

2012

# Attachment, experiential avoidance, and mindfulness in the narrative disclosure task

---

<https://hdl.handle.net/2144/31621>

*"Downloaded from OpenBU. Boston University's institutional repository."*

BOSTON UNIVERSITY  
GRADUATE SCHOOL OF ARTS AND SCIENCES

Dissertation

**ATTACHMENT, EXPERIENTIAL AVOIDANCE, AND MINDFULNESS  
IN THE NARRATIVE DISCLOSURE TASK**

by

**VALERIE ROSEN WILSON**

B.A., Swarthmore College, 1995  
M.A., Boston University, 2004

Submitted in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy

2012



PhD  
2012  
wils  
cop.1



Approved by

First Reader

[Redacted]  
Leslie R. Brody, Ph.D.  
Professor of Psychology

Second Reader

[Redacted]  
Tibor Palfai, Ph.D.  
Associate Professor of Psychology

Third Reader

[Redacted]  
Kathleen Malley-Morrison, Ed.D.  
Professor of Psychology



## Acknowledgments

I thank my parents, Stanley and Françoise Rosen, my husband, Evan, and my daughter, Jane, for their love and support over the years. I thank the members of my committee, and in particular my research mentor, Dr. Leslie Brody, for her thoughtful, honest, and practical advice and guidance. I thank my lab mates Amy Dierberger, Susan Moore, Maria Steenkamp, and Sarah Darghouth for their collaboration on this project and for their mentoring, support, and humor. Finally, I thank my fellow interns at Counseling and Psychological Services at the University of Pennsylvania, and the fearless leader of our dissertation support group, Dr. Gabrielle Mauren, for their emotional support and practical guidance in completing the final stages of the dissertation while on internship.

**ATTACHMENT, EXPERIENTIAL AVOIDANCE, AND MINDFULNESS IN THE  
NARRATIVE DISCLOSURE TASK**

(Order No.            )

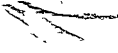
**VALERIE ROSEN WILSON**

Boston University Graduate School of Arts and Sciences, 2012

Major Professor: Leslie R. Brody, Professor of Psychology

**ABSTRACT**

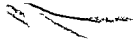
Research on expressive writing (Pennebaker & Beall, 1986) has demonstrated psychological, physiological, and occupational benefits of writing about traumatic events, with many recent studies examining the moderating role of individual difference variables (Frattaroli, 2006). The present study examined the relationship of attachment anxiety and attachment avoidance (as measured by the Experiences in Close Relationships questionnaire) to changes in mindfulness and experiential avoidance (as measured by the Kentucky Inventory of Mindfulness Skills and the Acceptance and Action Questionnaire) following narrative writing for participants who write about traumatic versus emotionally neutral topics. It was predicted that attachment avoidance would be significantly positively related to increases in mindfulness four to eight weeks after writing about traumatic events, and that attachment anxiety would be significantly positively related to increases in mindfulness four to eight weeks after writing about emotionally neutral events. Associations between attachment variables and mindfulness variables at baseline, as well as interactions of attachment variables with linguistic



characteristics of narratives as predictors of changes in mindfulness and experiential avoidance, were also examined. Three hundred twenty-six undergraduate students completed self-report measures of attachment, experiential avoidance, and mindfulness before writing for twenty minutes on one of two assigned topics on three consecutive days. Two hundred thirty-two participants agreed to a voluntary follow-up and completed post-task self-report measures four to eight weeks later. As predicted, attachment avoidance and attachment anxiety were significantly positively correlated with higher levels of experiential avoidance and lower levels of mindfulness at baseline. However, multiple regression analyses showed that in general, interactions of attachment variables with writing condition were not predictive of mindfulness outcomes. Multiple regressions revealed that both attachment avoidance and attachment anxiety predict increased experiential avoidance and decreased mindfulness for participants, especially women, who use increasingly higher frequencies of attachment-related words in their narratives. The present study suggests that healthy, young adult participants with secure attachment gain more in mindfulness following expressive writing than do young adults with more insecure attachment, and there is little evidence for matching participants to writing topics based on attachment style. Clinical and theoretical implications of the findings are discussed.

## Table of Contents

|  |          |
|--|----------|
| List of Tables   | ix       |
| List of Figures  | x        |
| <b>Chapter 1: Introduction</b>   | <b>1</b> |
| The Narrative Disclosure Task  | 2        |
| Adult Attachment   | 5        |
| Experiential Avoidance and Mindfulness   | 13       |
| The Present Study  | 17       |
| Hypotheses   | 19       |
| Relationships Among Variables at Baseline  | 19       |
| Hypothesis 1   | 19       |
| Hypothesis 2   | 19       |
| Content of Writing, Attachment Variables, and Changes in Mindfulness and<br>Experiential Avoidance | 20       |
| Hypothesis 3   | 20       |
| Hypothesis 4   | 20       |
| Attachment and Linguistic Characteristics of Narratives at Baseline                                | 21       |
| Hypothesis 5   | 21       |
| Hypothesis 6   | 21       |
| Attachment and Linguistic Predictors of Changes in Mindfulness and<br>Experiential Avoidance       | 21       |
| Hypothesis 7   | 21       |



|  |           |
|--|-----------|
| Hypothesis 8   | 22        |
| Gender Differences   | 23        |
| Hypothesis 9: Exploratory Analyses                                   | 23        |
| <b>Chapter 2: Methods</b>  | <b>24</b> |
| Participants   | 24        |
| Procedure  | 26        |
| Measures   | 27        |
| Attachment Style   | 27        |
| Mindfulness  | 27        |
| Experiential Avoidance   | 28        |
| Word Use   | 28        |
| <b>Chapter 3: Results</b>  | <b>30</b> |
| Preliminary Analyses   | 30        |
| Differences Between Groups at Baseline                               | 30        |
| Descriptive Statistics and Gender Differences Among Study Completers | 32        |
| Characteristics of Narratives  | 34        |
| Tests of Hypotheses  | 36        |
| Hypotheses 1 and 2   | 36        |
| Hypotheses 3 and 4   | 39        |
| Hypothesis 3   | 39        |
| Hypothesis 4   | 43        |
| Hypotheses 5 and 6   | 46        |

|  |            |
|--|------------|
| Hypotheses 7 and 8                                       | 47         |
| Preliminary Analyses                                     | 48         |
| Hypothesis 7   | 48         |
| Hypothesis 8   | 61         |
| <b>Chapter 4: Discussion</b>                             | <b>68</b>  |
| Attachment, Experiential Avoidance, and Mindfulness      | 68         |
| Attachment, Narrative Content, and Mindfulness Outcomes  | 71         |
| Attachment and Language Use                              | 73         |
| Attachment, Language Use, and Mindfulness Outcomes       | 75         |
| Attachment Avoidance                                     | 75         |
| Gender Differences                                       | 76         |
| Attachment Anxiety                                       | 79         |
| Limitations of the Study                                 | 81         |
| Clinical Implications and Directions for Future Research | 82         |
| Appendix: Participant Instructions                       | 104        |
| <b>References</b>  | <b>109</b> |
| <b>Curriculum Vitae</b>                                  | <b>124</b> |

## List of Tables

|           |  |    |
|-----------|--|----|
| Table 2.1 | Participant retention rates  | 85 |
| Table 2.2 | Ages of study completers and non-completers  | 85 |
| Table 2.3 | Annual household incomes of study completers and non-completers  | 86 |
| Table 2.4 | Ethnicities of U.S. citizen participants   | 87 |
| Table 2.5 | Ethnicities of international student participants  | 88 |
| Table 2.6 | Attachment-related words and word stems  | 89 |
| Table 3.1 | Mean scores of male and female study completers on baseline<br>measures  | 90 |
| Table 3.2 | Mean relative frequencies of word-use categories for men<br>and women  | 91 |
| Table 3.3 | Mean relative frequencies of word-use categories by writing<br>condition   | 91 |
| Table 3.4 | Correlations among self-report measures at baseline  | 92 |
| Table 3.5 | Mean relative frequencies of attachment-related words<br>in Day 1, 2, and 3 narratives                               | 93 |
| Table 3.6 | Mean relative frequencies of negative emotion words in<br>Day 1, 2, and 3 narratives                                 | 93 |
| Table 3.7 | Mean relative frequencies of 2 <sup>nd</sup> - and 3 <sup>rd</sup> -person pronouns<br>in Day 1, 2, and 3 narratives | 94 |
| Table 3.8 | Summary of gender-specific interactions between attachment<br>and linguistic variables                               | 95 |

## List of Figures

|             |   |     |
|-------------|---|-----|
| Figure 3.1  | Effect of Writing Condition X Attachment Avoidance on KIMS<br>Accept scores                         | 98  |
| Figure 3.2  | Effect of Attachment Words Change Score X Attachment<br>Avoidance on AAQ Total scores               | 99  |
| Figure 3.3  | Effect of Attachment Words Change Score X Attachment<br>Avoidance on AAQ Action scores              | 99  |
| Figure 3.4  | Effect of Attachment Words Change Score X Attachment<br>Avoidance on women's AAQ Willingness scores | 100 |
| Figure 3.5  | Effect of Attachment Words Change Score X Attachment<br>Avoidance on women's KIMS Total scores      | 100 |
| Figure 3.6  | Effect of Attachment Words Change Score X Attachment<br>Avoidance on men's KIMS Describing scores   | 101 |
| Figure 3.7  | Effect of Attachment Words Change Score X Attachment<br>Avoidance on women's KIMS Act scores        | 101 |
| Figure 3.8  | Effect of Attachment Words Change Score X Attachment<br>Avoidance on women's KIMS Accept scores     | 102 |
| Figure 3.9  | Effect of Negative Emotion Words Change Score X<br>Attachment Anxiety on AAQ Willingness scores     | 102 |
| Figure 3.10 | Effect of Attachment Words Change Score X Attachment<br>Anxiety on KIMS Total scores                | 103 |

## CHAPTER ONE

### Introduction

Twenty years of research has produced hundreds of studies examining the effects of written disclosure of traumatic events. This research has a number of potential benefits, including the development of empirically-supported protocols for therapeutic written disclosure, greater understanding of emotion regulation and meaning-making processes, and further insight into the relationship of written language to various intrapsychic and sociocultural variables. Although the preponderance of the evidence suggests that expressive writing leads to improved physical and psychological functioning, varying results have been obtained depending on the nature of the sample and the experimental design. Recently, researchers have examined characteristics of the task and of study participants that moderate the effects of expressive writing, seeking to answer the questions “How and for whom does the narrative disclosure intervention work?” While the original task included an experimental condition involving trauma narratives and a control condition involving emotionally-neutral narratives, recent studies employing emotionally-positive narratives have raised questions about the necessity of trauma disclosure in achieving beneficial outcomes following expressive writing. Meanwhile, individual difference variables such as neuroticism, alexithymia, mindfulness, and social support have been examined as potential moderators of the beneficial effects of expressive writing on psychological functioning, but no published study has examined attachment style as a moderator. Further, few studies have looked at mindfulness as an outcome of the narrative disclosure task. The present study sought to

determine whether attachment anxiety and attachment avoidance differentially moderate changes in mindfulness and experiential avoidance following narrative writing for participants who write about traumatic versus emotionally neutral topics. In addition, the interaction of attachment variables with linguistic characteristics of narratives to predict changes in mindfulness and experiential avoidance was examined. A primary goal of the study was to incorporate findings regarding mindfulness, experiential avoidance and narrative writing into an attachment-theoretical framework that provides a rich empirical and theoretical context for understanding individual differences in emotion regulation and psychological adjustment.

### **The Narrative Disclosure Task**

Pennebaker and Beall (1986) provided the first evidence that emotionally expressive writing about traumatic experiences can lead to improved health outcomes. Subsequent studies have also documented improvements in psychological functioning following narrative disclosure of trauma (e.g., Sloan & Marx, 2004a). Pennebaker's narrative disclosure task, in which participants write for approximately twenty minutes on one to three occasions over the course of several days to several weeks, has been examined in hundreds of experiments with diverse populations over the last several decades. In the prototypical design, participants are instructed to write about the most traumatic event of their life and to explore their emotions about the event in depth. Outcomes, ranging from self-reported depression, anxiety, and well-being (Lepore, 1997; Stanton et al., 2002; Sloan & Marx, 2004a) to academic and occupational performance (Francis & Pennebaker, 1992; Pennebaker & Francis, 1996), to utilization of medical

services and immune functioning (Pennebaker & Beall, 1986; Pennebaker, Kiecolt-Glaser, & Glaser, 1988), have typically been compared to those of participants in a control group who write about a neutral topic such as their schedule for the day, with instructions to avoid emotions and focus on facts. Meta-analyses have suggested that expressive writing yields small to moderate effect sizes, including moderate-sized effects for outcomes pertaining to psychological health (Smyth, 1998; Frisina, Borod, & Lepore, 2004; Frattaroli, 2006).

