that the RPTs were as valid as the pretests. In several cases where the response shift bias (i.e., change in subjective standard of measurement from pretest to posttest) was involved, the RPTs were even found to outperform the pretests and to be in closer alignment with anecdotal, objective, and behavioral indices of the same constructs (Howard, 1980). In a study on the effect of group counseling on the self-concept of the children of alcoholics, Riddle and Bergin (1997) utilized the RPT in the experimental group in addition to the traditional pretest-posttest. They discovered that, even though significant treatment effect was detected in the RPT-posttest as well as pretest-posttest difference, the score

difference between the RPT and posttest data was in closer alignment with the increased scores as assessed by the observation inventory.

Howard (1980) stressed that, in studies where the subjects' awareness or understanding of the construct is expected to change through treatment and where only self-report measures are used, retrospective pretest-posttest ratings are better able to reduce possible confounding response shift bias and more accurately reflect treatment effect than the traditional pretest-posttest ratings. In this present study, all measures used will be self-reports. Also, a key construct under investigation in this study—mindfulness—is expected to change significantly through therapy, which means it is particularly susceptible to response shift bias from pretreatment to posttreatment. For instance, participants in this study may think they have high levels of mindfulness before therapy and thus mistakenly rate their mindfulness as higher. Due to increased awareness through therapy, they may realize how low their actual self-awareness is and then rate themselves lower in this aspect after therapy. Use of retrospective pretest-posttest ratings can ensure that participants will be using a common metric in judging their pre- and post-therapy functioning and reducing possible response shift bias.

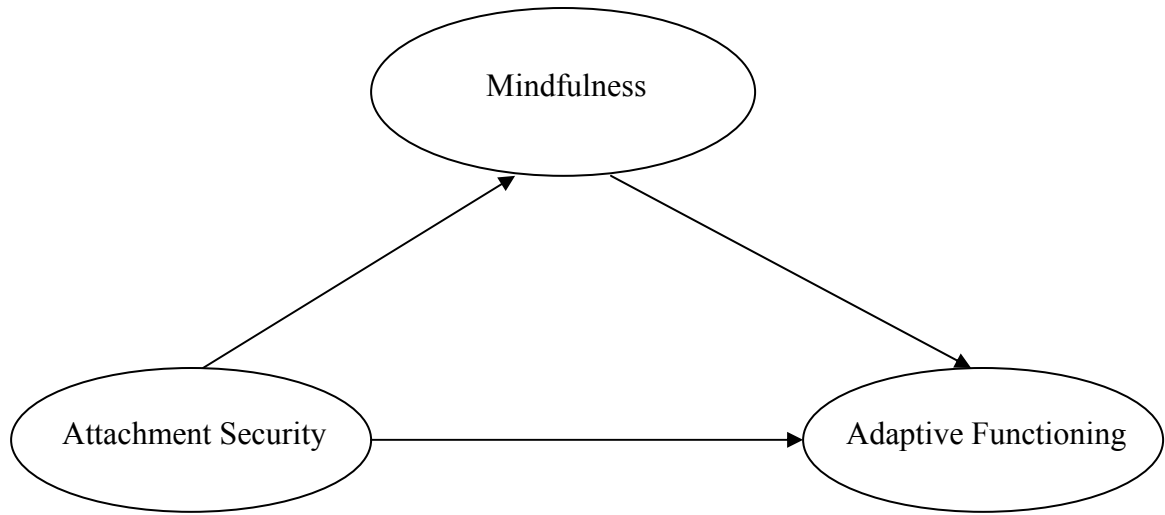
Although it may not be ideal to collect retrospective pretest data only (without pretest data or behavioral measures for actual comparison), based on a series of studies conducted by Howard and others, the retrospective pretest ratings can provide valid and useful information on subjects' pretest conditions. In the current study where only self-report measures are employed and where response shift bias from pretreatment to posttreatment is suspected, use of retrospective pretest-posttest ratings may be able to reduce possible response shift bias and also detect participants' changes through therapy.

### Chapter 3 – Statement of the Problem

As discussed in the previous chapters, prior research demonstrates strong theoretical and empirical support for the link between attachment security and optimal human functioning (Lopez, 1995; Lopez & Brennan, 2000). However, the direct links examined in these research studies generally fail to capture the causal complexity of the attachment-optimal functioning relationship because they do not, for example, identify important change mechanisms through which attachment security exerts its influence on human functioning. Identification of mediators in the simple direct link between attachment security and optimal human functioning has significant clinical implications (Frazier, Tix, & Baron, 2004). Since one's attachment organization, once formed, is usually difficult to modify, especially in relatively short term therapy, targeting those "more modifiable" variables for counseling interventions in brief therapy may bring about more fruitful therapeutic results.

The main purpose of this present study was to examine whether mindfulness would partially mediate the relation between attachment security and adaptive human functioning in the therapeutic context. (See Figure 1.) In order to be able to test this mediational model, the link between any of the two variables needed to be established. Therefore, the theoretical and/or empirical support for each link in the model was presented first, followed by relevant hypotheses. Also, considering that, in this current study, all measures used were self-reports and retrospective pretests were employed, the Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1984, 1988, 1991) was utilized to control for possible self report bias or self deception.





*Figure 1.* Mediational Model Proposed in the Current Study.

In the following subsection, the author presents all the hypotheses proposed in the current study and discussed the rationale for each hypothesis. The author would like to put a special note here to the following: (a) Social desirability was controlled for in testing each hypothesis. However, to avoid redundancy in writing, the author decided not to repeat the phrase “after partialing out social desirability” in each hypothesis. (b) The adoption of retrospective pretest was reflected in the description of each hypothesis.

### *Hypotheses*

Prior research has established a strong link between secure attachment in early childhood and positive adaptations later in life, as well as a substantial correlation between insecure attachment and maladjustments (e.g., Erickson, Sroufe, & Egeland, 1985; Grossmann & Grossmann, 1991; Grossmann et al., 1993; Zimmermann et al., 2001). In other words, one’s early attachment organization is often regarded as a strong predictor for one’s later functioning in life. Also, research in adult attachment evidenced the positive correlations between attachment security and current healthy functioning (Lopez, 1995; Lopez & Brennan, 2000) in terms of cognitive processes (e.g., Feeney, 1998; Hesse, 1999; Mikulincer & Arad, 1999), affect self-regulation (e.g., Brennan & Shaver, 1995; Lopez et al., 1997), and relational behaviors (e.g., Feeney, 1995; Tidwell, Reis, & Shaver, 1996). Therefore, in the present study it was postulated that attachment security would act as a predictor for adaptive human functioning in the context of psychotherapy.

*Hypothesis I. Client recalled pre-therapy attachment security would predict client recalled pre-therapy functioning.*

One's attachment orientation is also believed to have a significant impact on the therapy outcome. Three studies (Fonagy et al., 1996; Meyer et al., 2001; Mosheim et al., 2000) provided empirical support that the patients with secure attachment orientation, assessed at the beginning of treatment, functioned better at the end of treatment compared to those patients with insecure attachment organization. Thus, the author in this current study proposed that attachment security would also act as a strong predictor for adaptive human functioning at the end of therapy.

*Hypothesis 1A. Changes in client attachment security during therapy (i.e., client post-therapy attachment security partialing out client recalled pre-therapy attachment security) would predict therapy outcome (i.e., client post-therapy functioning partialing out client recalled pre-therapy functioning).*

Two of the important functions of mindfulness are to facilitate cognitive as well as affective balances in individuals (Wallace & Shapiro, 2006; Siegel, 2007). These two functions happen to be two important functions of attachment security—to help individuals develop more flexible and benign cognitive processes and enhance their capacities of emotional self-regulation (Lopez & Brennan, 2000). In addition to reflection in thinking and flexibility of feelings, Siegel (2007) pointed out a third function that secure attachment and mindfulness appear to share: neural integration. He further proposed that secure attachment, or “interpersonal” attunement, seemed to promote mindfulness, “intrapersonal” attunement. Siegel reasoned that the interpersonal attunement in the secure attachment relationships may help individuals better attune to their internal worlds, which may, in turn, further enhance these individuals' capacities to

attune to others in interpersonal relationships. Hence, the author hypothesized that attachment security would predict mindfulness before and after therapy.

*Hypothesis II. Client recalled pre-therapy attachment security would predict client recalled pre-therapy mindfulness.*

*Hypothesis IIA. Changes in client attachment security during therapy (i.e., client post-therapy attachment security partialing out client recalled pre-therapy attachment security) would also predict changes in client mindfulness during therapy (i.e., client post-therapy mindfulness partialing out client recalled pre-therapy mindfulness).*

Mindfulness has been found to enhance general well-being (e.g., Brown & Ryan, 2003). Specifically, studies show that it is related to neuroplasticity (Davidson, 2003); neural integration (Siegel, 2007); increased capacity to regulate emotions, improve negative thinking, and enrich interpersonal relationships (Siegel, 2007); enhanced bodily functioning, such as healing, immune response, physical well-being (Davidson et al., 2003); mental clarity and reduction of body tension (Reibel, Greeson, Brainard, & Rosenzweig, 2001), etc. Therefore, the author proposed that mindfulness would act as a predictor for optimal human functioning.

*Hypothesis III. Client recalled pre-therapy mindfulness would predict client recalled pre-therapy functioning.*

The concept of mindfulness has been incorporated into several cognitive-behavioral treatment programs. Over the past decade, there emerged a plethora of empirical evidence of the efficacy of these mindfulness-based treatments (Baer et al., 2006; Cardaciotto, 2005; Germer, 2005). For example, the Mindfulness-Based Stress Reduction program (MBSR; Kabat-Zinn, 1990) achieves clinical success for individuals

with chronic pain (Kabat-Zinn, 1982), generalized anxiety and panic disorders (Kabat-Zinn, Massion, Kristeller, & Peterson, 1992), binge eating disorder (Kristeller & Hallet, 1999), etc. The Mindfulness-Based Cognitive Therapy (MBCT; Segal et al., 2002) has been found to be particularly effective in treating individuals with depression. The Acceptance and Commitment Therapy (ACT; Hayes et al., 1999) is shown to demonstrate clinical success for individuals with depression (Zettle & Hayes, 1986), anxiety disorders (Block, 2002), chronic pain (Geiser, 1992), and substance abuse (Hayes et al., 2002). The Dialectical Behavior Therapy (DBT; Linehan, 1993) is reported to be an effective treatment program for patients with borderline personality disorder and has also demonstrated success with bulimia (Telch, Agras, & Linehan, 2000) and substance abuse (Linehan et al., 1999). This wealth of evidence suggests that mindfulness may have a substantial impact on therapy outcome. Given the strong empirical support in the link between mindfulness-based treatments and therapy outcome, the author suspects that changes in individuals' levels of mindfulness may contribute to changes in their adaptive functioning through therapy. Hence, the author further proposed that changes in mindfulness would predict changes in adaptive functioning through therapy.