Smyth and Pennebaker (2008) recently noted that the expressive writing intervention was developed empirically, outside the context of any specific theoretical foundation. Questions of how and for whom the intervention works remain unanswered. Some aspects of the design of the intervention appear to be quite flexible. For example, writing about positive topics has been shown to be just as beneficial as writing about trauma (Burton & King, 2004; Pennebaker & Chung, 2007), and effective writing sessions may be briefer in duration, fewer in number, and more closely spaced than originally assumed (Chung & Pennebaker, 2008; Greenberg, Stone, & Wortman, 1996). A number of hypothesized mechanisms of change have received attention, with most authors suggesting that multiple processes are likely involved (Sloan & Marx, 2004b; Smyth & Pennebaker, 2008). Brody and Park (2004) explored the links between expressive writing and mindfulness interventions, which encourage a non-judgmental awareness of the present moment. Brody and Park noted that disinhibition, exposure to negative affect, and changes in cognitive processing, the major factors suggested as mechanisms of change for expressive writing (Sloan & Marx, 2004b), have also been

discussed as key processes underlying mindfulness interventions (e.g., Baer, 2003).

Brody and Park suggested that during expressive writing sessions, the transformation of experience into language, along with the presence of an implicit audience, creates a mindful state that allows unconscious thoughts and feelings to come into conscious awareness and facilitates new and more flexible associations among thoughts, memories, and emotions.

Efforts to understand the complex pattern of findings regarding expressive writing have also focused on possible moderators. A number of studies have explored the hypothesis that expressive writing should be most beneficial for participants who are unaccustomed to expressing their feelings. An early meta-analysis (Smyth, 1998) found that studies with greater percentages of male participants yielded higher effect sizes for expressive writing; however, subsequent reviews have found no effect of gender (e.g., Frattaroli, 2006). Several studies have found that greater ambivalence about emotional expression (Norman, Lumley, Dooley, & Diamond, 2004) and greater difficulty describing one's feelings (Paez, Velasco, & Gonzales, 1999; Solano, Donati, Pecci, Persichetti, & Colaci, 2003) predicted better outcomes following narrative disclosure of trauma. However, other studies have found little support for the hypothesis that alexithymia or emotional avoidance predict greater response to expressive writing (e.g., Smyth, Anderson, Hockemeyer, & Stone, 2002). Lumley (2004) summarized a program of research on this topic and concluded that in fact, alexithymia interfered with the effectiveness of expressive writing among people with chronic health problems; he noted that the studies that found positive effects for alexithymia involved populations without

chronic health conditions. Thus, it is possible that the effects of emotional avoidance or alexithymia on the benefits of expressive writing differ depending on characteristics of the participants, the setting, or the task.

In addition to trait variables such as alexithymia, researchers have examined linguistic features of participants' narratives as moderators of the effects of expressive writing. For example, Pennebaker, Mayne, and Francis (1997) found that greater use of positive emotion words was associated with greater health improvements following expressive writing. In contrast, moderate use of negative emotion words predicted greater health benefits than did extremely high or extremely low use of negative emotion words. Changes in word use over the course of writing sessions have also been examined. Campbell and Pennebaker (2003) reported that the more participants changed the types of pronouns used in their narratives over the course of several days of writing, the more health improvements they experienced. Flexibility in using both first-person and second- or third-person pronouns is believed to reflect a process of perspective-shifting regarding the events being written about. Meanwhile, increasing use of negative emotion words over the course of multiple writing sessions about trauma appears to predict poorer outcomes (Ullrich & Lutgendorf, 2002), and increased use of cognitive-insight words, such as *because*, *reason*, and *realize*, predicts better outcomes (Pennebaker, 1993; Pennebaker & Francis, 1996; Pennebaker, Mayne, & Francis, 1997).

### **Adult Attachment**

Examining the expressive writing paradigm from the perspective of major theories of personality and emotion regulation may provide greater insight into the

unanswered questions regarding moderators of change and mechanisms of action.

Attachment style is a core aspect of personality with far-reaching effects on emotion regulation, interpersonal functioning, and psychopathology, but it has yet to be examined in relation to the expressive writing intervention. The attachment system promotes and regulates relationships with others. It is activated by threats to physical or emotional well-being and motivates efforts to seek and maintain proximity to a primary caregiver or other attachment figure through active approach, expressions of distress, or explicit requests for support (Bowlby, 1969/1982; Main, 1995). Adults' attachment figures may include long-term romantic partners, parents, siblings, or friends (Hazan & Zeifman, 1994; Trinke & Bartholomew, 1997). The characteristic attitudes, coping strategies, and capacities for intimacy that make up an adult's attachment style reflect patterns of behavior that were adaptive in early relationships with caregivers; research suggests rates of 64% to 70% continuity in attachment from infancy to adulthood (Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). Attachment theory posits that this continuity is due to the formation of cognitive-affective schemas known as internal working models of self and other (Bowlby, 1969/1982; Bowlby, 1973). Internal working models also make it possible for adults to obtain felt security through psychological, rather than physical, contact with the attachment figure; for example, by imagining or remembering a supportive interaction (Mikulincer & Shaver, 2007).

Individual differences in attachment arise in infancy when the primary attachment strategy of proximity-seeking is unsuccessful (Mikulincer & Shaver, 2007). The various secondary attachment strategies that were discovered empirically in research with infants

(Ainsworth, Blehar, Waters, & Wall, 1978) gave rise to a categorical system of understanding attachment insecurity, made up of styles such as *anxious*, *ambivalent* (or *preoccupied*) and *avoidant* (or *dismissing*.) Individual differences in adult attachment are commonly understood in terms of two underlying dimensions called *attachment anxiety* and *attachment avoidance* (Bartholomew, Kwong, & Hart, 2001; Brennan, Clark, & Shaver, 1998). Low levels of both anxiety and avoidance result in secure attachment. High levels of attachment anxiety reflect fear of rejection and abandonment and are associated with hyperactivation of the attachment system through increased proximity-seeking and expressions of distress, as in the anxious-ambivalent infant and the preoccupied adult. High levels of attachment avoidance reflect discomfort with closeness and dependency and are associated with deactivation of the attachment system through compulsive self-reliance and denial of distress, as in the avoidant infant and the dismissing adult. High levels of both anxiety and avoidance present as a fearful-avoidant style (Bartholomew & Horowitz, 1991) which has been likened to the disorganized pattern identified in infants (Main & Hesse, 1990) and is characterized by unsuccessful attempts to make use of both hyperactivating and deactivating strategies, a chaotic and fragmented pattern deriving from a severely impaired caregiving relationship.

Attachment security, attachment anxiety, and attachment avoidance are differentially related to a wide range of outcomes. According to theory, the positive internal working models of self and other that characterize secure attachment lead to a balance between autonomy and relatedness that promotes optimal psychological functioning across multiple domains. A secure attachment style results in the

development of capacities for positive emotional experience, healthy self-esteem, prosocial behavior, and openness to new experiences (Mikulincer & Shaver, 2007), as well as flexible, adaptive cognitive processing and emotion regulation (Lopez & Brennan, 2000). Empirical evidence supports this notion. For example, securely attached adults exhibit healthy self-esteem that is based on both interpersonal and achievement-related sources (Mikulincer & Shaver, 2007; Brennan & Morris, 1997), and form positive, realistic, and differentiated appraisals of others (Levy, Blatt, & Shaver, 1998; Feeney, 1998). In addition, securely attached individuals have greater tolerance for ambiguity and are better able to accommodate discrepant information into their existing cognitive schemas than are those with insecure attachment (Mikulincer, 1997; Mikulincer & Arad, 1999). Secure attachment is associated with higher levels of agreeableness and extraversion (Nofle & Shaver, 2006), greater enjoyment of social interactions (Tidwell, Reis, & Shaver, 1996), higher relationship satisfaction (Feeney, 1994) and better communication and conflict management in intimate relationships (Brennan & Bosson, 1998; Feeney, 1995). In coping with stress, securely attached adults are more likely than those with insecure attachment to make use of problem-focused coping (Mikulincer & Florian, 1998) and interpersonal support-seeking strategies (Florian, Mikulincer & Bucholtz, 1995; Larose, Bernier, Soucy, & Duchesne, 1999), and they report lower levels of distress following stressful events (Birbaum, Orr, Mikulincer, & Florian, 1997; Mikulincer & Florian, 1998).

In contrast, individuals with high levels of attachment anxiety experience a number of negative outcomes that are compatible with the hyperactivation of the

attachment system and the negative self and positive other internal working models posited by attachment theory. For example, those with high attachment anxiety report low self-esteem and low self-efficacy across a range of domains (Mikulincer & Shaver, 2007; Avihou, 2006; Raz, 2002). Attachment-anxious individuals are prone to a “hopeless cognitive style” that involves an external locus of control (Mickelson, Kessler, & Shaver, 1997), as well as a tendency to base self-appraisals on unstable sources such as current perceptions of others’ approval (Mikulincer, 1998). Attachment anxiety is associated with low levels of assertiveness, positive emotions, and interpersonal trust (Nofle & Shaver, 2006). In relationships, it predicts frequent reassurance-seeking, negative reactions to partner feedback (Brennan & Bosson, 1998), and greater dissatisfaction with relationships (Feeney, 1994). Attachment-anxious adults tend to rely on emotion-focused coping strategies such as venting of emotions, rumination, and self-blame (Mikulincer & Florian, 1998; Lopez & Gormley, 2002). Their negative expectations about the availability of support can prevent them from seeking social support (Vogel & Wei, 2005) or lead them to do so in indirect ways (e.g., through nonverbal distress signals such as crying or sulking; Collins & Feeney, 2000). There is mixed evidence on gender differences in attachment anxiety, with some studies reporting that women are more likely to endorse an anxious attachment style (Bartholomew & Horowitz, 1991; Scharfe & Bartholomew, 1994; Brennan, Shaver, & Tobey, 1991). However, in a large, nationally representative sample, Mickelson, Kessler and Shaver (1997) found no gender differences in endorsement of an anxious attachment style.

While attachment anxiety is associated with chronic distress regarding unmet needs for closeness and reassurance, attachment avoidance is associated with disavowal of intimacy needs and denial of vulnerability. In theory, these features reflect the deactivation of the attachment system and a pattern of positive self and negative other internal working models. Findings regarding attachment avoidance and self-esteem are mixed, but there is some evidence that attachment avoidant individuals express confidence and pride to compensate for underlying feelings of vulnerability (Mikulincer, 1998; Hart, Shaver, & Goldenberg, 2005; Kim, 2006). Attachment-avoidant individuals tend to value achievement and competence, and although they report low self-efficacy in the social realm, they also rate this area of functioning as unimportant (Lopez & Brennan, 2000). Attachment avoidance is associated with lower levels of gregariousness, warmth, positive emotions, interpersonal trust and altruism (Nofle & Shaver, 2006). Attachment-avoidant adults are less skilled at seeking feedback from relationship partners (Brennan & Bosson, 1998) and at interpreting facial expressions and nonverbal communications than are those with lower levels of attachment avoidance (Magai, Distel, & Liker, 1995; Schachner, Shaver, & Mikulincer, 2005). Like anxiously-attached individuals, those with avoidant attachment have poor conflict management skills (Lopez et al., 1997; Campbell, Simpson, Boldry, & Kashy, 2005), and report lower levels of intimacy (Collins, Cooper, Albino, & Allard, 2002) and relationship satisfaction (Feeney, 1994) than do securely-attached relationship partners. In addition, attachment-avoidant adults desire less intimacy in relationships and underestimate the amount of intimacy their partners experience (Mikulincer & Erev, 1991). Attachment avoidance is associated with

distancing coping strategies such as denial and distraction (Feeney, 1998; Lopez, Mauricio, Gormley, Simko, & Berger, 2001). Research on gender differences in self-reported adult attachment suggests that men tend to have higher levels of attachment avoidance than women (Bartholomew & Horowitz, 1991; Brennan, Shaver, & Tobey, 1991; Mickelson, Kessler, & Shaver, 1997).

Given the importance of attachment in emotion regulation and interpersonal functioning, attachment insecurity has been examined as a risk factor for psychopathology. Attachment insecurity, conceptualized and measured in a number of ways, has been shown to be associated with neuroticism and negative affectivity (Nofle & Shaver, 2006; Wei, Vogel, Ku, & Zakalik, 2005), anxiety and depression (Mikulincer & Shaver, 2007), eating disorders (Kenny & Hart, 1992; Ward, Ramsay, Turnbull, Benedettini, & Treasure, 2000), criminal behavior and substance abuse (Mickelson, Kessler, & Shaver, 1997; Cooper, Shaver, & Collins, 1998), and development of PTSD following trauma (Mikulincer, Florian, & Weller, 1993; Fraley, Fazzari, Bonanno, & Dekel, 2006). Severe disruption of attachment functioning is a core element of the personality disorders, with extreme levels of attachment avoidance contributing to paranoid, schizoid, and schizotypal personality disorders, and extreme levels of attachment anxiety characterizing borderline, histrionic, avoidant, and dependent personality disorders (Crawford et al., 2006). In addition, insecure attachment, especially high levels of attachment avoidance, predicts poorer response to psychotherapy (Dozier, 1990; Korfmacher, Adam, Ogawa, & Egeland, 1997; Eames & Roth, 2000).