*Hypothesis IIIA. Changes in client mindfulness during therapy (i.e., client post-therapy mindfulness partialing out client recalled pre-therapy mindfulness) would predict therapy outcome (i.e., client post-therapy functioning partialing out client recalled pre-therapy functioning).*

As mentioned above, prior research shows theoretical and/or empirical support in the link between attachment security and adaptive functioning, between attachment security and mindfulness, as well as between mindfulness and adaptive functioning.

Besides, mindfulness is considered to be theoretically similar to several constructs that have been identified as significant mediators between attachment security and positive life adaptations (e.g., reflective functioning, Fonagy et al., 1995/2000; Slade, 2002; emotional awareness, Mallinckrodt & Wei, 2005; affect regulation strategies; Wei et al., 2005; reflective capacity/observing ego, Ma, 2006). Therefore, the author in this present study hypothesized that mindfulness would function as a mediator in the link between attachment security and adaptive functioning before and after therapy.

*Hypothesis IV. Client recalled pre-therapy mindfulness would partially mediate the relation between client recalled pre-therapy attachment security and pre-therapy functioning.*

*Hypothesis IVA. Changes in client mindfulness during therapy would partially mediate the relation between changes in client attachment security during therapy and therapy outcome.*

According to Bowlby (1969/1982), one's attachment organization, once formed, though not impossible to change, tends to become gradually cemented through repeated confirmatory life experiences and are not easy to modify, especially in relatively short-term therapy. In comparison, mindfulness can be considered as a state or a quasi-trait that is susceptible to change through meditation practice or mindfulness skill training (e.g., Brown & Ryan, 2003; Buchheld et al., 2001; Baer et al., 2004; Cardaciotto, 2005). So the author proposed that in brief therapy, changes in mindfulness would be greater than changes in attachment security.

*Hypothesis V. Changes in client mindfulness during therapy would be larger than changes in client attachment security during therapy.*

## Chapter 4 – Method

### *Participants*

Participants for this online study were recruited in a large mid-Atlantic university from undergraduate psychology-related courses, on Facebook.com, via email requests and through study flyers (see Appendix I) posted in certain locations on campus. Eligible participants were those who (a) were 18 or older and (b) ended individual therapy within the last six months. One hundred and thirty-nine potential participants logged in to the online survey on SurveyMonkey.com and 108 of them finished the survey. However, 18 of the completed surveys were filled out by people who either had no psychotherapy experience ( $N = 4$ ) or ended psychotherapy more than six months ago ( $N = 18$ ), and therefore were excluded from the final valid sample ( $N = 90$ ) for data analyses. Each participant was offered either one extra course credit or the chance to win one of the ten \$20 lotteries for their voluntary participation. The sample consisted of 67 females and 23 males. Participants' age ranged from 18 to 33 years ( $M = 20.96$ ;  $SD = 3.15$ ). 64.4% of the participants self-identified as European American/Caucasian, 8.9% as African American, 15.6% as Asian American, 5.6% as Hispanic American, and 5.6% as other. The participants indicated that the duration of their most recent therapy ranged from 1 day to 72 months ( $M = 9.43$  (month);  $SD = 14.32$ ). Specifically, 11.1% reported duration of therapy for less than 1 month; 35.6% for 1 to 3 months; 21.1% for 4 to 6 months; 14.4% for 6 months to 1 year; 10% for 1 to 2 years; and 7.8% for more than 2 years. Also, the participants indicated that their most recent therapy ranged from 1 to 240 sessions ( $M = 16.27$ ;  $SD = 28.68$ ). Specifically, 22.2% reported having 1 to 3 sessions; 42.2% 4 to 12 sessions; 20% 13 to 24 sessions; and 13.3% more than 25 sessions. 47.8% of the

participants reported having counseling experience prior to their most recently terminated therapy. 14.4% of the participants indicated that they had meditation experience for 6 to 42 months. 73.3% of the participants indicated that they were currently and/or had been in a committed romantic relationship and that the duration of their longest romantic relationships ranged from 3 to 64 months.

In order to see whether the sample in the current study was truly a “clinical” sample, comparisons were made between this study’s sample and the samples in other studies in terms of adaptive functioning and attachment security. With regard to adaptive functioning, the sample in the present study was found to be comparable to a sample of patients from a university-based outpatient clinic (Lambert et al., 1996). No significant difference was detected between this study’s sample and the outpatient clinic’s sample in terms of the retrospective pretest vs. pretest scores ( $t = 0.21$ ;  $p = .83$ ) or posttherapy posttest vs. posttest scores ( $t = 0.32$ ;  $p = .75$ ). In terms of attachment security, the sample in this current study was found to be comparable to clinical participants from a community mental health clinic in Jacobson’s study (2004) on the Anxiety subscale ( $t = 0.89$ ;  $p = .37$ ), but higher on the Avoidance subscale ( $t = 3.71$ ;  $p < .001$ ), as assessed prior to therapy. Unfortunately, the author of this current study could not locate any existing study in which a clinical sample’s mindfulness is assessed by the Five Facet Mindfulness Questionnaire. However, as expected, the participants’ levels of post-therapy mindfulness in this study were found to be significantly lower ( $t = 7.35$ ;  $p < .001$ ) than those of a sample of therapists in Kholooci’s study (2008).

### *Measures*



*Attachment security.* The Experiences in Close Relationships Scale (ECRS; Brennan, Clark, & Shaver, 1998; see Appendix A) was used to assess adult romantic attachment. This ECRS is a 36-item self-report instrument, using a 7-point Likert scale (1 = disagree strongly, 4 = neutral/mixed, 7 = agree strongly). This instrument assesses the two adult romantic attachment dimensions of Avoidance (18 items) and Anxiety (18 items). Respondents are instructed to report their experiences in close relationships in general, not restricted to those experiences in a current relationship. The Avoidance subscale is used to measure an individual's degree of discomfort with emotional closeness, openness, and interdependence in romantic relationships. The Anxiety subscale, on the other hand, measures the degree to which a person fears being rejected, neglected, or abandoned by romantic partners.

According to Brennan et al. (1998), the ECRS was created through a large-scale instrument development process in which 1,086 participants completed 14 existing self-report attachment measures with a total of 60 subscales. A principal components analysis yielded two attachment factors: anxiety and avoidance described above. Both subscales showed high internal consistency estimates: .90-.94 for Avoidance and .88-.91 for Anxiety (e.g., Brennan et al., 1998; Mohr, Gelso, & Hill, 2005; Woodhouse & Gelso, in press). The test-retest reliabilities over a 6-month interval are .68 for attachment anxiety and .71 for attachment avoidance (Lopez & Gormley, 2002). The two attachment dimensions were found to be meaningfully related to interpersonal problems and core relationship conflicts (Mallinckrodt & Wei, 2005). In the present study, the overall reliability for the measure was .92 (both pre- and post- therapy). The internal consistency

estimates for the two dimensions were .94 (pre-therapy) and .90 (post-therapy) for Anxiety and .91 (pre-therapy) and .92 (post-therapy) for Avoidance.

Even though the ECRS provides no instructions on how to respond to the items for those participants who have never had romantic relationship experiences, Mohr and colleagues (2005) found that undergraduate students with no such prior experiences still offered meaningful responses to the ECRS items based on their imaginary relationships. Furthermore, his study offered empirical support for the validity of using the ECRS on the sample of undergraduate students who had no prior romantic involvements. Therefore, the author used the instructions of the ECRS as they were in the current study.

In order to examine the hypotheses regarding the secure-insecure attachment continuum, the attachment secure-fearful continuum was created by the sum of the Avoidance and Anxiety scores of the present sample, using the approach suggested by Fraley and Shaver (1997). Lower scores reflected more secure attachment orientation (i.e., low avoidance and anxiety), whereas higher scores suggested more insecure attachment organization (i.e., high avoidance and low anxiety, low avoidance and high anxiety, high avoidance and anxiety).

*Mindfulness.* The Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; see Appendix B) was used to assess the construct of mindfulness. The FFMQ is a 39-item self-report instrument, using a 5-point Likert-type scale (1 = never or very rarely true, 5 = very often or always true). This instrument was created by pooling all the items from five of the existing mindfulness measures. Five latent facets of mindfulness were identified in the FFMQ: (a) Nonreact: nonreactivity to inner experience; (b) Observing: observing, noticing, and attending to sensations,

perceptions, thoughts, and feelings; (c) Actaware: acting with awareness, concentration, and nondistractedness as well as avoiding being on automatic pilot; (d) Describe: describing and labeling with words; (e) Nonjudge: nonjudging of experience. All of the five facets showed adequate to good internal consistency, with alpha values at .75 for Nonreact, .83 for Observing, .87 for Actaware, .91 for Describing, and .87 for Nonjudging (Baer et al., 2006). Four of these facets (i.e., Describe, Actaware, Nonjudge, and Nonreact) were found to be consistently related in expected ways to a variety of other variables, while the factor “observe” showed both expected and unexpected relationships. Three of these facets (i.e., Actaware, Nonjudge, and Nonreact) were shown to have incremental validity in the prediction of psychological symptoms. In the current study, the Cronbach’s  $\alpha$  for the MMFQ was found to be .92 (pre-therapy) and .87 (post-therapy). And the internal consistency estimates for the five factors were .89 (pre-therapy) and .74 (post-therapy) for the Nonreact subscale; .88 (pre-therapy) and .77 (post-therapy) for Observe; .91 (pre-therapy) and .84 (post-therapy) for Actaware; .90 (pre-therapy) and .90 (post-therapy) for Describe; and .91 (pre-therapy) and .90 (post-therapy) for Nonjudge.

*Adaptive functioning/Therapy Outcome.* The Outcome Questionnaire (OQ; Lambert et al., 1996; see Appendix C) was employed to assess adaptive functioning both before and after therapy. The OQ is a 45-item, using 5-point response scale (0 = never, 1 = rarely, 2 = sometimes, 3 = frequently, 4 = almost always). This instrument was designed to assess both positive and negative aspects of mental health in the following three areas: symptomatic distress, interpersonal problems, and social role adjustment. It assesses symptom severity and individuals’ overall functioning appropriate for university counseling center clients. Items address common problems across a wide variety of

disorders. Item responses are summed to produce a total score, with higher scores indicating lower functioning. In terms of concurrent validity, OQ45.2 has been demonstrated by significant correlations with multiple established measures of general and specific psychopathology (Lambert et al., 1996). An internal consistency of .93 has been reported, with retest reliability over 3-week intervals ranging from .78 to .84 (Lambert et al., 1996). It is also sensitive to changes in psychological distress over short periods of time. In the present study, the overall reliability estimates were found to be .96 (pre-therapy) and .93 (post-therapy), and the alpha for the each factor was .94 (pre-therapy) and .91 (post-therapy) for Symptomatic Distress, .86 (pre-therapy) and .79 (post-therapy) for Interpersonal Problems and .72 (pre-therapy) and .71 (post-therapy) for Social Role Adjustment.