To date, few studies have examined expressive writing and attachment. Stroebe, Schut, and Stroebe (2006) offered predictions about the usefulness of narrative disclosure of trauma depending on attachment style. They suggested that securely attached individuals are unlikely to benefit noticeably from a narrative intervention, because they are likely to share their emotions with others in the course of their daily lives. Stroebe et al. speculated that those high in attachment anxiety might *not* benefit from narrative disclosure if it provides them with a chance to ruminate, and suggested that they might do well with instructions that “guide them away from their intense expression of negative emotions” (p. 78) and encourage them to re-appraise their experience of loss. Stroebe and colleagues predicted that those high in attachment avoidance might benefit from narrative writing if their avoidance of emotion is extreme; for moderately dismissing individuals, they argued that an avoidant coping style may be relatively adaptive. The present study responds to the argument of Stroebe and colleagues by testing the hypothesis that different kinds of writing may be beneficial for participants with different attachment styles.

The present study also examines the interaction of attachment variables with linguistic features of written narratives. As noted earlier, patterns of language use in written narratives have been found to predict outcomes (Pennebaker, Mayne, & Francis, 1997; Campbell & Pennebaker, 2003; Ullrich & Lutgendorf, 2002). There is limited research on the relationship of attachment style to language use in written narratives. Stone (2003) found that securely attached participants used a wider range of personal pronouns than did insecurely attached participants during the Adult Attachment

Interview. Participants classified as having a preoccupied attachment style used high frequencies of first- and second-person pronouns relative to members of the other attachment groups, while participants classified as having a dismissing attachment style used low frequencies of second-person pronouns. These results are consistent with attachment theory in that people with a preoccupied style should be more focused on interpersonal relationships (particularly I – thou relationships) while those with a dismissing style should be less so. Stone (2003) also found differences in use of emotion words based on attachment style. Preoccupied individuals used the highest rates of *anxious* words, while dismissing individuals used the highest rates of *angry* words, again consistent with theory. This study provides an additional test of the relationship between attachment style and language use, and also explores the interaction of attachment and changes in language use over the course of several writing sessions as a predictor of outcome.

### **Experiential Avoidance and Mindfulness**

The present study focuses on attachment as a predictor of changes in experiential avoidance and mindfulness following narrative writing. Experiential avoidance, defined as an unwillingness to remain in contact with particular sensations, thoughts, emotions, memories, or situations, has been proposed as a fundamental dimension underlying many forms of psychopathology (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). In this conception, psychological symptoms are understood as behaviors that allow one to escape, avoid, or modify an unpleasant experience. Hayes and colleagues argued that experiential avoidance is the unifying element underlying the defenses (e.g., repression,

denial, rationalization), coping strategies (e.g., distraction, substance use, blaming self or others) and problematic behaviors (e.g., compulsions, phobic avoidance, social withdrawal) that have been the focus of many theories of psychopathology and psychotherapy. Recent empirical studies reviewed by Chawla and Ostafin (2007) have shown that experiential avoidance predicted greater severity of PTSD, depression, and somatization symptoms among undergraduate students reporting stressful life events and among veterans presenting for inpatient treatment of PTSD (Plumb, Orsillo, & Luterek, 2004; Orcutt, Pickett, & Pope, 2005), as well as greater severity of generalized anxiety (Roemer, Salters, Raffa, & Orsillo, 2005), and impulse-control symptoms (Begotka, Woods, & Wetterneck, 2004). Other research suggests that experiential avoidance interacts with negative life events to predict substance abuse relapse (Westrup, 1999) and partially mediates the relationship between maladaptive coping and psychological distress (Kashdan, Barrios, Forsyth, & Steger, 2006). Gender differences in experiential avoidance have been reported in clinical samples, with women scoring slightly higher than men, while significant gender differences have not been reported among non-clinical samples (Hayes et al., 2004.)

The practice of mindfulness, which originates in Buddhist philosophy, involves a deliberate focus of awareness on the present moment, and has been suggested as a means of counteracting the effects of experiential avoidance (e.g., Hayes, Follett, & Linehan, 2004; Wallin, 2007). Mindfulness may be cultivated through the practice of meditation, or through directing attention to one's breathing or the perceptions of the senses during daily activities. Brown and Ryan (2003) defined mindfulness as a receptive attention to

and awareness of present events and experience. Mindfulness is both present-centered and non-judgmental and involves clarity, flexibility, and continuity of awareness (Brown, Ryan, & Creswell, 2007). Scores on trait measures of mindfulness are positively correlated with self-esteem and positive affect, and negatively correlated with neuroticism, rumination, physical symptoms, depression and anxiety (Brown & Ryan, 2003), alexithymia, and experiential avoidance (Baer, Smith, & Allen, 2004). Many psychotherapists have embraced the practice of mindfulness as an intervention. The focus on acceptance is seen as promoting compassion for the self, while the focus on awareness is believed to encourage the development of an internal observer, allowing for questioning of long-held assumptions and beliefs about the self and recognition that painful emotions are temporary states (Wallin, 2007).

The relationship between experiential avoidance and attachment has received little attention. On the other hand, Shaver, Lavy, Saron, and Mikulincer (2007) and Ryan, Brown, and Creswell (2007) recently delineated some of the theoretical links between attachment and mindfulness. They noted that these two constructs share a number of common correlates, such as mental and physical well-being, behavioral self-regulation, and conflict management skills, and that attachment security and mindfulness skills are likely to have a reciprocal relationship. Ryan, Brown, and Creswell cited research showing that children who grow up with loving, supportive caregivers are more likely to develop mindfulness skills (Fonagy & Target, 1997; Ryan, 2005) and suggested that the attunement to and mirroring of emotional experience provided by caregivers encourage development of internal observation and self-reflection. Shaver and

colleagues argued that this process is a function of the attachment system: secure attachment relationships lead to mindfulness and other self-soothing skills through the internalization of attachment figures in internal working models.

Shaver and colleagues (2007) also emphasized that contemporary psychologists who study mindfulness have extracted it from its original Buddhist religious context, in which the practice of mindfulness was intended to promote not only healthy self-regulation but also empathy and kindness towards all living beings. In so doing, psychologists have “applied it in a more individualistic, less socially connected, and more ethically neutral way” (p. 266); the authors believe that integrating mindfulness research into an attachment-theoretical framework would better allow study of the ethical and social implications of the construct. Wallin (2007) discussed theoretical links between mindfulness and attachment and emphasized clinical applications of these ideas. Specifically, he suggested that mindfulness can help attachment-anxious patients, who are likely to feel embedded in their negative thoughts and painful emotions, to develop more of an observer’s stance toward their negative emotional states in order to begin to understand them. Meanwhile, mindfulness can help attachment-avoidant patients, who are likely to detach from their internal experience, to become more self-aware and more receptive to noticing and exploring their sensations and emotions. Thus, mindfulness promotes greater balance for those with insecure attachment, whose emotion regulation strategies are often found at the extremes of emotional embeddedness or detachment.

Empirical data on attachment and mindfulness are limited, but a few preliminary correlational studies have been published. Cordon and Finney (2008) found that

insecurely attached individuals had lower mindfulness scores. Shaver, Lavy, Saron, and Mikulincer (2007) reported that attachment avoidance was significantly negatively correlated with all five facets of mindfulness (previously identified in a factor analysis by Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006): nonreactivity to inner experience, observing/noticing/attending, describing/labeling with words, acting with awareness, and nonjudging of experience. Attachment anxiety was significantly negatively correlated with three of the five (nonreactivity, acting with awareness, and nonjudging). In another study, trait anxiety and attachment anxiety, but not attachment avoidance, were found to be negatively correlated with mindfulness (Walsh, Balint, Smolira, Fredericksen, & Madsen, 2009). Ma (2009) found that mindfulness partially mediated the relationship between attachment security and adaptive functioning. In summary, although there are some theoretical predictions regarding attachment and expressive writing and some preliminary data on the relationship between attachment status and mindfulness, no studies have explored how attachment status moderates the effects of the narrative disclosure task on mindfulness and experiential avoidance as outcomes. The proposed project addresses this gap in the literature.

### **The Present Study**

This project involved secondary analyses of data from a large-scale narrative disclosure study. The goal of the parent project was to replicate previous findings that writing about trauma improves psychological adjustment, and to identify possible moderators of this effect. However, the results did not reveal any significant differences between the experimental group, who wrote about trauma, and the control group, who

wrote about neutral topics, in levels of depression or general psychiatric symptoms at a four- to eight-week follow-up (Moore, Brody, & Dierberger, 2009). Moore, Brody, and Dierberger (2009) also examined experiential avoidance and mindfulness as both predictors and outcomes of narrative disclosure, in the first published study to do so. In an unexpected finding, participants in the control group were more likely than participants in the experimental group to show increases in non-judgmental acceptance of thoughts and emotions at follow-up. The present study explored the hypothesis that writing in a factual and unemotional way about one's daily activities may be as beneficial as writing emotionally charged narratives about difficult experiences, depending on attachment style. For example, writing about trauma might lead to increases in mindfulness for individuals with high levels of attachment avoidance, since this intervention explicitly instructs them to attend to their internal experiences and might lead to greater processing of painful memories and emotions. Greater processing of these memories and emotions might be expected to be reflected in increased use of attachment-related words, negative emotion words, and personal pronouns over the course of writing sessions. In contrast, writing about daily routines might lead to increases in mindfulness for individuals with high levels of attachment anxiety, since this intervention requires participants to minimize their focus on emotional topics and be mindful of external experiences over the course of their day, interfering with rumination about negative emotional experiences. Decreased rumination and emotional preoccupation might be expected to be reflected in decreased use of attachment and negative emotion words and personal pronouns over the course of writing sessions.

## Hypotheses

The hypotheses below refer to several different assessment points, before, during, and after completion of the narrative disclosure task. The first assessment point is baseline, which is the initial assessment point at which attachment, mindfulness, and experiential avoidance measures were administered to all participants, and before the narrative disclosure task took place. Day 1 narratives were written on the same day and immediately following the administration of baseline measures. Day 2 and Day 3 narratives were written on the two consecutive days following Day 1. The final assessment point is follow-up, which occurred four to eight weeks after baseline. Participants completed follow-up measures of mindfulness and experiential avoidance via a confidential web site. The hypotheses also refer to four aspects of mindfulness: *observing*, *describing*, *acting*, and *accepting*; and two dimensions of attachment: attachment avoidance and attachment anxiety.

### Relationships Among Variables at Baseline

1. Attachment anxiety will be significantly positively related to experiential avoidance, and significantly negatively related to the *acting* and *accepting* domains of mindfulness.
2. Attachment avoidance will be significantly positively related to experiential avoidance, and significantly negatively related to all four domains (*observing*, *describing*, *acting*, and *accepting*) of mindfulness.

### **Content of Writing, Attachment Variables, and Changes in Mindfulness and Experiential Avoidance**

3. The relationship between writing condition and the outcomes of mindfulness and experiential avoidance will be moderated by levels of attachment avoidance at baseline. The product term of Writing Condition X Attachment Avoidance will account for significant unique variance in levels of the outcome variables at follow-up, after controlling for main effects of attachment avoidance and writing condition and for baseline levels of the outcome variables.

As baseline levels of attachment avoidance increase, the beneficial effects of writing about trauma, as compared to writing about daily events, will increase, resulting in significantly higher levels of mindfulness and significantly lower levels of experiential avoidance at follow-up.

4. The relationship between writing condition and the outcomes of mindfulness and experiential avoidance will be moderated by levels of attachment anxiety at baseline. The product term of Writing Condition X Attachment Anxiety will account for significant unique variance in levels of the outcome variables at follow-up, after controlling for main effects of attachment anxiety and writing condition and for baseline levels of the outcome variables.

As baseline levels of attachment anxiety increase, the beneficial effects of writing about daily events, as compared to writing about trauma, will increase, resulting in significantly higher levels of mindfulness and significantly lower levels of experiential avoidance at follow-up.

### **Attachment and Linguistic Characteristics of Narratives at Baseline**

5. When looking at levels of attachment avoidance dimensionally at baseline, higher levels will predict (a) significantly lower relative frequencies of attachment words in Day 1 narratives; (b) significantly lower relative frequencies of negative emotion words in Day 1 narratives; and (c) significantly lower relative frequencies of second- and third-person pronouns in Day 1 narratives.

6. When looking at levels of attachment anxiety dimensionally at baseline, higher levels will predict (a) significantly higher relative frequencies of attachment words in Day 1 narratives; (b) significantly higher relative frequencies of negative emotion words in Day 1 narratives; and (c) significantly higher relative frequencies of second- and third-person pronouns in Day 1 narratives.

### **Attachment and Linguistic Predictors of Changes in Mindfulness and Experiential Avoidance**

7. The relationships between increases in the relative frequencies of three categories of words (attachment words, negative emotion words, and second- and third-person pronouns) over the course of three writing sessions and the outcomes of mindfulness and experiential avoidance will be moderated by levels of attachment avoidance at baseline. Greater increases in use of these words will be associated with greater benefits for participants high in attachment avoidance.

Change scores will be computed for each word category by subtracting word category percentages of Day 1 narratives from word category percentages of Day 3 narratives. Thus, higher change scores will reflect increases in use of words in the

relevant category over the course of three days' writing. Product terms representing interactions between word category change scores and level of attachment avoidance at baseline will account for significant unique variance in levels of the outcome variables at follow-up, after controlling for main effects of attachment avoidance and word category change scores and for baseline levels of the outcome variables.

The beneficial effects of increased use of attachment words, negative emotion words, and second- and third-person pronouns over the course of three days' writing will be significantly enhanced as baseline levels of attachment avoidance increase, resulting in significantly higher levels of mindfulness and significantly lower levels of experiential avoidance at follow-up.

8. The relationships between increases in the relative frequencies of three categories of words (attachment words, negative emotion words, and second- and third-person pronouns) over the course of three writing sessions and the outcomes of mindfulness and experiential avoidance will be moderated by levels of attachment anxiety at baseline. Greater decreases in use of these words will be associated with greater benefits for participants high in attachment anxiety.

Product terms representing interactions between word category change scores and level of attachment anxiety at baseline will account for significant unique variance in levels of the outcome variables at follow-up, after controlling for main effects of attachment anxiety and word category change scores and for baseline levels of the outcome variables.

The beneficial effects of decreased use of attachment words, negative emotion words, and second- and third-person pronouns over the course of three days' writing will be significantly enhanced as baseline levels of attachment anxiety increase, resulting in significantly higher levels of mindfulness and significantly lower levels of experiential avoidance at follow-up.

### **Gender Differences**

9. Exploratory analyses will examine gender differences for each of the above hypotheses.

## CHAPTER TWO

### Methods

#### Participants

The present research project was a secondary analysis of data from a short-term longitudinal study of the effects of narrative disclosure of trauma. Participants were 326 undergraduate students (165 men and 161 women) at a large private urban university in the northeast. The majority of participants ( $n = 307$ ) were recruited from undergraduate psychology classes and received course credit for completing the first phase of the study. After completing the first phase of the study and fulfilling their course requirement, these participants were offered monetary compensation in exchange for participation in the follow-up portion of the study. Two hundred fourteen participants who were students in an Introductory psychology class (69.7%) completed the follow-up and received payment of either \$15 ( $n = 170$ ) or \$20 ( $n = 44$ ); the amount of payment offered for participation in the follow-up was reduced over time in response to recruitment rates and to conserve limited funds. An additional 19 male students who were not enrolled in Introductory psychology courses were recruited and offered monetary compensation to complete both phases of the study; one of these students was paid \$20 after completing the follow-up, 17 of these students were paid \$30 after completing the follow-up, and one of these students did not complete the follow-up. Payment rates for these participants were increased in response to recruitment rates. After eliminating data for participants with procedural errors, final sample sizes were  $N = 315$  (154 women and 161 men) for analyses of data from the first phase of data collection and  $N = 232$  (129 women and 103

men) for analyses of follow-up data. Table 2.1 displays retention rates from the first phase of data collection to the follow-up phase.

The 326 participants who initially enrolled in the study ranged in age from 16 years to 24 years, with an average age of 18.97 years ( $SD = 1.22$ ). Participants who completed the entire study ( $M = 18.88$ ,  $SD = 1.17$ ) were significantly younger than participants who did not complete the study or whose data were eliminated due to procedural errors ( $M = 19.20$ ,  $SD = 1.30$ ,  $t = -2.18$ ,  $p < .05$ ). Participants reported a variety of ethnic backgrounds. Of the 280 participants who identified as American and reported their ethnicity, 68.2% were White/European American, 12.9% were Asian American, 3.9% were Hispanic/Latino American, 2.9% were Black/African American, 2.5% were Indian American, 2.5% were Middle Eastern American, 0.4% were Native Hawaiian/Pacific Islander, and 6.5% reported two or more ethnicities. Of the 46 participants who identified as non-American and reported their ethnicity, 30.4% were Asian, 26.1% were of White/European descent, 13.0% were Indian, 10.9% were Hispanic/Latino, 8.7% were Middle Eastern, 8.7% were of Black/African descent, and 2.2% reported two or more ethnicities. Participants came from predominantly middle to upper-middle class backgrounds, with 67.9% of students reporting annual household family income of over \$75,000 and 43.7% reporting annual household family income of over \$100,000. There were no significant differences between completers and non-completers in ethnicity, parents' median household income, or randomly assigned writing condition. Tables 2.2 through 2.5 summarize age, household income, and ethnicity data for completers and non-completers.

An independent samples *t*-test comparing male and female study completers revealed that women ( $M = 18.59, SD = .95$ ) were significantly younger than men ( $M = 19.24, SD = 1.32; t = 4.39, p < .001$ ). Therefore, age was controlled in subsequent analyses. Men and women did not differ significantly on ethnicity or family income. Members of the two writing conditions did not differ significantly on any demographic variables.

### **Procedure**

Participants were randomized into either an experimental (trauma writing condition;  $n = 222$ ) or control (neutral events writing condition;  $n = 104$ ) group. Data were collected from each participant on four separate occasions, including three consecutive days in the initial data collection phase and one occasion during the follow-up phase. On the first day of participation, all participants provided written informed consent. Next, prior to completing the writing task, participants completed a number of self-report individual difference and adjustment measures, including measures of attachment, experiential avoidance, and mindfulness. They then completed a 20-minute narrative writing task and returned on each of the next two days to complete additional 20-minute writing sessions. The writing instructions used were adapted from those provided by Pennebaker (1994; see Appendix A). Members of the experimental group were instructed to write about the most traumatic or upsetting experience of their lives and to focus on their emotional experiences, while members of the control group were instructed to write structured descriptions of their daily activities and to focus on factual

details. Pre-task self-report measures and narrative writing were completed in the lab; participants wrote narratives in private offices.

Participants who agreed to a voluntary follow-up were contacted after four weeks and completed post-task self-report measures between four and eight weeks after completion of the writing task. The post-task versions of the measures were modified to instruct participants to report on their functioning “over the last few weeks.” Follow-up self-report measures were completed in the lab, by mail, or online through a confidential website.

## **Measures**

**Attachment Style.** The Experiences in Close Relationships questionnaire (ECR, Brennan, Clark, & Shaver, 1998) is a 36-item measure of adult attachment that was developed from a factor analysis of all known prior dimensional measures of adult attachment. Participants rated their endorsement of statements describing experiences in romantic or other close relationships on a 7-point scale. The ECR provides scores for two dimensional constructs, attachment anxiety, which reflects fear of rejection and abandonment, and attachment avoidance, which reflects discomfort with closeness and dependency. The authors report reliabilities of  $\alpha = .91$  for the attachment anxiety subscale and  $\alpha = .94$  for the attachment avoidance subscale, as well as superior construct validity when compared to previously developed measures.

**Mindfulness.** The Kentucky Inventory of Mindfulness Skills (KIMS; Baer, Smith, & Allen, 2004) is a 39-item self-report inventory containing four subscales corresponding to four mindfulness skills: Observing Internal and External Stimuli,

Describing Observed Phenomena, Acting With Awareness, and Accepting Without Judgment. Participants rated statements such as “I pay attention to whether my muscles are tense or relaxed” and “I drive on ‘automatic pilot’ without paying attention to what I’m doing [reversed scored]” on a 5-point scale. Higher scores indicate a greater tendency towards mindfulness. The inventory has demonstrated adequate to good test-retest reliability and internal consistency (alpha coefficients for each scale range from .76 to .91), as well as adequate content validity (Baer et al., 2004).

**Experiential Avoidance.** The Acceptance and Action Questionnaire – Revised (AAQ; Hayes et al., 2004) includes an experiential avoidance total score and two subscales. The Action subscale measures the ability to behave in desired ways even when experiencing intense emotion and the Willingness subscale measures acceptance of internal experiences (e.g., emotions and thoughts). Sample items include “Worries can get in the way of my success,” and “I try to suppress thoughts and feelings that I don’t like by just not thinking about them.” The 16-item version used in the present study has demonstrated adequate internal consistency (alpha coefficients ranging from .72 to .79; Bond & Bunce, 2003; Roemer, Salters, Raffa, & Orsillo, 2005). Construct validity is supported by moderate correlations with measures of thought control and avoidant coping (Hayes et al., 2004). A revised form of the AAQ was used in which negatively worded statements (e.g., “I rarely worry...”) are re-worded positively (e.g., “I worry...”).

**Word Use.** Word use in narratives was analyzed using *Linguistic Inquiry and Word Count, Second Version* (SLIWC; Pennebaker & Francis, 1996). This computer software measures the relative frequency (i.e., percentage of total word count) of specific

words and categories of words used in written narratives. The program provides three dictionaries of words categorized into a number of groupings ranging from positive emotion words (e.g., *happy, love, pride*) to first-, second-, and third-person pronouns and other grammatical structures. In addition to emotion words and personal pronouns, the present study examined attachment-related words. A list of 80 such words (e.g., *trust, together, support, alone, abandon*) was generated and programmed into the software. The software allows the inclusion of any word using a specific word stem, so that, for example, *trust, trusts, trusting, trustful, trusted*, etc., are each counted. Words were generated based on a reading of the attachment literature (Bowlby, 1969/1982; Main, 1995, Mikulincer & Shaver, 2007). A clinical psychologist as well as several clinical psychology graduate students independently reviewed the list, checking for content validity of the words that were generated. The final list of words was decided upon by consensus of this group. These words are listed in Table 2.6.

## CHAPTER THREE

### Results

#### Preliminary Analyses

**Differences Between Groups at Baseline.** A series of analyses was conducted to determine if there were significant differences between men and women, completers and non-completers, and members of the two writing conditions, or interaction effects among any of these grouping variables, on attachment, experiential avoidance, and mindfulness variables at baseline. For each questionnaire score or subscale score, a 2 x 2 x 2 (Gender X Completer Status X Writing Condition) ANCOVA was conducted. Age was entered as a covariate because men and women, as well as completers and non-completers, were found to differ significantly in age.

**Attachment.** For Attachment Avoidance, there was a significant main effect of gender,  $F(1,311) = 5.57, p < .05$ , partial  $\eta^2 = .01$ . However, this effect was qualified by the significant two-way interaction effect of gender by completer status,  $F(1,311) = 6.91, p < .01$ , partial  $\eta^2 = .02$ . One-way ANCOVAs conducted separately for each gender revealed that women who dropped out after the first phase of the study scored significantly lower ( $M = 2.38, SD = 1.08$ ) on attachment avoidance at baseline than did women who completed the study ( $M = 2.91, SD = 1.10; F(1,152) = 4.26, p < .05$ , partial  $\eta^2 = .03$ ), but that there was no significant difference in attachment avoidance scores at baseline for men who dropped out as compared to men who completed the study. There were no significant main effects or interaction effects for gender, completer status, or writing condition on baseline levels of attachment anxiety.

**Experiential Avoidance.** For experiential avoidance as measured by the AAQ Total score at baseline, there were no significant main effects, but there was a significant interaction effect of gender by completer status,  $F(1,312) = 4.34, p < .05$ , partial  $\eta^2 = .01$ . One-way ANCOVAs conducted separately for each gender revealed no significant differences on mean AAQ Total scores between completers and non-completers for either gender. However, among male participants only, a trend for a main effect of completer status on AAQ Total scores was found, with male study completers having higher AAQ Total scores (and thus lower levels of experiential avoidance;  $M = 4.67, SD = .62$ ) than men who dropped out ( $M = 4.47, SD = .75; F(1,158) = 3.22, p = .08$ , partial  $\eta^2 = .02$ ). There were no significant main effects or interaction effects for gender, completer status, or writing condition on the AAQ Action subscale or the AAQ Willingness subscale at baseline.

**Mindfulness.** There were no significant main effects or interaction effects of these grouping variables on baseline levels of mindfulness as measured by the KIMS Total score. For the KIMS Accept subscale, there was a significant main effect of age,  $F(1,312) = 4.10, p < .05$ , partial  $\eta^2 = .01$ . When this effect was examined using a Pearson correlation, there was a trend for a negative correlation between age and baseline KIMS Accept subscale scores ( $r = -.10, p = .06$ ). There was a significant main effect of completer status,  $F(1,312) = 6.90, p < .01$ , partial  $\eta^2 = .02$ , on baseline KIMS Accept subscale scores. However, this main effect was qualified by the significant interaction effect of gender by completer status,  $F(1,312) = 5.35, p < .05$ , partial  $\eta^2 = .02$ . Follow-up analyses run separately for each gender revealed a main effect of age for men only,

$F(1,158) = 4.60, p < .05$ , partial  $\eta^2 = .03$ . When Pearson correlations were run separately for each gender, age was significantly negatively correlated with baseline KIMS Accept subscale scores for men only ( $r = -.17, p < .05$ ). For women, there was a main effect of completer status,  $F(1,153) = 7.53, p < .01$ , partial  $\eta^2 = .05$ , such that women who dropped out of the study had higher KIMS Accept subscale scores at baseline ( $M = 3.63, SD = .59$ ) than did women who completed the study ( $M = 3.20, SD = .74$ ). There was no main effect of completer status for men. There were no significant main effects or interaction effects for gender, completer status, or writing condition for any of the other KIMS subscales at baseline.