*Socially desirable responding.* The Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1984, 1988, 1991; see Appendix D) was used to assess social desirable responding. The BIDR is 40-item measure, using a 7-point Likert scale (1 = not true to 7 = very true). This instrument was designed to measure individuals' tendency to give "overly positive self descriptions" (Paulhus, 2002, p. 50). It assesses two types of biases of social desirable responding: Self Deception and Impression Management. The Self-Deception subscale taps the unconscious, positive, self defensive, largely adaptive aspects of social desirability and includes such items as "My first impressions of people usually turn out to be right," "It would be hard for me to break any of my bad habits," "I don't care to know what other people really think of me," etc. The Impression Management subscale taps conscious efforts aimed at appearing socially desirable to others and include such items as "I sometimes tell lies if I have to," "I never cover up my

mistake,” “I never swear,” etc. In scoring the BIDR, only extreme responses of 6 or 7 are counted toward a respondent’s score on each of the scales. Each extreme response counts as 1; therefore, raw scores have a possible range of 0 to 20. In terms of concurrent validity, the Self-Deception subscale was found to be correlated to measures of coping and defense (Paulhus, 1991). Persons who are higher in self-deception show higher levels of adjustment, as evidenced by higher self-esteem, lower social anxiety, more maturity, openness to experience, and hardiness (Compton et al., 1996; Paulhus & Reid, 1991). The Impression Management scale was shown to correlate highly with common lie scales, role-playing measures, and ratings of agreeableness and conscientiousness (Paulhus, 1991). According to Paulhus (1991), the internal consistency reliability coefficients were reported to range from .68 to .80 for the Self-Deception subscale and from .75 to .86 for the Impression Management scale. Test-retest reliability coefficients over a 5-week period were reported at .69 for the Self-Deception scale and at .65 for the Impression Management scale. In the present study, the overall reliability coefficients were found to be .81. And the internal consistency reliability coefficients were found to be .69 for the Self-Deception subscale and .77 for the Impression Management subscale.

### *Procedure*

Participants for the current study were recruited from a large mid-Atlantic university. Information about this study was posted in the Sona-system in the psychology department to recruit participants from undergraduate psychology-related courses. These participants were offered one extra course credit for their voluntary participation. Also, flyers about this study were sent out to several student listserv and posted on Facebook.com and in certain locations on campus. These participants were offered the

chance to win one of ten \$20 lotteries for their voluntary participation. To maintain anonymity and confidentiality, all eligible participants were directed to a specific website to fill out all the forms and measures for this study online. When participants logged in to the website, they had to, first, respond to the following two eligibility check questions: (a) Are you 18 or older? (b) Did you just end individual counseling within the last six months? They then were instructed (see Appendix E) to read and sign the informed consent form (see Appendix F). After that, they were asked to fill out the post-therapy measures (i.e., the BIDR, ECRS, FFMQ, and OQ). The author created three different web links with the measures arranged in three different orders to reduce order effect. All the participants were asked to report their current functioning at the time of testing. After that, all the participants were instructed (see Appendix E) to recall being in the first session of their most recent therapy and then fill out the pre-therapy measures (i.e., the ECRS, FFMQ, and OQ). At the end of the survey, participants were asked to provide some demographic information (see Appendix G). After completion of the survey, all the participants were debriefed about the purpose of this study (see Appendix H).

## Chapter 5 – Results

### *Descriptive Data*

Descriptive data for all the measures were calculated in the present study. Means, standard deviations, reliability estimates for each measure are presented in Table 1. The intercorrelation matrix among the variables is presented in Table 2.

### *Analyses of the Hypotheses*

To test Hypotheses I to IIIA, hierarchical multiple regression analyses were conducted. The results of each hierarchical multiple regression analysis are presented in Tables 3-8.

*Hypothesis I. Client recalled pre-therapy attachment security would predict client recalled pre-therapy functioning after partialing out social desirability.*

*Hypothesis IA. Changes in client attachment security during therapy (i.e., client post-therapy attachment security partialing out client recalled pre-therapy attachment security) would predict therapy outcome (i.e., client post-therapy functioning partialing out client recalled pre-therapy functioning) after partialing out social desirability.*

As is shown in the intercorrelation matrix in Table 2, social desirability is significantly correlated to pre-therapy attachment security ( $r = -.26; p < .01$ ) and adaptive functioning ( $r = -.42; p < .001$ ). Also, as is shown in Table 3, results of Step 1 in the final regression equation indicated that social desirability has a significant relationship with pre-therapy adaptive functioning with an adjusted  $R^2$  of 16% ( $p < .001$ ). It appeared that the current sample showed some significant amount of self-deception and impression management in responding to pre-therapy attachment and functioning. This justified the author's decision to reduce the self report bias by controlling for the social desirability

Table 1

*Means, Standard Deviations, and Reliabilities for Variables*

Measure	<i>M</i>	<i>SD</i>	$\alpha$
1. Social desirability	10.9	4.2	.82
2. Attachment security (pre-therapy)	144.91	29.96	.92
3. Attachment security (post-therapy)	131.73	28.72	.92
4. Mindfulness (pre-therapy)	107.37	21.88	.92
5. Mindfulness (post-therapy)	123.02	15.79	.87
6. Adaptive functioning (pre-therapy)	85.74	28.70	.96
7. Adaptive functioning (post-therapy)	65.76	21.11	.93
8. Relationship Duration	17.57	17.85	-
9. End Therapy Duration	3.45	1.79	-
10. Number of Sessions	16.27	28.68	-
11. Therapy Duration	9.43	14.32	-
12. Meditation Duration	2.44	8.40	-

*Note.* Social desirability = Balanced Inventory of Desirable Responding; Attachment security = Experiences in Close Relationships Scale; Mindfulness = Five Facet Mindfulness Questionnaire; Adaptive functioning = Outcome Questionnaire; Relationship Duration = the number of months participants had in their most recent committed romantic relationship; End therapy duration = the number of months that had passed since participants ended their most recent therapy; Number of sessions = the number of sessions participants had in their most recently terminated therapy; Therapy duration = the number of months participants had in their most recently terminated therapy; Meditation duration = the number of months participants practiced meditation.



Table 2

*Intercorrelations among Variables*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Social desirability	-														
2. Attachment security (Pre-therapy)	-.26**	-													
3. Attachment security (Post-therapy)	-.29**	.60***	-												
4. Mindfulness (Pre-therapy)	.29**	-.61***	-.27**	-											
5. Mindfulness (Post-therapy)	.37**	-.40***	-.43***	.39***	-										
6. Adaptive functioning (Pre-therapy)	-.42***	.57***	.32**	-.65***	-.37***	-									
7. Adaptive functioning (Post-therapy)	-.57***	.26*	.46***	-.14	-.46***	.53***	-								
8. Gender	.12	-.07	-.09	.11	-.05	-.21	-.12	-							
9. Race/Ethnicity	-.13	.11	.07	-.15	-.06	.18	.18	-.06	-						
10. Relationship Duration	-.11	-.02	-.22*	.10	.19	.07	-.08	.02	-.00	-					

11. End Therapy	.06	.09	.05	-.13	-.12	.05	-.08	-.09	-.06	.06	-				
Duration															
12. Number of sessions	-.00	.09	-.13	-.21*	.11	.08	-.19	-.07	.11	.08	.18	-			
13. Therapy Duration	.11	.01	-.21*	-.01	.15	-.08	-.25*	-.09	.12	.16	.18	.48***	-		
14. Prior Counseling	.29**	-.01	-.08	.16	.00	-.23*	-.28**	.25*	-.23*	.12	-.03	-.16	.13	-	
Experience															
15. Meditation Duration	-.00	-.12	.11	.07	.15	-.02	.15	-.06	.20	-.03	.02	.00	-.04	-.19	-

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*Note.* Social desirability = Balanced Inventory of Desirable Responding; Attachment security = Experiences in Close Relationships Scale; Mindfulness = Five Facet Mindfulness Questionnaire; Adaptive functioning = Outcome Questionnaire; Relationship Duration = the number of months participants had in their most recent committed romantic relationship; End therapy duration = the number of months that had passed since participants ended their most recent therapy; Number of sessions = the number of sessions participants had in their most recently terminated therapy; Therapy duration = the number of months participants had in their most recently terminated therapy; Prior counseling experience = whether participants had any counseling experience prior to their most recent therapy; Meditation duration = the number of months participants practiced meditation.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Table 3

*Regression Equations Predicting Client Recalled Pre-therapy Adaptive Functioning with Client Recalled Pre-therapy Attachment Security after Partialing out Social Desirability*

Step and predictor	<i>B</i>	$\beta$	<i>t</i>	Total $R^2$	Adj. $R^2$	$R^2$ inc.	<i>F</i> inc.	<i>df</i>
Step 1								
SD	-.53	-.29	-3.37**	.17	.16	.17	18.36***	1, 88
Step 2								
Pre-AS	.47	.49	5.75***	.40	.39	.23	33.11***	1, 87

*Note.* Adj. = adjusted shrinkage related to sample size; inc. = increment. SD = social desirability; Pre-AS = pre-therapy attachment security.

\*\*  $p < .01$ . \*\*\*  $p < .001$ .

factor in the hierarchical multiple regression model. In Table 3, the significant  $R^2$  change of 23% ( $p < .001$ ;  $f^2 = .38$ ) at Step 2 supports Hypothesis I that client pre-therapy attachment security predicts client pre-therapy functioning after partialing out social desirability. In Table 4, the significant  $R^2$  change of 10% ( $p < .001$ ;  $f^2 = .20$ ) at Step 2 supports Hypothesis IA that changes in client attachment security during therapy predict therapy outcome after partialing out social desirability.

*Hypothesis II. Client recalled pre-therapy attachment security would predict client recalled pre-therapy mindfulness after partialing out social desirability.*

*Hypothesis IIA. Changes in client attachment security during therapy (i.e., client post-therapy attachment security partialing out client recalled pre-therapy attachment security) would also predict changes in client mindfulness during therapy (i.e., client post-therapy mindfulness partialing out client recalled pre-therapy mindfulness) after partialing out social desirability.*

As is indicated in the intercorrelation matrix in Table 2, social desirability is significantly correlated to pre-therapy attachment security ( $r = -.26$ ) and mindfulness ( $r = .29$ ) at the significance level of .01. Also, as is shown in Table 5, results of Step 1 in the final regression equation indicated that social desirability has a significant relationship with pre-therapy mindfulness with an adjusted  $R^2$  of 8% ( $p < .01$ ). It appeared that the current sample showed some significant amount of self-deception and impression management in responding to pre-therapy attachment and mindfulness. This justified the author's decision to reduce the self report bias by controlling for the social desirability factor in the hierarchical multiple regression model. In Table 5, the significant  $R^2$  change

Table 4

*Regression Equations Predicting Therapy Outcome with Changes in Client Attachment**Security after Partialing out Social Desirability*

Step and predictor	<i>B</i>	$\beta$	<i>t</i>	Total $R^2$	Adj. $R^2$	$R^2$ inc.	<i>F</i> inc.	<i>df</i>
Step 1								
SD	-.48	-.36	-4.29***	.43	.41	.43	21.79***	3, 86
Pre-AS	-.23	-.32	-3.00**					
Pre-AF	.32	.43	4.46***					
Step 2								
Post-AS	.30	.41	4.29***	.53	.51	.10	18.40***	1, 85

*Note.* Adj. = adjusted shrinkage related to sample size; inc. = increment. SD = social desirability; Pre-AS = pre-therapy attachment security; Pre-AF = pre-therapy adaptive functioning; Post-AS = post-therapy attachment security.