#### **Descriptive Statistics and Gender Differences Among Study Completers.**

Table 3.1 displays means and standard deviations, for all study completers and separately by gender, for each of the predictor and outcome variables as measured at baseline. One-way ANCOVAs, covarying age, were conducted to explore gender differences on these baseline measures and results of the ANCOVAs are also displayed in Table 3.1. Women ( $M = 4.06, SD = 1.21$ ) scored significantly higher than men ( $M = 3.69, SD = 1.10$ ) on attachment anxiety,  $F(1, 230) = 7.0, p < .01$ , partial  $\eta^2 = .03$ . There was no significant gender difference for attachment avoidance. Men ( $M = 4.67, SD = .62$ ) scored significantly higher than women ( $M = 4.48, SD = .62$ ) on the AAQ Total scale,  $F(1,231) = 6.69, p = .01$ , partial  $\eta^2 = .03$ . Men ( $M = 4.85, SD = .61$ ) also scored significantly higher than women ( $M = 4.65, SD = .62$ ) on the AAQ Action subscale,  $F(1,231) = 6.65, p < .05$ , partial  $\eta^2 = .03$ .

Men ( $M = 2.94$ ,  $SD = .57$ ) scored significantly higher than women ( $M = 2.76$ ,  $SD = .46$ ) on the KIMS Act subscale,  $F(1,231) = 7.14$ ,  $p < .01$ , partial  $\eta^2 = .03$ . There were no significant gender differences on the other three KIMS subscales, the KIMS Total score, or the AAQ Willingness subscale.

In the present sample, mean ECR subscale total scores were 68.42 ( $SD = 20.77$ ) for attachment anxiety and 51.68 ( $SD = 20.38$ ) for attachment avoidance. These values were compared to those obtained in two other studies with undergraduates. Lopez, Mitchell, & Gormley (2002) reported mean total ECR scores of 63.06 ( $SD = 21.26$ ) for attachment anxiety and 47.63 ( $SD = 18.59$ ) for attachment avoidance in a sample of 127 undergraduate students. Independent samples  $t$ -tests revealed that levels of attachment avoidance in the present sample did not differ significantly from those in the sample of Lopez and colleagues. However, levels of attachment anxiety in the present sample were significantly higher than those in the sample of Lopez and colleagues ( $t = 2.45$ ,  $p < .05$ ). Wei, Russell, Mallinckrodt, and Vogel (2007) reported mean total ECR scores of 64.95 ( $SD = 20.63$ ) for attachment anxiety and 51.24 ( $SD = 20.34$ ) for attachment avoidance in a sample of 122 undergraduates. Neither attachment anxiety nor attachment avoidance scores in the present sample were significantly different from those reported by Wei and colleagues. Norms from a revised version of the ECR that was administered to 22,000 people on the internet (Fraley, 2005) suggest that levels of attachment anxiety may be especially high among women in the present sample. Women in this study ( $N = 161$ ) had an average attachment anxiety item score of 4.06 ( $SD = 1.21$ ), which was significantly higher than the average score of 3.64 ( $SD = 1.33$ ) for women in the online sample ( $N =$

17,160;  $t = 3.99, p < .001$ ). (Although women of all ages participated in the online study, a regression model examining attachment anxiety as a function of age predicted an average score of 3.67 for 20-year-old women among the internet-based sample. Data from the revised version of the ECR suggest that levels of attachment avoidance increase with age, while levels of attachment anxiety decrease with age; Fraley, 2005). Thus, attachment patterns in the present sample were generally in keeping with those reported by other researchers studying undergraduate students, though levels of attachment anxiety appear to be slightly higher than average in the present sample, especially among women.

**Characteristics of Narratives.** Participants' written narratives ranged in length from 525 words to 5,346 words with an average length of 1097 words ( $SD = 369$ ). A 2 x 2 x 2 (Gender x Completer Status x Writing Condition) ANCOVA was conducted to determine if male and female participants, study completers and non-completers, or members of the two writing conditions differed in average narrative length. Age was entered as a covariate because men and women, as well as completers and non-completers, were found to differ significantly in age. There were no significant main effects or interaction effects of gender, completer status, or writing condition on average narrative length.

Tables 3.2 and 3.3 display mean relative frequencies, averaged across all three narratives, for attachment words, negative emotion words, and second- and third-person pronouns, broken down by gender and writing condition. An independent samples  $t$  test revealed that participants who wrote about traumatic events used a higher proportion of

attachment-related words ( $M = .57$ ,  $SD = .35$ ) than did participants who wrote about neutral events ( $M = .32$ ,  $SD = .24$ ;  $t = 6.5$ ,  $p < .001$ ). In addition, participants in the trauma narrative condition used higher proportions of positive emotion words ( $M = .98$ ,  $SD = .37$ ) and negative emotion words ( $M = 1.29$ ,  $SD = .46$ ) than did participants in the neutral events narrative condition (for positive emotion words,  $M = .69$ ,  $SD = .33$ ,  $t = 6.80$ ,  $p < .001$ ; for negative emotion words,  $M = .34$ ,  $SD = .24$ ,  $t = 19.76$ ,  $p < .001$ ). Finally, participants in the trauma writing condition used higher proportions of second- and third-person pronouns ( $M = 1.70$ ,  $SD = .96$ ) than did participants in the neutral events condition ( $M = .73$ ,  $SD = .41$ ,  $t = 10.31$ ,  $p < .001$ ). These results suggest that the narrative instructions successfully prompted participants to write about topics with greater emotional valence and interpersonal focus in the trauma narrative condition and to write about less emotional, less interpersonally relevant topics in the neutral events condition.

Independent samples  $t$  tests revealed that female participants' narratives included a higher proportion of attachment-related words ( $M = .54$ ,  $SD = .36$ ) than male participants' narratives ( $M = .44$ ,  $SD = .30$ ,  $t = -2.9$ ,  $p < .01$ ). In addition, female participants' narratives included a higher proportion of second- and third- person pronouns ( $M = 1.66$ ,  $SD = 1.0$ ) than did male participants' narratives ( $M = 1.19$ ,  $SD = .83$ ,  $t = -4.67$ ,  $p < .001$ ). Male and female participants did not differ significantly in their use of negative emotion words.

Typical topics in the trauma writing condition included death or serious illness of a loved one, parental divorce, relationship conflicts, abuse, and experiences of bullying or

discrimination. For example, one trauma condition participant wrote about the death of a close relative: “When I think about her, I can never really remember what she was like, only how she was sick. I feel guilt, remorse, anger but never sadness, sometimes I think it is wrong. Why am I not sad?” Participants in the neutral events narrative condition wrote about their activities in the last one to two days, or their planned activities for the remainder of the day, as in the following example: “After this experiment, I will take the elevator down to the ground floor, then I will leave this building...Then I will walk down Commonwealth Avenue, cross the street, and go back to my dorm room. I will put my bag down, brush my hair and take it out of a ponytail, and maybe change my clothes...Then I will turn my computer on [and] check my email.”

### **Tests of Hypotheses**

All analyses were run for the full sample and separately for each gender, in order to explore gender differences as stated in Hypothesis 9.

**Hypotheses 1 and 2.** Hypothesis 1 predicted that attachment anxiety would be positively associated with experiential avoidance, as measured by the AAQ at baseline, and negatively associated with two aspects of mindfulness, as measured by the KIMS Act and KIMS Accept subscales at baseline. Correlations among self-report measures at baseline for the full sample are displayed in Table 3.4. As predicted, attachment anxiety was significantly negatively correlated with the AAQ Total score ( $r = -.45, p < .001$ ) and with the AAQ Action subscale ( $r = -.38, p < .001$ ) and the AAQ Willingness subscale ( $r = -.39, p < .001$ ). (Higher scores on the AAQ reflect lower levels of experiential avoidance.) For men, attachment anxiety was also significantly negatively correlated

with the AAQ Total score ( $r = -.43, p < .001$ ), the AAQ Action subscale ( $r = -.36, p < .001$ ), and the AAQ Willingness subscale ( $r = -.40, p < .001$ ). Similarly, among women, attachment anxiety was significantly negatively correlated with all three AAQ scales (AAQ Total,  $r = -.46, p < .001$ ; AAQ Action,  $r = -.39, p < .001$ ; AAQ Willingness,  $r = -.37, p < .001$ ).

Also as predicted, attachment anxiety was significantly negatively correlated with the KIMS Total score ( $r = -.28, p < .001$ ) and with the KIMS Act ( $r = -.23, p < .001$ ) and KIMS Accept ( $r = -.45, p < .001$ ) subscales for the full sample. Significant negative correlations of attachment anxiety with these subscales were also found among male participants (KIMS Total score,  $r = -.35, p < .001$ ; KIMS Act subscale,  $r = -.28, p < .001$ ; KIMS Accept subscale,  $r = -.43, p < .001$ ) and female participants (KIMS Total score,  $r = -.23, p < .01$ ; KIMS Act subscale,  $r = -.16, p = .05$ ; KIMS Accept subscale,  $r = -.49, p < .001$ ). No prediction was made regarding associations between attachment anxiety and the other two KIMS subscales. However, attachment anxiety was significantly negatively correlated with the KIMS Describing subscale for the full sample ( $r = -.13, p < .05$ ) and for men ( $r = -.20, p < .05$ ), but not for women ( $r = -.07, n.s.$ ); and attachment anxiety was significantly positively correlated with the KIMS Observing subscale for the full sample ( $r = .14, p < .05$ ) and for women ( $r = .19, p < .05$ ), but not for men ( $r = .05, n.s.$ ).

Fisher's  $z$  tests were conducted to determine whether the correlations between attachment anxiety and KIMS Observing and Describing Scales for the two genders were significantly different from each other. A Fisher's  $z$  statistic with an absolute value greater than 1.96 reflects statistical significance at the .05 level. Neither of the

correlations were significantly different for the two genders (KIMS Observing, Fisher's  $z = -1.29$ ; KIMS Describing, Fisher's  $z = -1.11$ ).

Hypothesis 2 predicted that attachment avoidance would be positively associated with experiential avoidance and negatively associated with all four aspects of mindfulness. Results supported most of these predictions. Attachment avoidance was significantly negatively correlated with the AAQ Total score ( $r = -.25, p < .001$ ), the AAQ Action subscale ( $r = -.16, p < .001$ ), and the AAQ Willingness subscale ( $r = -.27, p < .001$ ) among the full sample. Among men, attachment avoidance was also significantly negatively correlated with these three variables (AAQ Total score,  $r = -.33, p < .001$ ; AAQ Action subscale,  $r = -.25, p < .01$ ; AAQ Willingness subscale,  $r = -.32, p < .001$ ). Among women, attachment avoidance was significantly negatively correlated with the AAQ Total score ( $r = -.18, p < .05$ ) and the AAQ Willingness subscale ( $r = -.22, p < .01$ ), but not the AAQ Action subscale ( $r = -.08, n.s.$ ). However, results of Fisher's  $z$  tests revealed that the correlations of attachment avoidance with the AAQ Action subscale did not differ significantly for the two genders (Fisher's  $z = -1.54$ ).

As predicted, attachment avoidance was significantly negatively correlated with the KIMS Total score ( $r = -.21, p < .001$ ), the KIMS Describing subscale ( $r = -.13, p < .05$ ), the KIMS Act subscale ( $r = -.18, p < .01$ ), and the KIMS Accept subscale ( $r = -.24, p < .001$ ) among the full sample. However, the predicted relationship between attachment avoidance and the KIMS Observing subscale was not observed ( $r = .01, n.s.$ ). Among men, the same pattern of significant negative correlations was observed. Attachment avoidance was significantly negatively correlated with the KIMS Total score

( $r = -.28, p < .001$ ), the KIMS Describing subscale ( $r = -.20, p = .01$ ), the KIMS Act subscale ( $r = -.22, p < .01$ ), and the KIMS Accept subscale ( $r = -.20, p = .01$ ), but not the KIMS Observing subscale ( $r = -.08, n.s.$ ). Among women, the only subscale of the KIMS to be significantly negatively correlated with attachment avoidance was the Accept subscale ( $r = -.28, p < .01$ ). The KIMS Total score ( $r = -.14, n.s.$ ), KIMS Observing subscale ( $r = .10, n.s.$ ), KIMS Describing subscale ( $r = -.06, n.s.$ ), and KIMS Act subscale ( $r = -.13, n.s.$ ) did not show the predicted relationship to attachment avoidance among women. However, Fisher's  $z$  tests revealed that the correlations of attachment avoidance with KIMS variables were not significantly different for the two genders (KIMS Total, Fisher's  $z = -1.36$ ; KIMS Describing subscale, Fisher's  $z = -1.25$ ; KIMS Act subscale, Fisher's  $z = -.83$ ).