\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 5

*Regression Equations Predicting Client Recalled Pre-therapy Mindfulness with Client Recalled Pre-therapy Attachment Security after Partialing out Social Desirability*

Step and predictor	<i>B</i>	$\beta$	<i>t</i>	Total $R^2$	Adj. $R^2$	$R^2$ inc.	<i>F</i> inc.	<i>df</i>
Step 1								
SD	.21	.15	1.70	.09	.08	.09	8.27**	1, 88
Step 2								
Pre-AS	-.42	-.57	-6.64***	.39	.38	.31	44.02***	1, 87

*Note.* Adj. = adjusted shrinkage related to sample size; inc. = increment. SD = social desirability; Pre-AS = pre-therapy attachment security.

\*\*\*  $p < .001$ .

of 31% ( $p < .001$ ;  $f^2 = .48$ ) at Step 2 supports Hypothesis II that client pre-therapy attachment security predicts client pre-therapy mindfulness after partialing out social desirability. In Table 6, the significant  $R^2$  change of 5% ( $p < .05$ ;  $f^2 = .06$ ) at Step 2 supports Hypothesis IIA that changes in client attachment security during therapy predict changes in client mindfulness during therapy after partialing out social desirability.

*Hypothesis III. Client recalled pre-therapy mindfulness would predict client recalled pre-therapy functioning after partialing out social desirability.*

*Hypothesis IIIA. Changes in client mindfulness during therapy (i.e., client post-therapy mindfulness partialing out client recalled pre-therapy mindfulness) would predict therapy outcome (i.e., client post-therapy functioning partialing out client recalled pre-therapy functioning) after partialing out social desirability.*

As is shown in the intercorrelation matrix in Table 2, social desirability is significantly correlated to pre-therapy mindfulness ( $r = .29$ ;  $p < .01$ ) and adaptive functioning ( $r = -.42$ ;  $p < .001$ ). Also, as is indicated in Table 7, results of Step 1 in the final regression equation indicated that social desirability has a significant relationship with pre-therapy adaptive functioning with an adjusted  $R^2$  of 16% ( $p < .001$ ). It appeared that the current sample showed some significant amount of self-deception and impression management in responding to pre-therapy mindfulness and adaptive functioning. This justified the author's decision to reduce the self report bias by controlling for the social desirability factor in the hierarchical multiple regression model. In Table 7, the significant  $R^2$  change of 31% ( $p < .001$ ;  $f^2 = .58$ ) at Step 2 supports Hypothesis III that client pre-therapy mindfulness predicts client pre-therapy functioning after partialing out social desirability. In Table 8, the significant  $R^2$  change of 7% ( $p < .001$ ;  $f^2 = .17$ ) at Step

Table 6

*Regression Equations Predicting Changes in Client Mindfulness with Changes in Client Attachment Security after Partialing out Social Desirability*

Step and predictor	<i>B</i>	$\beta$	<i>t</i>	Total $R^2$	Adj. $R^2$	$R^2$ inc.	<i>F</i> inc.	<i>df</i>
Step 1								
SD	.23	.22	2.30*	.26	.24	.26	10.22***	3, 86
Pre-AS	-.02	-.04	-.31					
Pre-M	.16	.22	1.90					
Step 2								
Post-AS	-.15	-.28	-2.34*	.31	.28	.05	5.48*	1, 85

*Note.* Adj. = adjusted shrinkage related to sample size; inc. = increment. SD = social desirability; Pre-AS = pre-therapy attachment security; Pre-M = pre-therapy mindfulness; Post-AS = post-therapy attachment security.

\*  $p < .05$ . \*\*\*  $p < .001$ .



Table 7

*Regression Equations Predicting Client Recalled Pre-therapy Adaptive Functioning with Client Recalled Pre-therapy Mindfulness after Partialing out Social Desirability*

Step and predictor	<i>B</i>	$\beta$	<i>t</i>	Total $R^2$	Adj. $R^2$	$R^2$ inc.	<i>F</i> inc.	<i>df</i>
Step 1								
SD	-.45	-.25	-3.04**	.17	.16	.17	18.36***	1, 88
Step 2								
Pre-M	-.76	-.58	-7.14***	.48	.47	.31	50.95***	1, 87

*Note.* Adj. = adjusted shrinkage related to sample size; inc. = increment. SD = social desirability; Pre-M = pre-therapy mindfulness.

\*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 8

*Regression Equations Predicting Therapy Outcome with Changes in Client Mindfulness  
after Partialing out Social Desirability*

Step and predictor	<i>B</i>	$\beta$	<i>t</i>	Total $R^2$	Adj. $R^2$	$R^2$ inc.	<i>F</i> inc.	<i>df</i>
Step 1								
SD	-.42	-.31	-3.84***	.57	.52	.57	13.16***	8, 81
Pre-M	.38	.39	4.11***					
Pre-AF	.38	.52	5.42***					
End TH Dur. <sup>a</sup>	-.57	-.05	-.67					
# of Sessions <sup>a</sup>	-.08	-.10	-1.24					
TH Duration <sup>a</sup>	-.07	-.05	-.61					
Prior Coun. Ex. <sup>a</sup>	-5.20	-.12	-1.62					
Meditation Dur. <sup>a</sup>	.37	.15	2.12*					
Step 2								
Post-M	-.41	-.31	-3.75***	.63	.59	.07	14.05***	1, 80

*Note 1.* Adj. = adjusted shrinkage related to sample size; inc. = increment. SD = social desirability; Pre-M = pre-therapy mindfulness; Pre-AF = pre-therapy adaptive functioning; Post-M = post-therapy mindfulness; End therapy duration = the number of months that had passed since participants ended their most recent therapy; # of sessions = the number of sessions participants had in their most recently terminated therapy; Therapy duration = the number of months participants had in their most recently terminated therapy; Prior Coun. Ex. = whether participants had any counseling experience prior to their most recent therapy; Meditation duration = the number of months participants practiced meditation.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

*Note 2.* <sup>a</sup> These additional variables were speculated to be related to the outcome variable and therefore controlled for in testing Hypotheses I to IIIA. However, since only one of these variables (i.e., meditation duration) was found to be significantly related to the outcome variable in testing Hypothesis IIIA, these additional variables were presented in this table only.

2 supports Hypothesis IIIA that changes in client mindfulness during therapy predict therapy outcome after partialing out social desirability.

*Hypothesis IV. Client recalled pre-therapy mindfulness would partially mediate the relation between client recalled pre-therapy attachment security and pre-therapy functioning after partialing out social desirability.*

*Hypothesis IVA. Changes in client mindfulness during therapy would partially mediate the relation between changes in client attachment security during therapy and therapy outcome after partialing out social desirability.*

To test the mediational models proposed in Hypotheses IV and IVA, the bootstrap resampling procedures (Mallinckrodt, Abraham, Wei, & Russell, 2006; Shrout & Bolger, 2002) were conducted. Mallinckrodt and colleagues (2006) asserted that the bootstrap mediation analyses can address the issue of low statistical power inherent in the conventional multiple regressions approach proposed by Baron and Kenny (1986), especially with small sample size. Bootstrap procedures offer an empirical means for determining statistical significance (Efron & Tibshirani, 1993) that circumvent the need to assume normality because the bootstrapping results provide asymmetric confidence limits. If the 95% CI for the estimate of asymmetric indirect effect does not include zero, it can be concluded that the indirect effect is statistically significant at the .05 level (Shrout & Bolger, 2002). To conduct the bootstrap, 10,000 bootstrap data samples were created by randomly sampling with replacements from the original data set ( $N = 90$ ). Next, the partially mediated model was performed in Amos (Version 7.0) with each of the 10,000 samples, resulting in 10,000 estimations of each path coefficient. To test Hypothesis IV, the indirect effect of pre-therapy attachment security on pre-therapy

functioning through the mediator of pre-therapy mindfulness was calculated by multiplying the 10,000 pairs of path coefficients (a) from pre-therapy attachment security to pre-therapy mindfulness and (b) from pre-therapy mindfulness to pre-therapy adaptive functioning. Table 9 shows the estimates for the direct and indirect effects. In the bootstrap procedure, the mediated pathway from pre-therapy attachment security through pre-therapy mindfulness to pre-therapy adaptive functioning ( $-.57 \times -.44 = .25$ ) was significant at the .001 level. This supports Hypothesis IV that client pre-therapy mindfulness partially mediates the relation between client pre-therapy attachment security and client pre-therapy adaptive functioning after partialing out social desirability. To test Hypothesis IVA, the indirect effect of changes in attachment security on therapy outcome (i.e., changes in adaptive functioning) through the mediator of changes in mindfulness was calculated by multiplying the 10,000 pairs of path coefficients (a) from changes in attachment security to changes in mindfulness and (b) from changes in mindfulness to changes in adaptive functioning. Table 10 shows the estimates for the direct and indirect effects. In the bootstrap procedure, the mediated pathway from changes in attachment security through changes in mindfulness to changes in adaptive functioning ( $-.28 \times -.22 = .06$ ) was significant at the .05 level. This supports Hypothesis IVA that changes in client mindfulness during therapy partially mediate the relation between changes in client attachment security during therapy and therapy outcome after partialing out social desirability.

*Hypothesis V. Changes in client mindfulness during therapy would be larger than changes in client attachment security during therapy.*

Table 9

*Bootstrap Analyses of the Magnitude and Statistical Significance of Direct and Indirect Effects*

Independent variable	Mediator variable	Dependent variable	$\beta$ standardized indirect effect	B mean indirect effect <sup>a</sup>	SE of mean <sup>a</sup>	95% CI (lower, upper)
Pre-AS→		Pre-AF	.25	.24	.095	.059, .449
Pre-AS→		Pre-M	-.57	-.42	.069	-.693, -.416
Pre-M→		Pre-AF	-.44	-.57	.139	-.616, -.210
Pre-AS→	Pre-M→	Pre-AF	$(-.57) \times (-.44) = .25$	.24	.063	.137, .376***

*Note.* <sup>a</sup> These values are based on unstandardized path coefficient. CI = confidence

interval. Pre-AS = pre-therapy attachment security; Pre-M = pre-therapy mindfulness;

Pre-AF = pre-therapy adaptive functioning.

\*\*\*  $p < .001$ .

Table 10

*Bootstrap Analyses of the Magnitude and Statistical Significance of Direct and Indirect Effects*

Independent variable	Mediator variable	Dependent variable	$\beta$ standardized indirect effect	B mean indirect effect <sup>a</sup>	SE of mean <sup>a</sup>	95% CI (lower, upper)
Change-AS→		Change-AF	.30	.22	.107	.010, .549
Change-AS→		Change-M	-.28	-.15	.082	-.573, .000
Change-M→		Change-AF	-.22	-.29	.139	-.444, -.024
Change-AS→	Change-M→	Change-AF	$(-.28) \times (-.22) = .06$	.044	.039	.000, .206*

*Note.* <sup>a</sup> These values are based on unstandardized path coefficient. CI = confidence interval. Change-AS = changes in client attachment security; Change-M = changes in client mindfulness; Change-AF = changes in adaptive functioning.

\*  $p < .05$ .

To test Hypothesis V, a paired-sample t-test was conducted to compare the Z-scores of changes in attachment security and the Z-scores of changes in mindfulness. However, this hypothesis was not supported by the data gathered in this current study. (See Table 11.)

#### *Additional Analyses*

*Pre-therapy attachment security and mindfulness vs. therapy outcome.* Prior research demonstrated inconsistency regarding the relations between clients' pre-therapy attachment security and the amount of clients' therapeutic gains over the course of treatment. For example, whereas Mosheim and colleagues (2000) discovered that the "securely" attached patients seemed to benefit most from treatment, Fonagy and others (1996) reported that patients with the "dismissive" attachment orientation appeared to show the greatest amount of improvement over the course of therapy. Intrigued by this empirical inconsistency in the existing literature on this particular link, the author of this study conducted a post hoc hierarchical multiple regression analysis to see whether client pre-therapy attachment security would predict changes in client adaptive functioning (i.e., therapy outcome). Besides, since previous research on the relations between mindfulness and therapy outcome was focused mainly on changes in client mindfulness and changes in adaptive functioning (i.e., therapy outcome), the author of this study was also curious about whether client pre-therapy mindfulness would predict therapy outcome and therefore conducted another post hoc hierarchical multiple regression analysis to test this specific link. Interestingly, it was discovered in this current study that, whereas client pre-therapy attachment security does not predict therapy outcome (see Table 12), client pre-therapy mindfulness does, as is shown in the significant  $R^2$  change of 8% ( $p < .001$ ) at Step 2 in Table 13.

Table 11

*Paired-Samples t-Test Comparing Changes in Attachment Security and Changes in Mindfulness*

Variable	Paired Differences						
	<i>M</i>	<i>SD</i>	S.E. Mean	95% CI (lower, upper)		<i>t</i>	<i>df</i>
Pair							
Z-ChangeAS minus Z-ChangeM	.00	1.08	.11	-.23	.23	.00	1, 89

*Note.* Z-ChangeAS = Z scores of changes in attachment security; Z-ChangeM = Z scores of changes in mindfulness.



Table 12

*Regression Equations Predicting Therapy Outcome with Client Recalled Pre-therapy**Attachment Security after Partialing out Social Desirability*

Step and predictor	<i>B</i>	$\beta$	<i>t</i>	Total $R^2$	Adj. $R^2$	$R^2$ inc.	<i>F</i> inc.	<i>df</i>
Step 1								
SD	-.58	-.43	-5.27***	.43	.42	.43	32.59***	2, 87
Pre-AF	.29	.39	5.58***					
Step 2								
Pre-AS	-.05	-.07	3.71***	.43	.41	.00	.53	1, 86

*Note.* Adj. = adjusted shrinkage related to sample size; inc. = increment. SD = social desirability; Pre-AF = pre-therapy adaptive functioning; Pre-AS = pre-therapy attachment security.

Table 13

*Regression Equations Predicting Therapy Outcome with Client Recalled Pre-therapy**Mindfulness after Partialing out Social Desirability*

Step and predictor	<i>B</i>	$\beta$	<i>t</i>	Total $R^2$	Adj. $R^2$	$R^2$ inc.	<i>F</i> inc.	<i>df</i>
Step 1								
SD	-.59	-.44	-5.27***	.43	.42	.43	32.59***	2, 87
Pre-AF	.43	.58	5.58***					
Step 2								
Pre-M	.36	.37	3.71***	.51	.49	.08	13.76***	1, 86

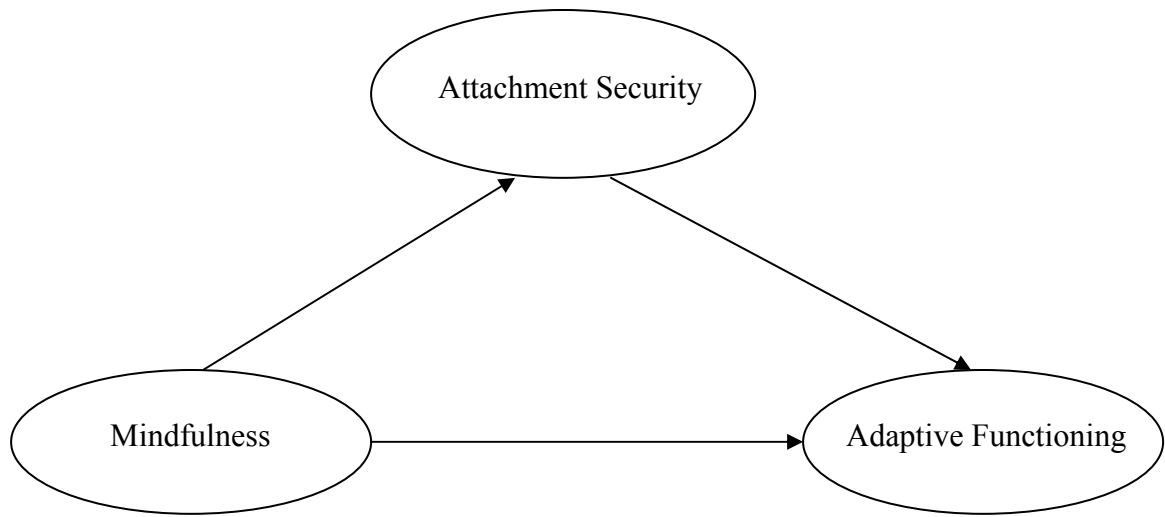
*Note.* Adj. = adjusted shrinkage related to sample size; inc. = increment. SD = social desirability; Pre-AF = pre-therapy adaptive functioning; Pre-M = pre-therapy mindfulness.

\*\*\*  $p < .001$ .

*Testing alternative mediational models.* Frazier, Tix, and Barron (2004) asserted that “for any given model, there generally are alternative models with different patterns of relations among variables that fit the data as well as the original model, especially when the data are correlational” (p. 129). Also, a prior research project conducted by the author of this current study demonstrated the significant mediating effect of attachment security on the relation between reflective capacity and personal resilience. Since mindfulness, as discussed in the literature review, is considered to be theoretically similar to the construct of reflective capacity, the author conducted two additional bootstrap mediation analyses of two alternative mediational models, as is shown in Figure 2, to see (a) whether client recalled pre-therapy mindfulness would partially mediate the relation between client recalled pre-therapy attachment security and adaptive functioning and (b) whether changes in client mindfulness during therapy would partially mediate changes in client attachment security and adaptive functioning during therapy. Both alternative mediational models were supported by the data in this present study. (See both Tables 14 and 15.)

*Wide variability in session number.* According to Howard and colleagues (1986), six to eight sessions is generally considered the minimum dosage of effective psychotherapeutic treatment. However, thirty-one out of ninety participants in this current study reported having less than six sessions. This may cause readers to question whether the findings of this study were biased by these participants who may not have been exposed to an adequate amount of effective treatment. To address this concern, an independent t-test was conducted comparing therapy outcome between those participants who had less than 6 sessions ( $N = 31$ ) and those who had at least 6 sessions ( $N = 59$ ).

However, no significant difference was detected between these two groups ( $t = -.582$ ;  $p = .562$ ). Moreover, most of the hypotheses were still found to be significant using only those participants who reported having at least 6 sessions. The results of the hierarchical regression analyses for Hypothesis I to IIIA are presented in Table 16. (To simplify the presentation of the results of the 6 hypotheses, only  $R^2$  increment,  $F$  value change, and degrees of freedom are presented for each hypothesis being tested.) The results of the bootstrap analyses for Hypothesis IV and IVA are reported in Table 17. These additional findings provided further empirical support for the proposed hypotheses and, therefore, demonstrated the robustness of the findings in this study.



*Figure 2. Alternative Mediation Model.*

Table 14

*Bootstrap Analyses of the Magnitude and Statistical Significance of Direct and Indirect Effects*

Independent variable	Mediator variable	Dependent variable	$\beta$ standardized indirect effect	B mean indirect effect <sup>a</sup>	SE of mean <sup>a</sup>	95% CI (lower, upper)
Pre-M→		Pre-AF	-.44	-.57	.139	-.616, -.210
Pre-M→		Pre-AS	-.59	-.80	.116	-.712, -.430
Pre-AS→		Pre-AF	.25	.23	.095	.059, .449
Pre-M→	Pre-AS→	Pre-AF	$(-.59) \times (.25) = -.15$	-.18	.086	-.292, -.038**

*Note.* <sup>a</sup> These values are based on unstandardized path coefficient. CI = confidence

interval. Pre-AS = pre-therapy attachment security; Pre-M = pre-therapy mindfulness;

Pre-AF = pre-therapy adaptive functioning.

\*\*  $p < .01$ .

Table 15

*Bootstrap Analyses of the Magnitude and Statistical Significance of Direct and Indirect**Effects*

Independent variable	Mediator variable	Dependent variable	$\beta$ standardized indirect effect	B mean indirect effect <sup>a</sup>	SE of mean <sup>a</sup>	95% CI (lower, upper)
Change-M→		Change-AF	-.22	-.30	.139	-.444, -.024
Change-M→		Change-AS	-.22	-.15	.189	-.417, -.005
Change-AS→		Change-AF	.30	.22	.107	.010, .549
Change-M→	Change-AS→	Change-AF	$(-.22) \times (.30) = -.07$	-.03	.057	-.187, -.006*

*Note.* <sup>a</sup> These values are based on unstandardized path coefficient. CI = confidence

interval. Change-M = changes in client mindfulness; Change-AS = changes in client attachment security; Change-AF = changes in adaptive functioning.

\*  $p < .05$ .

Table 16

*Regression Equations in Testing Hypotheses I to IIIA Using Participants with at Least Six Sessions*

Hypothesis	$R^2$ inc.	$F$ inc.	$df$
Hypothesis I	.26	25.72***	1, 56
Hypothesis IA	.04	4.17*	1, 54
Hypothesis II	.30	27.49***	1, 56
Hypothesis IIA	.06	4.99*	1, 54
Hypothesis III	.34	38.27***	1, 56
Hypothesis IIIA	.09	12.07**	1, 54

*Note.* inc. = increment. Hypothesis I = client recalled pre-therapy attachment security would predict client recalled pre-therapy functioning; Hypothesis IA = changes in client attachment security during therapy would predict therapy outcome; Hypothesis II = client recalled pre-therapy attachment security would predict client recalled pre-therapy mindfulness; Hypothesis IIA = changes in client attachment security during therapy would also predict changes in client mindfulness during therapy; Hypothesis III = client recalled pre-therapy mindfulness would predict client recalled pre-therapy functioning; Hypothesis IIIA = changes in client mindfulness during therapy would predict therapy outcome.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .



Table 17

*Bootstrap Analyses of the Magnitude and Statistical Significance of Direct and Indirect Effects Using Participants with at Least Six Sessions*

Independent variable	Mediator variable	Dependent variable	$\beta$ standardized indirect effect	B mean indirect effect <sup>a</sup>	SE of mean <sup>a</sup>	95% CI (lower, upper)
Hypothesis IV						
Pre-AS→		Pre-AF	.28	.25	.114	.026, .532
Pre-AS→		Pre-M	-.57	-.42	.081	-.704, -.369
Pre-M→		Pre-AF	-.45	-.55	.162	-.668, -.177
Pre-AS→	Pre-M→	Pre-AF	$(-.57) \times (-.45) = .26$	.23	.071	.124, .411**
Hypothesis IVA						
Change-AS→		Change-AF	.14	.11	.112	-.175, .467
Change-AS→		Change-M	-.31	-.19	.085	-.612, -.059
Change-M→		Change-AF	-.33	-.36	.156	-.601, -.071
Change-AS→	Change-M→	Change-AF	$(-.31) \times (-.33) = .10$	.07	.044	.014, .280*

*Note.* <sup>a</sup> These values are based on unstandardized path coefficient. CI = confidence interval. Pre-AS = pre-therapy attachment security; Pre-M = pre-therapy mindfulness; Pre-AF = pre-therapy adaptive functioning; Change-AS = changes in attachment security; Change-M = changes in mindfulness; Change-AF = changes in adaptive functioning; Hypothesis IV = client recalled pre-therapy mindfulness would partially mediate the relation between client recalled pre-therapy attachment security and pre-therapy functioning; Hypothesis IVA = changes in client mindfulness during therapy would partially mediate the relation between changes in client attachment security during therapy and therapy outcome.

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

## Chapter 6 – Discussion

The purpose of this study was mainly to investigate the relations among the three constructs—attachment security, mindfulness, and adaptive functioning—in clients who ended therapy within the last six months. In this chapter, the findings relevant to the hypotheses will be discussed. Also, limitations of the current study as well as suggestions for future research will be addressed, followed by several practical implications.

In general, most of the findings were consistent with the hypotheses in the present study. Specifically, client recalled pre-therapy attachment security was found to predict client recalled pre-therapy mindfulness as well as client recalled pre-therapy adaptive functioning. And client recalled pre-therapy mindfulness was shown to predict client recalled pre-therapy adaptive functioning. Also, it was shown that changes in client attachment security during therapy predicted changes in client mindfulness as well as changes in client adaptive functioning during therapy. And it was found that changes in client mindfulness predicted changes in client adaptive functioning during therapy. Furthermore, client recalled pre-therapy mindfulness was found to partially mediate the relation between client recalled pre-therapy attachment security and pre-therapy adaptive functioning. Also, changes in client mindfulness during therapy were shown to partially mediate the relation between changes in client attachment security and changes in client adaptive functioning during therapy. However, the data in this study failed to support the hypothesis that changes in client mindfulness during therapy would be larger than changes in client attachment security during therapy. The discussion of the key findings in this study will be broken down into several subsections and presented below according to the variables involved in those findings.

### *Attachment Security and Adaptive Functioning*

The present study established that client recalled pre-therapy attachment security predicts client recalled pre-therapy functioning. This finding is consistent with prior research that evidenced positive associations between attachment security and healthy human functioning, such as social competence (Lopez, 1995), resourcefulness in coping (Buelow, Lyddon, & Johnson, 2002), college adjustment (Kenny & Rice, 1995), just to name a few. Moreover, it was found in this current study that changes in client attachment security during therapy predict changes in client adaptive functioning therapy outcome (i.e., therapy outcome). This finding is also in keeping with previous research that established the positive links between clients' attachment security and therapy outcome (e.g., Fonagy et al., 1996; Meyer et al., 2001; Mosheim et al., 2000). In other words, these findings seem to suggest that (a) at the beginning stage of therapy, the greater clients' levels of attachment security, the higher their levels of adaptive functioning and (b) the greater the changes clients experience in attachment security, the more progress clients may make over the course of therapy.

According to the first additional analysis, it was discovered that client pre-therapy attachment security did not predict therapy outcome. This nonsignificant finding seemed to reflect the empirical inconsistency regarding this link that has already been identified in existing research. For example, Mosheim and colleagues (2000) found that the "securely" attached patients seemed to benefit most from treatment, whereas Fonagy and others (1996) reported that patients with the "dismissive" attachment orientation appeared to show the greatest amount of improvement over the course of therapy. From the theoretical standpoint, these inconsistent findings may seem puzzling and even

counterintuitive, given the significant associations established between attachment security and positive life adaptations. These phenomena could, however, be understood from the perspective of measurement issues. It is possible that the insecurely attached patients might have come in therapy with much lower functioning and therefore had plenty of room for improvement. In comparison, their securely attached counterparts might have come in therapy with already high levels of functioning and, due to the ceiling effect, were not allowed much room for improvement to begin with.

### *Mindfulness and Adaptive Functioning*

This current study demonstrated that client recalled pre-therapy mindfulness predicts client recalled pre-therapy adaptive functioning. In other words, the higher clients' initial levels of mindfulness, the higher their initial levels of adaptive functioning. This finding echoes the existing research that indicated the consistent positive correlations between mindfulness and a host of indicators of optimal human functioning (e.g., general well-being, Brown & Ryan, 2003; neuroplasticity, Davidson, 2003; neural integration, Siegel, 2007). In addition, it was also discovered in this present study that changes in client mindfulness predict changes in client adaptive functioning (i.e., therapy outcome). That is to say, over the course of therapy, as clients experience greater changes in their levels of mindfulness, they may achieve greater therapeutic gains. This finding not only confirmed the positive relations reported in a plethora of existing empirical data between mindfulness-based interventions and therapy outcome (e.g., ACT, Hayes et al., 1999; MBSR, Kabat-Zinn, 1990; DBT, Linehan, 1993; MBCT, Segal et al., 2002), it also lent empirical support to the positive relation specifically between mindfulness and therapy outcome.

Perhaps more interestingly, it was found in one of the additional analyses in this study that client recalled pre-therapy mindfulness also predicts changes in client adaptive functioning during therapy (i.e., therapy outcome). This seems to suggest that clients' initial levels of mindfulness may be an indicator of the amount of therapeutic gains they may be able to achieve over the course of therapy. Since prior empirical evidence was focused mainly on establishing the significant relations between mindfulness-based interventions and therapy outcome, this finding added to the existing research by provision of initial empirical support for the significance of clients' initial mindfulness levels in predicting therapy outcome.

#### *Attachment Security and Mindfulness*

Significant relationships were found in the present study between client recalled pre-therapy attachment security and mindfulness as well as changes in client attachment security and changes in mindfulness during therapy. As was discussed in the literature review, one's attachment security has been theorized to enhance one's mindfulness (e.g., Siegel, 2007). However, prior research only provided empirical support for the positive associations between attachment security and mindfulness“-related” constructs, such as reflective functioning (Fonagy et al., 1995/2000), emotional awareness (Mallinckrodt & Wei, 2005) and reflective capacity/observing ego (Ma, 2006), but not for the direct link between attachment security and mindfulness. The finding in this study offered initial empirical evidence that one's attachment security may help improve one's level of mindfulness, which confirmed Siegel's (2007) proposition that the interpersonal attunement in secure attachment relationships appeared to help develop the “intra-”personal attunement (i.e., mindfulness) within individuals.

The hypothesis that changes in client mindfulness during therapy would be larger than changes in client attachment security during therapy was not supported by the data in the present study. One possible explanation for this nonsignificant result is that, in this study, duration of the participants' most recent therapy ranged from 1 day to 6 years and their reported session numbers ranged from 1 to 240. Specifically, approximately 8% of the participants had more than 40 sessions that lasted for more than two years. In other words, the sample in this current study included participants with relatively longer-term therapy, which was not appropriate for testing this hypothesis that was premised particularly on "brief" therapy. Also, some participants' reported session numbers did not seem to fit with their reported duration of therapy (i.e., some seemed very concentrated, while others seemed relatively spread out), which might create instability in the existing data. When the author conducted the paired-sample *t*-test, using only the data from those participants who reported having 12 sessions over less than 4 months, the sample size dropped to 58, which, according to Cohen (1992, 1998), is lacking in statistical power to detect even a medium effect size. The *t*-value, though still nonsignificant, increased to .25. In short, due to the wide variability and potential instability in the reported therapy duration and session number in the data, no firm conclusion can be drawn regarding this hypothesis in the current study. This proposed hypothesis obviously needs further research for confirmation or disconfirmation.

#### *Attachment Security, Mindfulness and Adaptive Functioning*

Both mediational models proposed were supported by the data in the current study. Specifically, client recalled pre-therapy mindfulness was found to partially mediate the relation between client recalled pre-therapy attachment security and adaptive functioning.

Besides, changes in client mindfulness during therapy were shown to partially mediate the link between changes in client attachment security during therapy and therapy outcome (i.e., changes in client adaptive functioning during therapy). These findings are in keeping with existing empirical evidence that mindfulness-related constructs (e.g., reflective functioning, Fonagy et al., 1995/2000; emotional awareness, Mallinckrodt & Wei, 2005; reflective capacity/observing ego, Ma, 2006) appeared to function as significant mediators in the link between attachment security and optimal human functioning in nonclinical samples. Furthermore, these findings added to the existing research through provision of preliminary empirical support for the mediating role of mindfulness in the relation between attachment security and adaptive functioning in a clinical sample of young adults.

Interestingly, two alternative mediational models (with attachment security as the mediator in the link between mindfulness and adaptive functioning in the therapeutic context) were also supported by the data in the current study. These findings are in line with what the author of this study discovered in another research project (Ma, 2006) in which attachment security was demonstrated to partially mediate the relation between reflective capacity, a construct theoretically similar to mindfulness, and personal resilience in a nonclinical sample of young adults. These findings imply that attachment security and mindfulness also seem to feed on each other, as do attachment security and reflective capacity (Fonagy et al., 1995/2000).