**Hypotheses 3 and 4.** Hypotheses 3 and 4 predicted that the relationship between writing condition and levels of mindfulness and experiential avoidance at follow-up would be moderated by levels of attachment avoidance and attachment anxiety at baseline.

**Hypothesis 3.** Hypothesis 3 predicted that the product term of Writing Condition X Attachment Avoidance would account for significant unique variance in levels of experiential avoidance and mindfulness at follow-up, after controlling for main effects of attachment avoidance and writing condition and for baseline levels of the outcome variables in a regression model. Specifically, as baseline levels of attachment avoidance increase, it was predicted that the beneficial effects of writing about trauma, as compared

to writing about daily events, would increase, resulting in significantly higher levels of mindfulness and significantly lower levels of experiential avoidance at follow-up.

A series of hierarchical multiple regression analyses were conducted to test this hypothesis. Outcome measures were the AAQ and KIMS Total scores and subscale scores. Separate regressions were run for each outcome variable. All variables were standardized by converting them to *z*-scores. In Block 1, levels of the outcome variable at baseline were entered into the regression model. Age was also entered as a predictor in Block 1 to control for significant age differences between some groups of participants. In Block 2, attachment avoidance (measured at baseline) and experimental condition were entered. In Block 3, the interaction of Writing Condition X Attachment Avoidance was entered, with the interaction terms being dummy variables. Each regression analysis was run for the sample of all study completers and for each gender separately. Significant interaction effects were explored by plotting the simple slopes of writing condition on the outcome variable at several different levels (e.g., very low, low, average, high, very high) of the moderating variable (i.e., attachment avoidance).

For experiential avoidance outcomes as measured by the AAQ Total score, AAQ Action subscale, and AAQ Willingness subscale, there were no significant main effects of writing condition or attachment avoidance. In addition, contrary to prediction, there were no significant interaction effects of Writing Condition X Attachment Avoidance on any of the AAQ scores for the mixed-gender sample or for either gender alone.

For mindfulness outcomes as measured by the KIMS Total score, there was a significant main effect of writing condition ( $\beta = .14, p < .01$ ) for the full sample,

indicating that participants who wrote about neutral events had higher mindfulness scores at follow-up, and a significant main effect of attachment avoidance ( $\beta = -.09, p = .05$ ), indicating that participants with higher levels of attachment avoidance had lower mindfulness scores at follow-up. Among male participants, both main effects were significant (writing condition,  $\beta = .16, p < .02$ ; attachment avoidance,  $\beta = -.15, p < .05$ ). Among female participants, only the effect of writing condition was significant ( $\beta = .12, p < .05$ ). To explore this apparent gender difference, a follow-up regression including gender and interactions between Gender X Attachment Avoidance as predictors was run for the full sample of study completers. There was no significant interaction effect of Gender X Attachment Avoidance on KIMS Total scores at follow-up. The predicted interaction effect of Writing Condition X Attachment Avoidance on KIMS Total scores at follow-up was not observed among the full sample or among either gender alone.

There were no significant main effects or interaction effects of writing condition or attachment avoidance on KIMS Observing subscale or KIMS Act subscale scores at follow-up for the full sample or for either gender.

For the outcome of the KIMS Describing subscale, there was a significant main effect of attachment avoidance ( $\beta = -.12, p < .01$ ), with higher levels of attachment avoidance predicting lower scores on the KIMS Describing subscale at follow-up. This effect was significant among men ( $\beta = -.20, p < .01$ ), but not among women. A follow-up regression including gender and the interaction of Gender x Attachment Avoidance as predictors was run for the full sample of study completers and revealed no significant interaction effect of Gender X Attachment Avoidance on KIMS Describing subscale

scores at follow-up. The predicted interaction effect of Writing Condition X Attachment Avoidance was not observed for the outcome of KIMS Describing subscale scores at follow-up for the full sample or for either gender.

For the KIMS Accept subscale, there was a significant main effect of writing condition ( $\beta = .13, p < .01$ ), with participants who wrote about neutral events scoring higher on the KIMS Accept subscale at follow-up, and a significant interaction effect of Writing Condition X Attachment Avoidance ( $\beta = -.09, p = .05$ ). Among men, the main effect of writing condition was significant ( $\beta = .20, p < .01$ ), as was the interaction effect of Writing Condition X Attachment Avoidance ( $\beta = -.18, p < .02$ ). Neither effect was significant among women. However, follow-up regressions including gender and interactions with gender as predictors were run for the full sample of study completers and revealed no significant interaction effects of Gender X Attachment Avoidance or Gender X Writing Condition on KIMS Accept subscale scores at follow-up. In addition, there was no significant three-way interaction of Gender X Attachment Avoidance X Writing Condition.

Therefore, follow-up analysis of the significant interaction effect of Writing Condition X Attachment Avoidance on KIMS Accept subscale scores was conducted using the full sample, rather than male participants only. This follow-up analysis was completed by plotting the slopes of writing condition on KIMS Accept subscale follow-up scores for five values of baseline attachment avoidance (see Figure 3.1). Very low and very high levels of attachment avoidance were defined as  $\pm 2$  SD of the mean, low and high levels of attachment avoidance were defined as  $\pm 1$  SD of the mean, and a medium

level of attachment avoidance was defined as equivalent to the mean. Among participants with high to very high levels of attachment avoidance, KIMS Accept scores at follow-up did not differ significantly by writing condition. However, among participants with very low ( $t = 6.31, p < .001$ ), low ( $t = 4.72, p < .001$ ), and medium ( $t = 2.68, p < .01$ ) levels of attachment avoidance, KIMS Accept scores at follow-up were significantly higher for participants who wrote about neutral events than for participants who wrote about trauma.

**Hypothesis 4.** Hypothesis 4 predicted that the product term of Writing Condition X Attachment Anxiety would account for significant unique variance in levels of experiential avoidance and mindfulness at follow-up, after controlling for main effects of attachment anxiety and writing condition and for baseline levels of the outcome variables in a regression model. Specifically, as baseline levels of attachment anxiety increase, it was predicted that the beneficial effects of writing about daily events, as compared to writing about trauma, would increase, resulting in significantly higher levels of mindfulness and significantly lower levels of experiential avoidance at follow-up. This hypothesis was tested through a series of hierarchical multiple regression analyses, identical to those described above except that attachment anxiety was substituted for attachment avoidance as a predictor variable.

For the outcome of experiential avoidance as measured by the AAQ Total score, there was a main effect of attachment anxiety ( $\beta = -.24, p < .001$ ), such that higher levels of attachment anxiety were associated with higher levels of experiential avoidance (i.e., lower scores on the AAQ) at follow-up. This main effect was significant among women

( $\beta = -.31, p < .001$ ), but not among men. However, a follow-up regression including gender and the interaction of Gender x Attachment Anxiety as predictors found no significant interaction effect of Gender X Attachment Anxiety on AAQ Total scores at follow-up.

For the AAQ Action subscale, there was a significant main effect of attachment anxiety ( $\beta = -.17, p < .01$ ), with higher levels of attachment anxiety again predicting higher levels of experiential avoidance (i.e., lower AAQ Action scores) at follow-up. This effect was significant among women ( $\beta = -.18, p < .02$ ), and there was a trend for a main effect of attachment anxiety among men ( $\beta = -.16, p = .06$ ). A follow-up regression including gender and the interaction of Gender X Attachment Anxiety as predictors found no significant interaction effect of Gender X Attachment Anxiety on AAQ Action subscale scores at follow-up.

For the AAQ Willingness subscale, there was also a significant main effect of attachment anxiety ( $\beta = -.27, p < .001$ ), with higher levels of attachment anxiety predicting higher levels of experiential avoidance (i.e., lower AAQ Willingness scores) at follow-up. This effect was also significant for women ( $\beta = -.34, p < .001$ ), but not for men. However, a follow-up regression including gender and the interaction of Gender X Attachment Anxiety as predictors found no significant interaction effect of Gender X Attachment Anxiety on AAQ Willingness subscale scores at follow-up.

There were no significant main effects of writing condition on AAQ scores, and the hypothesized interaction effect of Writing Condition X Attachment Anxiety was not

observed for any of the AAQ variables among the mixed-gender sample or either single-gender sample.

For the outcome of mindfulness as measured by the KIMS Total score, there was a significant main effect of attachment anxiety ( $\beta = -.10, p < .05$ ), indicating that higher levels of attachment anxiety predicted lower levels of mindfulness at follow-up, and a significant main effect of writing condition ( $\beta = .15, p < .01$ ), indicating that participants who wrote about neutral events had higher mindfulness scores at follow-up. This effect was significant for men ( $\beta = .18, p < .01$ ), but not for women. However, a follow-up regression including gender and the interaction of Gender X Writing Condition as predictors revealed no significant interaction effect of Gender X Writing Condition on KIMS Total scores at follow-up. The predicted interaction effect of Writing Condition X Attachment Anxiety was not observed for either gender or for the mixed-gender sample.

There were no significant main effects or interaction effects of writing condition or attachment anxiety on either KIMS Act subscale or KIMS Observing subscale scores at follow-up for the full sample or for either gender.

For the KIMS Describing subscale, there was a significant effect of attachment anxiety ( $\beta = -.10, p < .05$ ), with higher levels of attachment anxiety predicting lower KIMS Describing subscale scores at follow-up for the full sample of study completers. This result was not significant for either single-gender sample. There was no main effect of writing condition and the hypothesized interaction effect of Writing Condition X Attachment Anxiety on KIMS Describing subscale scores at follow-up was not observed among the full sample or either single-gender sample.

Finally, for the KIMS Accept subscale, there was a significant main effect of writing condition ( $\beta = .13, p < .01$ ), with participants who wrote about neutral events scoring higher on the KIMS Accept subscale at follow-up, as well as a significant main effect of attachment anxiety ( $\beta = -.17, p = .001$ ), with higher attachment anxiety predicting lower KIMS Accept scores at follow-up. These main effects were significant for male participants (writing condition,  $\beta = .21, p < .01$ ; attachment anxiety,  $\beta = -.20, p < .01$ ). Only the main effect of attachment anxiety was significant among women ( $\beta = -.16, p < .05$ ). However, a follow-up regression including gender and the interaction of Gender X Writing Condition as predictors revealed no significant interaction effect of Gender X Writing Condition on KIMS Accept scores at follow-up. The hypothesized interaction effect of Writing Condition X Attachment Anxiety on KIMS Accept subscale scores at follow-up was not found for the full sample, or for either single-gender sample.

**Hypotheses 5 and 6.** Hypothesis 5 predicted that higher levels of attachment avoidance would be associated with lower frequencies of attachment words, negative emotion words, and second- and third-person pronouns in Day 1 narratives. This hypothesis was tested through a series of multiple regression analyses. Age was entered as a predictor in Block 1 and attachment avoidance was entered in Block 2. Regressions were run separately for the full sample and for each gender separately.

Results did not support this hypothesis, as there were no main effects of attachment avoidance on frequencies of any of the word categories in Day 1 narratives. As an exploratory analysis, regressions were completed using the combined relative frequencies of each word category from all three narratives rather than those of Day 1

narratives alone. There was a significant main effect of attachment avoidance ( $\beta = -.13, p < .05$ ) on pronoun use among the full sample, such that higher attachment avoidance predicted lower frequencies of second- and third-person pronouns across all three days' narratives. Separate analyses by gender revealed that this effect was significant for women ( $\beta = -.17, p < .05$ ), but not men. However, a follow-up regression including gender and the interaction of Gender X Attachment Avoidance as predictors revealed no significant interaction effect of Gender X Attachment Avoidance on pronoun use. There were no other significant effects of attachment avoidance on word use.

Hypothesis 6 predicted that higher levels of attachment anxiety would be associated with higher frequencies of attachment words, negative emotion words, and second- and third-person pronouns in Day 1 narratives. This hypothesis was tested through a series of multiple regression analyses. Age was entered as a predictor in Block 1 and attachment anxiety was entered in Block 2. Regressions were run separately for the full sample and for each gender separately.

There were no main effects of attachment anxiety on negative emotion words, attachment words, or second- and third-person pronouns. As an exploratory analysis, regressions were completed using the combined relative frequencies of each word category from all three narratives rather than those of Day 1 narratives alone. However, there were no main effects of attachment anxiety on any of the combined Day 1 – Day 3 word categories.

**Hypotheses 7 and 8.** Hypotheses 7 and 8 predicted that attachment variables would moderate the relationships between increases in the relative frequencies of three

categories of words (attachment words, negative emotion words, and second- and third-person pronouns) over the course of three writing sessions and the outcomes of mindfulness and experiential avoidance.

***Preliminary Analyses.*** Tables 3.5, 3.6, and 3.7 display mean relative frequencies for the three word use categories of attachment words, negative emotion words, and second- and third-person pronouns for Day 1, Day 2, and Day 3 narratives, by gender and writing condition. Mixed repeated-measures ANCOVA models of gender X writing condition X time were tested to determine whether relative frequencies of attachment words, negative emotion words, and second- and third-person pronouns changed significantly over the course of the three days of writing. Age was entered as a covariate. There was no significant main effect of time, and no significant interaction effects between time and either gender or writing condition, on the frequencies of negative emotion words, attachment words, or second- and third-person pronouns.

***Hypothesis 7.*** Hypothesis 7 stated that for each word category (negative emotion words, attachment words, and second- and third-person pronouns), the product term representing the interaction between the word category change score and level of attachment avoidance at baseline would account for significant unique variance in levels of experiential avoidance and mindfulness at follow-up, after controlling for main effects of attachment avoidance and word category change scores and for baseline levels of the outcome variables. It was predicted that greater increases in use of these categories of words over the course of the three days of writing would be associated with greater benefits for participants high in attachment avoidance.

Change scores were computed for each word category by subtracting word category percentages of Day 1 narratives from word category percentages of Day 3 narratives. Thus, higher change scores reflected increases in use of words in the relevant category over the course of three days' writing. Multiple regression analyses were conducted for each experiential avoidance and mindfulness outcome variable and for each of the word categories. All variables were standardized by converting them to z-scores. In Block 1, age and the outcome variable at baseline were entered as predictors. In Block 2, attachment avoidance and the word category change score were entered. In Block 3, the interaction term for Word Category Change Score X Attachment Avoidance was entered as a dummy variable. Each regression was run for the full sample of study completers, regardless of writing condition, and separately for each gender. Thus, results are described sequentially for each outcome (e.g., AAQ Total score, AAQ Action subscale). The section for each outcome describes results for three sets of regressions: one examining attachment avoidance and changes in use of negative emotion words, one examining attachment avoidance and changes in use of attachment words, and one examining attachment avoidance and changes in use of second- and third-person pronouns. Each set includes a regression run on the full sample of study completers and separate regressions for each gender.

*AAQ Total Score.* For the outcome of experiential avoidance as measured by the AAQ Total score, there were no significant main effects of the negative emotion words change score, and the hypothesized interaction effect of Negative Emotion Words

Change Score X Attachment Avoidance was not found for the full sample or for either gender alone.

In the regressions examining attachment words, there were no significant main effects of the attachment words change score, although there was a trend for a main effect among the full sample ( $\beta = .09, p = .06$ ) and among women ( $\beta = .13, p = .08$ ), such that greater increases in attachment words over the course of three days' writing tended to predict higher AAQ Total scores at follow-up. There was a significant interaction effect of Attachment Words Change Score X Attachment Avoidance ( $\beta = -.16, p < .05$ ) among the sample of all study completers. Separate analyses for each gender revealed that the interaction effect of Attachment Words Change Score X Attachment Avoidance on AAQ Total scores was significant among women ( $\beta = -.22, p = .003$ ), but not men. To explore this apparent gender difference, a follow-up regression was run for the full sample of study completers including gender and interactions with gender as predictors. The follow-up analysis revealed no significant main effect of gender, no significant two-way interaction effects of Gender X Attachment Avoidance or Gender X Attachment Words Change Score, and no significant three-way interaction effect of Gender X Attachment Words Change Score X Attachment Avoidance. Table 3.8 summarizes gender differences in the interaction of attachment variables and linguistic variables tested in Hypotheses 7 and 8.

The significant interaction effect of Attachment Words Change Score X Attachment Avoidance among the full sample was explored by plotting the slopes of the attachment words change score on AAQ Total follow-up scores for five values of

baseline attachment avoidance (see Figure 3.2). Very low and very high levels of attachment avoidance were defined as  $\pm 2 SD$  of the mean, low and high levels of attachment avoidance were defined as  $\pm 1 SD$  of the mean, and a medium level of attachment avoidance was defined as equivalent to the mean for the sample of full study completers. Among participants with medium to high levels of attachment avoidance, change in use of attachment words from Day 1 to Day 3 did not predict AAQ Total scores at follow-up. However, contrary to prediction, among participants with very low ( $t = 3.50, p < .001$ ) to low ( $t = 3.39, p < .001$ ) levels of attachment avoidance, greater increases in use of attachment words over the course of writing sessions were associated with significantly higher AAQ Total scores at follow-up. Also contrary to prediction, among participants with very high levels of attachment avoidance, greater increases in use of attachment words over the course of writing sessions were associated with significantly lower AAQ Total scores at follow-up ( $t = -2.31, p < .05$ ).

There were no significant main effects of the second- and third-person pronouns change score on AAQ Total scores at follow-up, and the hypothesized interaction effect of Second- and Third-Person Pronouns Change Score X Attachment Avoidance was not found for the full sample or for either gender alone.

*AAQ Action Subscale.* For the AAQ Action subscale, the first set of regressions revealed a significant main effect of the negative emotion words change score ( $\beta = .11, p < .05$ ) among the full sample of study completers, such that participants who showed greater increases in the relative frequencies of negative emotion words over the course of the three days' narratives had significantly higher AAQ Action scores at follow-up.

However, this main effect was not significant for either single-gender group. The hypothesized interaction effect of Negative Emotions Change Score X Attachment Avoidance was not observed for the full sample or for the sample of male participants.

In the set of regressions examining attachment words, there were no significant main effects of changes in use of attachment words on AAQ Action scores at follow-up, but there was a significant interaction effect of Attachment Words Change Score X Attachment Avoidance ( $\beta = -.17, p = .001$ ) for the full sample of study completers. Separate regressions for each gender indicated that the interaction effect was significant among women ( $\beta = -.20, p < .01$ ), but not men. To explore this apparent gender difference, a follow-up regression was run for the full sample of study completers including gender and interactions with gender as predictors. The follow-up analysis revealed no significant main effect of gender, no significant two-way interaction effects of Gender X Attachment Avoidance or Gender X Attachment Word Change Score, and no significant three-way interaction effect of Gender X Attachment Word Change Score X Attachment Avoidance.

The significant interaction effect of Attachment Words Change Score X Attachment Avoidance among the full sample was explored by plotting the slopes of the attachment words change score on AAQ Action follow-up scores for five values of baseline attachment avoidance (see Figure 3.3). Very low and very high levels of attachment avoidance were defined as  $\pm 2 SD$  of the mean, low and high levels of attachment avoidance were defined as  $\pm 1 SD$  of the mean, and a medium level of attachment avoidance was defined as equivalent to the mean for the sample of full study

completers. Among participants with medium to high levels of attachment avoidance, change in use of attachment words from Day 1 to Day 3 did not predict AAQ Action scores at follow-up. However, contrary to prediction, among participants with very low ( $t = 3.99, p < .001$ ) to low ( $t = 3.93, p < .001$ ) levels of attachment avoidance, greater increases in use of attachment words over the course of writing sessions were associated with significantly higher AAQ Action scores at follow-up. Also contrary to prediction, among participants with very high levels of attachment avoidance, greater increases in use of attachment words over the course of writing sessions were associated with significantly lower AAQ Action scores at follow-up ( $t = -2.30, p < .05$ ).

There were no significant main effects of the second- and third-person pronouns change score on AAQ Action scores at follow-up, and the hypothesized interaction effect of Second- and Third-Person Pronouns Change Score X Attachment Avoidance was not found for the full sample or for either gender alone.

*AAQ Willingness Subscale.* For the AAQ Willingness subscale, there was no significant main effect of change in negative emotion words, and the hypothesized interaction effect of Negative Emotion Words Change Score X Attachment Avoidance was not found.

In the next set of regressions, there were no significant main effects of change in use of attachment words on AAQ Willingness scores at follow-up, but there was a trend for the interaction of Attachment Words Change Score X Attachment Avoidance ( $\beta = -.10, p = .07$ ) for the full sample of study completers. Among women, this interaction effect was statistically significant ( $\beta = -.16, p = .03$ ), but it was not significant among

men. To explore this apparent gender difference, a regression was run for the full sample with gender and interactions with gender entered as predictors. The follow-up analysis revealed no significant main effect of gender, no significant two-way interaction effects of Gender X Attachment Avoidance or Gender X Attachment Word Change Score, and no significant three-way interaction effect of Gender X Attachment Word Change Score X Attachment Avoidance.

Because the results for women suggested possible support for Hypothesis 7, exploratory follow-up analyses were pursued as follows. The significant interaction effect among women was explored by plotting the slopes of the attachment words change score on AAQ Willingness follow-up scores for five values of baseline attachment avoidance (see Figure 3.4). Very low and very high levels of attachment avoidance were defined as  $\pm 2$  SD of the mean, low and high levels of attachment avoidance were defined as  $\pm 1$  SD of the mean, and a medium level of attachment avoidance was defined as equivalent to the mean for the sample of women. Among women with medium to very high levels of attachment avoidance, change in use of attachment words from Day 1 to Day 3 did not predict AAQ Willingness scores at follow-up. However, among women with very low ( $t = 2.89, p < .01$ ) to low ( $t = 3.00, p < .01$ ) levels of attachment avoidance, greater increases in use of attachment words over the course of writing sessions were associated with significantly higher AAQ Willingness scores at follow-up.

There were no significant main effects or interaction effects for changes in use of second- and third-person pronouns on AAQ Willingness scores at follow-up.

*KIMS Total Score.* For the outcome of mindfulness as measured by the KIMS Total score, among women only, there was a significant main effect of the negative emotion words change score ( $\beta = .14, p < .05$ ), indicating that women who used increasing relative frequencies of negative emotion words over the course of the three days' narratives had higher KIMS Total scores at follow-up. However, a follow-up regression run for the full sample and including gender and the interaction of Gender X Negative Emotion Words Change Score as predictors revealed no significant interaction of Gender X Negative Emotion Words Change Score. The hypothesized interaction effect of Negative Emotion Words Change Score X Attachment Avoidance was not found for the mixed-gender sample or for either gender alone.

In the next set of regressions, examining attachment words, there was no significant main effect of change in use of attachment words on KIMS Total scores at follow-up. The hypothesized interaction effect of Attachment Words Change Score X Attachment Avoidance was not observed in the full sample or among men. However, among women, there was a significant interaction effect of Attachment Words Change Score X Attachment Avoidance ( $\beta = -.17, p < .01$ ). To explore this apparent gender difference, a follow-up regression was run for the full sample including gender and interactions with gender as predictors. This analysis revealed a significant three-way interaction effect of Gender X Attachment Avoidance X Attachment Words Change Score ( $\beta = -.12, p < .05$ ).

The significant interaction effect of Attachment Words Change Score X Attachment Avoidance among women was explored by plotting the slopes of the

attachment words change score on KIMS Total follow-up scores for five values of baseline attachment avoidance (see Figure 3.5). Very low and very high levels of attachment avoidance were defined as  $\pm 2 SD$  of the mean, low and high levels of attachment avoidance were defined as  $\pm 1 SD$  of the mean, and a medium level of attachment avoidance was defined as equivalent to the mean for the sample of women. Contrary to prediction, among women with medium to very high levels of attachment avoidance, change in use of attachment words from Day 1 to Day 3 did not predict KIMS Total scores at follow-up. However, among women with very low ( $t = 3.06, p < .01$ ) to low ( $t = 2.99, p < .01$ ) levels of attachment avoidance, greater increases in use of attachment words over the course of writing sessions were associated with significantly higher KIMS Total scores at follow-up.

There were no significant main effects or interaction effects of changes in use of second- and third-person pronouns on KIMS Total scores at follow-up.

*KIMS Observing Subscale.* For the KIMS Observing subscale, there were no significant main effects for any of the word category change scores, and the predicted interaction effects of word category change scores with attachment avoidance were not found.

*KIMS Describing Subscale.* For the KIMS Describing subscale, there was no significant main effect of changes in use of negative emotion words, and there was no significant interaction effect of Negative Emotion Words Change Score X Attachment Avoidance for the full sample or for either gender.

Similarly, in the regressions examining attachment words, there was no significant main effect of changes in use of attachment words on KIMS Describing scores at follow-up. There was no significant interaction effect of Attachment Words Change Score X Attachment Avoidance in the full sample or among women. However, among men, there was a significant interaction effect of Attachment Words Change Score X Attachment Avoidance ( $\beta = .13, p = .05$ ). To explore this apparent gender difference, a follow-up regression was run for the full sample including gender and interactions with gender as predictors. This analysis revealed a significant three-way interaction effect of Gender X Attachment Avoidance X Attachment Words Change Score ( $\beta = -.12, p < .05$ ).