#### *Robustness of Findings*

It is worthy of note that the sample in this study was found to be comparable to a clinical sample in terms of adaptive functioning. Specifically, the retrospective pretest

and follow-up data in this study were shown to be comparable to the actual pretest and posttest data from patients in a university-based outpatient clinic in terms of adaptive functioning. This not only demonstrated that the sample in this current study was similar to a clinical sample, but also showed empirical support for the validity of using retrospective pretest data as pretest data and using follow-up data as posttest data in this current study. Furthermore, all the proposed hypotheses that were shown to be significant using the original sample in this study still came out as significant using those participants who reported having at least six sessions. These additional findings indicated that the significant findings of this study were not biased by those participants who may not have been exposed to an adequate amount of effective treatment. These findings also provided further empirical support for the proposed hypotheses and, therefore, demonstrated the robustness of the findings in this present study.

### *Limitations*

Despite many of the interesting findings discovered in this current study regarding the relationships among attachment security, mindfulness, and adaptive functioning in the population of young adult clients, several limitations should be noted. First of all, the nature of correlational studies like the present study using concurrent measures does not permit causal inferences about the models being tested. The data showed moderate correlations between attachment security and mindfulness as well as between mindfulness and adaptive functioning. Yet, correlations do not equal causation.

Second, due to practical constraints, the author was unable to employ actual pretest and posttest data as well as behavioral measures to assess the variables of interest in this study. Though retrospective pretests do provide valid and useful information on



subjects' pretest conditions (Howard, 1980) and though follow-up data, especially within one-year of termination, generally do not show significant differences from post-therapy data (e.g., Sherman, 1998; Taylor, 1996), no comparison could be made in this current study between pretest and retrospective pretest data as well as between posttest and follow-up data. Therefore, no definitive conclusion can be drawn from the study results as to whether clients' recalled pre-therapy conditions accurately reflect their actual pre-therapy conditions and whether clients' post-therapy reports truly reflect their actual post-therapy conditions as assessed right after termination of therapy.

Third, it was unclear as to why people self-selected to participate in this project. Interestingly, though, while the participants who had less than six sessions reported significantly higher pre-therapy functioning than those who had at least six sessions, no significant difference was detected between these two groups in terms of their post-therapy functioning. Maybe the participants in this project happened to have a more positive experience in their most recent therapy than those who did not. If this was the case, these participants' responses might have been tainted by their desire to look good to themselves. This may explain the significant correlations observed between almost all the variables of interest and social desirability, particularly the Self-Deception subscale, in this study.

Fourth, the wide variability in terms of therapy duration and session number in this study's sample, especially those with relatively longer-term therapy, may have rendered the sample inappropriate for testing hypotheses premised on "short-term" therapy. Fifth, the sample in this study consisted of predominantly European American and predominantly female college students, which reduced the generalizability of the

findings to other populations, e.g., predominately male from other racial/ethnic backgrounds. Finally, each construct in this study was measured only by one self-report instrument and from client perspective only. Although social desirability was controlled for in this present study, the study still suffered from mono-operation and mono-method biases.

#### *Directions for Future Research*

The current study provided preliminary empirical support for several significant relations among attachment security, mindfulness, and adaptive functioning. The results also expanded previous research studies on similar relations among these constructs from nonclinical to a clinical sample of young adults. What are some potentially useful directions for research in this area to take? First, to increase generalizability of future research findings to other populations, a more ethnicity- and gender-balanced sample is highly recommended for replications of this line of research inquiries in the future. Second, interested researchers may want to replicate this study and refine its design by incorporating retrospective pretest, pretest, posttest as well as behavioral measures in assessing the variables of interest and their relationships as proposed in the present study. Third, researchers may want to conduct longitudinal or experimental studies to investigate the mediational models in order to make clearer causal inferences about the relations among the three constructs. Fourth, researchers may want to examine the hypotheses proposed in this study in the contexts of both short-term and long-term therapy to see if and how differential duration of therapy may affect the variables of interest in this present study. Fifth, even though mindfulness is theorized to be a unifying construct that cuts across different theoretical frameworks, it may be interesting to

examine whether different therapeutic approaches (e.g., psychodynamic, interpersonal, cognitive behavioral) may result in differential levels of mindfulness in clients. Finally, it may also be interesting to look at how therapists' levels of mindfulness may be related to or even influence their clients' levels of mindfulness over the course of therapy.

### *Practical Implications*

The results in this study have several clinical implications for counseling the young adult population. For one thing, given the moderate correlations between attachment security and adaptive functioning as well as between attachment security and mindfulness in young adult clients, if clinicians can help modify clients' internal models of attachment relationships, they may, in turn, help clients become more in tune with their internal experiences in the present moment as well as more able to improve their functioning. The therapeutic relationship is in many ways comparable to an attachment relationship (Farber, Lippert, & Nevas, 1995; Gelso & Hayes, 1998). Therapists can exert some influence on the internal models of their clients' attachment relationships by becoming a significant "attachment figure" for their clients. The therapists may act as a secure base in sessions for their clients to freely explore their joyful and painful life experiences. They can also provide a holding environment (Winnicott, 1965), containment (Bion, 1962), and also corrective emotional experiences (Alexander & French, 1946) for their clients in the context of the intimate therapeutic relationship. One of the major tasks for therapists is to offer their clients different and good-enough interpersonal relationships, which may, in time, help modify the clients' outdated maladaptive internal working models of their previous attachment relationships.

A second implication is that given the significant positive relation found between mindfulness and optimal functioning found in young adult clients in this study, practitioners may want to consider employing mindfulness-based interventions or incorporating the concept of mindfulness in their clinical work. Therapists can help their clients to develop a healthy relationship with their thoughts and feelings and to engage in healthy behaviors and interpersonal relationships, especially during the interactions with the therapists in the here-and-now. This intrapersonal attunement may help clients, especially the detached or overwhelmed ones, strike a harmonious mental balance, which may in time help them to disentangle from stressful situations, to stay in touch with their internal world with acceptance, and finally to use helpful information they gain from their internal experiences to appropriately respond, rather than impulsively react, to those situations.

Finally, one's attachment security may influence one's adaptive functioning partially through one's mindfulness. As was discussed in the literature review, one's attachment organization, once formed, is not very susceptible to modification, let alone replacement (e.g., Bowlby, 1969/1982), especially in brief therapy. Therefore, in short-term therapy, therapists may want to consider targeting at raising clients' levels of mindfulness, which seems to lend itself to adjustment in relatively shorter periods of time through such interventions as mindfulness meditation, mindfulness skills training, etc. Also, one's mindfulness also seems to influence one's adaptive functioning partially through one's attachment security. In other words, one's attachment security and mindfulness appear to feed on each other to help improve one's optimal functioning. It seems that no matter which component therapists target for interventions in therapy, it

may naturally enhance the other and then further enhance the clients' ability to better cope with stress and challenges in their lives (Wallin, 2007).

## Appendix A

### Experiences in Close Relationships Scale (ECRS)

*Instructions:* The following statements concern how you feel in **romantic relationships**. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement by indicating how much you agree or disagree with it. Please write down the number that best shows how much you agree or disagree with each item according to the scale below.

1.....	2.....	3.....	4.....	5.....	6.....	7.....
Strongly			Neutral/mixed			Strongly
Disagree						Agree

1. I prefer not to show a partner how I feel deep down.
2. I worry about being abandoned.
3. I am very comfortable being close to romantic partners.
4. I worry a lot about my relationships.
5. Just when my partner starts to get close to me, I find myself pulling away.
6. I worry that romantic partners won't care about me as much as I care about them.
7. I get uncomfortable when a romantic partner wants to be very close.
8. I worry a fair amount about losing my partner.
9. I don't feel comfortable opening up to romantic partners.
10. I often wish that my partner's feelings for me were as strong as my feelings for him/her.
11. I want to get close to my partner, but I keep pulling back.
12. I often want to merge completely with romantic partners, and this sometimes scares them away.
13. I am nervous when partners get too close to me.
14. I worry about being alone.
15. I feel comfortable sharing my private thoughts and feelings with my partner.
16. My desire to be very close sometimes scares people away.
17. I try to avoid getting too close to my partner.
18. I need a lot of reassurance that I am loved by my partner.
19. I find it relatively easy to get close to my partner.
20. Sometimes I feel that I force my partners to show more feeling, more commitment.
21. I find it difficult to allow myself to depend on romantic partners.
22. I do not often worry about being abandoned.
23. I prefer not to be too close to romantic partners.
24. If I can't get my partner to show interest in me, I get upset or angry.
25. I tell my partner just about everything.
26. I find that my partner(s) don't want to get as close as I would like.
27. I usually discuss my problems and concerns with my partner.
28. When I'm not involved in a relationship, I feel somewhat anxious and insecure.
29. I feel comfortable depending on romantic partners.
30. I get frustrated when my partner is not around as much as I would like.
31. I don't mind asking romantic partners for comfort, advice, or help.
32. I get frustrated if romantic partners are not available when I need them.
33. It helps to turn to my romantic partner in times of need.
34. When romantic partners disapprove of me, I feel really bad about myself.
35. I turn to my partner for many things, including comfort and reassurance.
36. I resent it when my partner spends time away from me.

## Appendix B

### Five Facet Mindfulness Questionnaire (FFMQ)

*Instructions:* This list asks you to estimate how well each statement reflects your behavior. It is not a test so there are no right or wrong answers. Answer all items carefully by circling the number to the right of the statement that most accurately reflects your estimate of your behavior.

1.....	2.....	3.....	4.....	5.....
Strongly	Disagree	Neutral	Agree	Strongly
Agree				Disagree

1. I perceive my feelings and emotions without having to react to them.
2. When I'm walking, I deliberately notice the sensations of my body moving.
3. I find it difficult to stay focused on what's happening in the present.
4. I'm good at finding the words to describe my feelings.
5. I criticize myself for having irrational or inappropriate emotions.
6. I watch my feelings without getting lost in them.
7. When I take a shower or a bath, I stay alert to the sensations of water on my body.
8. It seems I am "running on automatic" without much awareness of what I'm doing.
9. I can easily put my beliefs, opinions, and expectations into words.
10. I tell myself that I shouldn't be feeling the way I'm feeling.
11. In difficult situations, I can pause without immediately reacting.
12. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
13. I rush through activities without being really attentive to them.
14. It's hard for me to find the words to describe what I'm thinking.
15. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.
16. Usually when I have distressing thoughts or images, I am able just to notice them without reacting.
17. I pay attention to sensations, such as the wind in my hair or sun on my face.
18. I do jobs or tasks automatically, without being aware of what I'm doing.
19. I have trouble thinking of the right words to express how I feel about things.
20. I make judgments about whether my thoughts are good or bad.
21. Usually when I have distressing thoughts or images, I feel calm soon after.
22. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
23. I find myself doing things without paying attention.
24. When I have a sensation in my body, it's hard for me to describe it because I can't find the right words.
25. I tell myself I should be thinking the way I'm thinking.
26. Usually when I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.
27. I notice the smells and aromas of things.
28. When I do things, my mind wanders off and I'm easily distracted.
29. Even when I'm feeling terribly upset, I can find a way to put it into words.
30. I think some of my emotions are bad or inappropriate and I shouldn't feel them.
31. Usually when I have distressing thoughts or images, I just notice them and let them go.
32. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.
33. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.
34. My natural tendency is to put my experiences into words.
35. I disapprove of myself when I have irrational ideas.

- 36. I pay attention to how my emotions affect my thoughts and behavior.
- 37. I am easily distracted.
- 38. I can usually describe how I feel at the moment in considerable detail.
- 39. Usually when I have distressing thoughts or images, I judge myself as good or bad, depending on what the thought or image is about.



## Appendix C

### Outcome Questionnaire (OQ-45.2)

*Instructions:* Looking back over the last week, including today, help us understand how you have been feeling. Read each item carefully. Please use the following scale and write down the number which best describes your current situation. For this questionnaire, work is defined as employment, school, housework, volunteer work, and so forth.

1.....2.....3.....4.....5  
Never          Rarely          Sometimes          Frequently          Almost Always

1. I get along well with others.
2. I tire quickly.
3. I feel no interest in things.
4. I feel stressed at work/school.
5. I blame myself for things.
6. I feel irritated.
7. I feel unhappy in my marriage/significant relationship.
8. I have thoughts of ending my life.
9. I feel weak.
10. I feel fearful.
11. After heavy drinking, I need a drink the next morning to get going. (If you do not drink, choose "never.")
12. I find my work/school satisfying.
13. I am a happy person.
14. I work/study too much.
15. I feel worthless.
16. I am concerned about family troubles.
17. I have an unfulfilling sex life.
18. I feel lonely.
19. I have frequent arguments.
20. I feel loved and wanted.
21. I enjoy my spare time.
22. I have difficulty concentrating.
23. I feel hopeless about the future.
24. I like myself.
25. Disturbing thoughts come into my mind that I cannot get rid of.
26. I feel annoyed by people who criticize my drinking (or drug use). (If not applicable, choose "never.")
27. I have an upset stomach.
28. I am not working/studying as well as I used to.
29. My heart pounds too much.
30. I have trouble getting along with friends and close acquaintances.
31. I am satisfied with my life.
32. I have trouble at work/school because of drinking or drug use. (If not applicable, choose "never.")
33. I feel that something bad is going to happen.
34. I have sore muscles.
35. I feel afraid of open spaces, of driving, or being on buses, subways, and so forth.
36. I feel nervous.
37. I feel my love relationships are full and complete.

- 38. I feel that I am not doing well at work/school.
- 39. I have too many disagreements at work/school.
- 40. I feel something is wrong with my mind.
- 41. I have trouble falling asleep or staying asleep.
- 42. I feel blue.
- 43. I am satisfied with my relationships with others.
- 44. I feel angry enough at work/school to do something I might regret.
- 45. I have headaches.

## Appendix D

### Balanced Inventory of Desirable Responding (BIDR)

*Instructions:* Using the scale below as a guide, choose a number beside each statement to indicate how much you agree with it.

1.....2.....3.....4.....5.....6.....7  
Not True                      Somewhat True                      Very True

1. My first impressions of people usually turn out to be right.
2. It would be hard for me to break any of my bad habits.
3. I don't care to know what other people really think of me.
4. I have not always been honest with myself.
5. I always know why I like things.
6. When my emotions are aroused, it biases my thinking.
7. Once I've made up my mind, other people can seldom change my opinion.
8. I am not a safe driver when I exceed the speed limit.
9. I am fully in control of my own fate.
10. It's hard for me to shut off a disturbing thought.
11. I never regret my decisions.
12. I sometimes lose out on things because I can't make up my mind soon enough.
13. The reason I vote is because my vote can make a difference.
14. My parents were not always fair when they punished me.
15. I am a completely rational person.
16. I rarely appreciate criticism.
17. I am very confident of my judgments.
18. I have sometimes doubted my ability as a lover.
19. It's all right with me if some people happen to dislike me.
20. I don't always know the reasons why I do the things I do.
21. I sometimes tell lies if I have to.
22. I never cover up my mistakes.
23. There have been occasions when I have taken advantage of someone.
24. I never swear.
25. I sometimes try to get even rather than forgive and forget.
26. I always obey laws, even if I'm unlikely to get caught.
27. I have said something bad about a friend behind his or her back.
28. When I hear people talking privately, I avoid listening.
29. I have received too much change from a salesperson without telling him or her.
30. I always declare everything at customs.
31. When I was young I sometimes stole things.
32. I have never dropped litter on the street.
33. I sometimes drive faster than the speed limit.
34. I never read sexy books or magazines.
35. I have done things that I don't tell other people about.
36. I never take things that don't belong to me.
37. I have taken sick-leave from work or school even though I wasn't really sick.
38. I have never damaged a library book or store merchandise without reporting it.
39. I have some pretty awful habits.
40. I don't gossip about other people's business.

## Appendix E

### Instructions to the Participants

This study is about relations between people's interpersonal relationships, self-awareness, and therapy outcome. Your task is to fill out the measures as carefully and truthfully as you can. It will take about 30-40 minutes to fill out the whole survey. We thank you in advance for your time and patience!

Please respond to the following measures according to how you feel NOW.

Now please take a minute to recall being in the FIRST session of your most recently terminated therapy. Please respond to the following measures according to how you felt THEN.

Please provide some basic demographic information about you.

You have finished filling out all the forms and measures for this study. Thank you very much for your participation! The purpose of this study... (See Appendix H for the debriefing statement.)

*Note.* Each paragraph or sentence will be shown on one page on the computer screen, followed by the relevant measures or form.

## Appendix F

### Participant Demographics Form

*Instructions:* Please complete the following items, either by putting an **X** next to your choice, or by writing in responses where appropriate.

1. Gender: ☐ Female ☐ Male ☐ Transgender
2. Age:
3. Race/Ethnicity:  
☐ African American  
☐ Asian/Pacific Islander  
☐ European American/Caucasian  
☐ Hispanic/Latino American  
☐ Other (Please specify: )
4. Relationship Status:
  - 1) Are you currently and/or have you been in a romantic relationship in which you are not seeing others except your partner? ☐ Yes ☐ No
  - 2) If you answered yes, how long were you or have you been in the romantic relationship that lasted the longest? (Please give a rough estimate.)  
 years  months  weeks  days
5. Counseling Experiences: (Please give a rough estimate.)
  - 1) How long has it been since you terminated your most recent therapy?  
 months  weeks  days
  - 2) How long did this counseling experience last?  
 years  months  weeks  days
  - 3) How many sessions did you have in the most recent therapy?
  - 4) Did you have any counseling experience prior to this counseling experience?  
☐ yes ☐ no
6. Meditation Experiences:

Do you have any meditation experience?

☐ yes; for how long?  years  months  weeks  days  
☐ no

## Appendix G

### Participant Informed Consent Form

Project title: Attachment Security, Mindfulness, and Psychotherapy: Testing a Mediational Model.

Investigator: Yueher (Emilie) Ma, U of Maryland, College Park, 301.314.7118, [yma1@umd.edu](mailto:yma1@umd.edu)  
Dr. Charles J. Gelso, U of Maryland, College Park, [gelso@psyc.umd.edu](mailto:gelso@psyc.umd.edu)

Purpose of study: This study is designed to investigate such concepts as interpersonal relationships, self-awareness and therapy outcome.

Procedures: I am aware that I will be asked to complete questionnaires regarding (a) interpersonal relationships with such items as “I worry about being abandoned,” “I prefer not to be too close to my partners,” etc.; (b) self-awareness with such items as “I perceive my feelings and emotions without having to react to them,” “It’s hard for me to find the words to describe what I’m thinking,” etc.; (c) adaptive functioning, such as “I like myself,” “I enjoy my spare time,” “I get along well with others,” etc. I am aware that my participation in this study will require one 30-40 minute time commitment.

Confidentiality: I am aware that all information collected in the study is confidential, and that I will not be identified at any time. The research questionnaires will contain as the only identifier a randomly assigned four-digit code. All questionnaires will be kept in a secure facility.

Risk/benefit statement: I am aware that participation in this project involves risk that is no greater than that encountered in ordinary daily living. The research (completing questionnaires) is not designed to help me personally, but the investigator hopes to learn more about the concepts of self-awareness and interpersonal relationships to help enhance counseling. I am aware that I may withdraw from the study at any time without penalty.

Statement of Willingness to Participate: I understand that my participation is completely voluntary and that I may withdraw participation and consent at any point within the study without consequence. I also understand that I may ask questions at any time without penalty. I certify that I am over 18 years of age, in good physical health, and am willing to participate in the research project under the direction of Ms. Ma and Dr. Gelso.

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(Participant’s Signature)

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(Date of Participation)

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(Participant’s Printed Name)

If you have any questions about your rights as a research participant or wish to report a research-related injury, you may contact:

Dr. Charles Stangor, Chair of Human Subjects Committee in the Department of Psychology at the University of Maryland; phone: 301-405-5921, or the Institutional Review Board Office at the University of Maryland, College Park, Maryland, 20742; email: [irb@deans.umd.edu](mailto:irb@deans.umd.edu); phone: 301-405-4212.

## Appendix H

### Debriefing Statement

Thank you for participating in this study. The purpose of the study is to investigate if and how people's nonjudgmental present-moment awareness (i.e., mindfulness) may be related to their interpersonal relationships and sense of well-being before and after therapy. You have completed four questionnaires for this study. One measured your attachment styles, another assessed your levels of mindfulness before and after therapy, still another measured your sense of well-being before and after therapy, and the other assessed your tendency to give positive self descriptions.

Please be certain that your responses to the questionnaires will be held in strict confidentiality. Under no circumstances will this be violated. Your responses will only be seen as anonymous, and reports based on the findings of this study will use only aggregate data, not individual responses.

Due to the fact that some people have not yet participated in this study, we must ask you not to discuss this study in detail with anyone. This is crucial to maintaining the validity of the study. If you wish to speak to the study's primary investigator, please feel free to contact Yueher (Emilie) Ma at [yma@psyc.umd.edu](mailto:yma@psyc.umd.edu). Thank you very much for your participation! We really appreciate your time and help!

## Appendix I

### Study Flyer

If you are 18 or older AND just ended individual therapy within the last six months, you are eligible to complete an online survey to earn one course credit or to enter to win one of ten \$20 lotteries!!!

Researchers at the University of Maryland are conducting a study on the effect of psychotherapy. If you have just ended individual counseling within the last six months, please consider participating in this study, which only takes about 30-40 minutes to complete online. Your responses will be kept completely confidential.

If you are interested in helping with this research project, please visit the following link: \_\_\_\_\_

Your participation in this survey will assist researchers in better understanding what makes therapy works. Your participation is greatly appreciated. Thank you so much for your time and help!

If you have any questions about your rights as a research participant or wish to report a research-related injury, you may contact: Dr. Charles Stangor, Chair of Human Subjects Committee in the Department of Psychology at the University of Maryland; phone: 301-405-5921, or the Institutional Review Board Office at the University of Maryland, College Park, Maryland, 20742; email: [irb@deans.umd.edu](mailto:irb@deans.umd.edu); phone: 301-405-4212.



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