The significant interaction effect of Attachment Words Change Score X Attachment Avoidance among men was explored by plotting the slopes of the attachment words change score on KIMS Describing follow-up scores for five values of baseline attachment avoidance (see Figure 3.6). Very low and very high levels of attachment avoidance were defined as  $\pm 2 SD$  of the mean, low and high levels of attachment avoidance were defined as  $\pm 1 SD$  of the mean, and a medium level of attachment avoidance was defined as equivalent to the mean for the sample of men. There were no significant effects of change in use of attachment words on KIMS Describing scores for any of the values of attachment avoidance. Trends were observed at extreme values: There was a trend for an effect of the attachment words change score at very low levels of attachment avoidance, such that greater increases in attachment words over the course of writing sessions were associated with lower KIMS Describing follow-up scores ( $t = -1.76, p = .08$ ). There was also a trend for an effect of the attachment words change score

at very high levels of attachment avoidance, such that greater increases in attachment words over the course of writing sessions were associated with higher KIMS Describing follow-up scores ( $t = 1.92, p = .06$ ).

Finally, there were no significant main effects of changes in use of second- and third-person pronouns on KIMS Describing follow-up scores, and the hypothesized interaction effect of Second- and Third-Person Pronouns Change Score X Attachment Avoidance was not found for the full sample or for either gender.

*KIMS Act Subscale.* For the KIMS Act subscale, there was no main effect of the negative emotion words change score and the hypothesized interaction effect of Negative Emotion Words Change Score X Attachment Avoidance was not found for the full sample or for either gender.

In the next set of regressions, there were no main effects of the attachment words change score on KIMS Act scores at follow-up, but there was a trend for the interaction of Attachment Words Change Score X Attachment Avoidance ( $\beta = -.09, p = .06$ ) for the full sample of study completers. This interaction was significant among women ( $\beta = -.15, p < .05$ ), but not among men. To explore this apparent gender difference, a follow-up regression was run for the full sample including gender and interactions with gender as predictors. This analysis revealed no significant main effect of gender, no significant two-way interaction effects of Gender X Attachment Avoidance or Gender X Attachment Word Change Score, and no significant three-way interaction effect of Gender X Attachment Word Change Score X Attachment Avoidance.

Because the results for women suggested possible support for Hypothesis 7, exploratory follow-up analyses were pursued as follows. The significant interaction effect among women was explored by plotting the slopes of the attachment words change score on KIMS Act follow-up scores for five values of baseline attachment avoidance (see Figure 3.7). Very low and very high levels of attachment avoidance were defined as  $\pm 2$  SD of the mean, low and high levels of attachment avoidance were defined as  $\pm 1$  SD of the mean, and a medium level of attachment avoidance was defined as equivalent to the mean for the sample of women. Among women whose attachment avoidance scores were within one standard deviation of the mean, change in use of attachment words from Day 1 to Day 3 was not significantly associated with KIMS Act scores at follow-up. However, contrary to prediction, among women with very low levels of attachment avoidance, two standard deviations below the mean, greater increases in use of attachment words over the course of writing sessions was associated with significantly higher KIMS Act scores at follow-up ( $t = 1.96, p = .05$ ). Also contrary to prediction, among women with very high levels of attachment avoidance, greater increases in use of attachment words were associated with significantly lower KIMS Act scores at follow-up ( $t = -1.97, p = .05$ ).

In the regressions examining pronouns, there was a significant main effect of the second- and third-person pronouns change score ( $\beta = .10, p < .05$ ) for the full sample of study completers, such that participants who used more second- and third-person pronouns over the course of the three days' narratives had higher KIMS Act scores at follow-up. However, this effect was not significant for either of the single-gender

groups. The hypothesized interaction effect of Second- and Third-Person Pronouns Change Score X Attachment Avoidance on KIMS Act scores at follow-up was not found.

*KIMS Accept Subscale.* For the KIMS Accept subscale, there were no significant main effects of the negative emotion words change score and the hypothesized interaction effect of Negative Emotion Words Change Score X Attachment Avoidance was not observed.

The regressions examining attachment words revealed no main effects of changes in use of attachment words and no significant interaction effects of Attachment Words Change Score X Attachment Avoidance on KIMS Accept scores at follow-up for the full sample or for men. However, there was a significant interaction effect of Attachment Words Change Score X Attachment Avoidance among women ( $\beta = -.14, p < .05$ ). To explore this apparent gender difference, a follow-up regression was run for the full sample including gender and interactions with gender as predictors. This analysis revealed no significant main effect of gender, no significant two-way interaction effects of Gender X Attachment Avoidance or Gender X Attachment Word Change Score, and no significant three-way interaction effect of Gender X Attachment Word Change Score X Attachment Avoidance.

Because the results for women suggested possible support for Hypothesis 7, exploratory follow-up analyses were pursued as follows. The significant interaction effect among women was explored by plotting the slopes of the attachment words change score on KIMS Accept follow-up scores for five values of baseline attachment avoidance (see Figure 3.8). Very low and very high levels of attachment avoidance were defined as

+/- 2 SD of the mean, low and high levels of attachment avoidance were defined as +/- 1 SD of the mean, and a medium level of attachment avoidance was defined as equivalent to the mean for the sample of women. Among women with very low, low, and medium levels of attachment avoidance, change in use of attachment words from Day 1 to Day 3 was not significantly associated with KIMS Accept scores at follow-up. However, contrary to prediction, among women with high ( $t = -2.65, p < .01$ ) to very high ( $t = -2.62, p < .01$ ) levels of attachment avoidance, greater increases in use of attachment words were associated with significantly lower KIMS Accept scores at follow-up.

Finally, there were no significant main effects or interaction effects of changes in second- and third-person pronouns use on KIMS Accept scores at follow-up for the full sample or for either gender.

***Hypothesis 8.*** Hypothesis 8 stated that for each word category (negative emotion words, attachment words, and second- and third-person pronouns), the product term representing the interaction between the word category change score and level of attachment anxiety at baseline would account for significant unique variance in levels of experiential avoidance and mindfulness at follow-up, after controlling for main effects of attachment anxiety and word category change scores and for baseline levels of the outcome variables. It was predicted that greater decreases in use of these categories of words over the course of the three days of writing would be associated with greater benefits for participants high in attachment anxiety. This hypothesis was tested through a series of multiple regression analyses, identical to those described for Hypothesis 7, except that attachment anxiety was included as a predictor rather than attachment

avoidance. Each regression was run for the full sample of study completers, regardless of writing condition, and separately for each gender. Thus, results are described sequentially for each outcome (e.g., AAQ Total Score, AAQ Action Subscale). The section for each outcome describes results for three sets of regressions: one examining attachment anxiety and changes in use of negative emotion words, one examining attachment anxiety and changes in use of attachment words, and one examining attachment anxiety and changes in use of second- and third-person pronouns. Each set includes a regression run on the full sample of study completers and separate regressions for each gender.

*AAQ Total Score.* For the outcome of experiential avoidance as measured by the AAQ Total score, there was no main effect of changes in use of negative emotion words, and the hypothesized interaction effect of Negative Emotion Words Change Score X Attachment Anxiety was not observed among the full sample or either single-gender sample.

Similarly, in the regressions examining attachment words, there was no main effect of changes in use of attachment words on AAQ Total scores at follow-up, and the hypothesized interaction effect of Attachment Words Change Score X Attachment Anxiety was not found.

This pattern was also found in the regressions examining use of pronouns, with no main effects of changes in use of pronouns and no significant interaction effect of Second- and Third- Person Pronouns Change Score X Attachment Anxiety for the full sample, for men, or for women.

*AAQ Action Subscale.* For the AAQ Action subscale, there was no significant main effect of changes in use of negative emotion words, and the hypothesized interaction effect of Negative Emotion Words Change Score X Attachment Anxiety was not found for the full sample, for men, or for women.

There was no significant main effect of changes in use of attachment words on AAQ Action scores at follow-up, and the hypothesized interaction effect of Attachment Words Change Score X Attachment Anxiety was not observed for the full sample, for men, or for women.

Similarly, in the regressions examining pronouns, there was no significant main effect of changes in pronoun use, and the hypothesized interaction effect of Second- and Third-Person Pronouns Change Score X Attachment Anxiety was not found.

*AAQ Willingness Subscale.* For the AAQ Willingness subscale, in the set of regressions examining negative emotion words, there was no main effect of changes in negative emotion words. However, there was a significant interaction effect of Negative Emotion Words Change Score X Attachment Anxiety ( $\beta = -.10, p < .05$ ) among the full sample, but not for men or women alone. The significant interaction effect for the full sample was explored by plotting the simple slopes of the negative emotion words change score on AAQ Willingness follow-up scores for five values of baseline attachment anxiety (see Figure 3.9). Very low and very high levels of attachment anxiety were defined as  $\pm 2 SD$  of the mean, low and high levels of attachment anxiety were defined as  $\pm 1 SD$  of the mean, and a medium level of attachment anxiety was defined as equivalent to the mean for the full sample. No significant effects of change in use of

negative emotion words on AAQ Willingness scores were observed at any of the values of attachment anxiety. There was a trend for a main effect of negative emotion words on AAQ Willingness among participants with very low levels of attachment anxiety, such that greater increases in use of negative emotion words over the course of writing predicted higher AAQ Willingness scores at follow-up ( $t = 1.93, p = .055$ ). In addition, there was a trend for a main effect in the opposite direction at very high values of attachment anxiety, such that greater increases in use of negative emotion words over the course of writing sessions predicted lower AAQ Willingness scores at follow-up ( $t = -1.67, p = .096$ ).

In the set of regressions examining attachment words, there was no significant main effect of change in use of attachment words on AAQ Willingness scores at follow-up, and the hypothesized interaction effect of Attachment Words Change Score X Attachment Anxiety was not found for the mixed-gender sample or for either gender alone.

Finally, in the set of regressions examining pronouns, there was no significant main effect of change in use of pronouns on AAQ Willingness scores at follow-up, and the hypothesized interaction effect of Second- and Third-Person Pronouns Change Score X Attachment Anxiety was not found for the mixed-gender sample or for either gender alone.

*KIMS Total Score.* For the outcome of mindfulness, as measured by the KIMS Total score, the hypothesized interaction effect of Negative Emotion Words Change Score X Attachment Anxiety was not found for the full sample, for men, or for women.

In the regressions examining attachment words, there was no significant main effect of changes in attachment words on KIMS Total scores at follow-up. However, there was a significant interaction effect of Attachment Words Change Score X Attachment Anxiety ( $\beta = -.10, p < .05$ ) among the full sample of study completers. The interaction effect was significant for women ( $\beta = -.13, p < .05$ ), but it was not significant for men. To explore this apparent gender difference, a follow-up regression was run for the full sample including gender and interactions with gender as predictors. This analysis revealed no significant main effect of gender, no significant two-way interaction effects of Gender X Attachment Anxiety or Gender X Attachment Word Change Score, and no significant three-way interaction effect of Gender X Attachment Word Change Score X Attachment Anxiety.

The significant interaction effect of Attachment Words Change Score X Attachment Anxiety for the full sample was explored by plotting the simple slopes of the attachment words change score on KIMS Total follow-up scores for five values of baseline attachment anxiety (see Figure 3.10). Very low and very high levels of attachment anxiety were defined as  $\pm 2 SD$  of the mean, low and high levels of attachment anxiety were defined as  $\pm 1 SD$  of the mean, and a medium level of attachment anxiety was defined as equivalent to the mean for the full sample. Among participants with very low to medium levels of attachment anxiety, there was no significant effect of change in attachment words on KIMS Total scores at follow-up, although there was a trend for an effect at very low levels of attachment anxiety, such that greater increases in use of attachment words predicted higher KIMS Total scores ( $t =$

1.65,  $p = .10$ ). Among participants with high ( $t = -2.05, p < .05$ ) to very high ( $t = -2.29, p < .05$ ) levels of attachment anxiety, increased use of attachment words over the course of three days' writing was associated with significantly lower KIMS Total scores at follow-up.

In the regressions examining pronouns, the hypothesized interaction effect of Second- and Third-Person Pronouns Change Score X Attachment Anxiety on KIMS Total scores at follow-up was not observed among men, women, or the mixed-gender sample.

*KIMS Observing Subscale.* For the KIMS Observing subscale, there were no significant main effects of changes in word use, and the hypothesized interaction effects were not found for negative emotion words, attachment words, or pronouns among the full sample or among either single-gender sample.

*KIMS Describing Subscale.* For the KIMS Describing subscale, there were no significant main effects of changes in word use, and the hypothesized interaction effects were not found for negative emotion words, attachment words, or pronouns among the full sample or among either single-gender sample.

*KIMS Act Subscale.* For the KIMS Act subscale, there were no significant main effects of changes in word use, and the hypothesized interaction effects were not found for negative emotion words, attachment words, or pronouns among the full sample or among either single-gender sample.

*KIMS Accept Subscale.* For the KIMS Accept subscale, there were no significant main effects of changes in word use, and the hypothesized interaction effects were not

found for negative emotion words, attachment words, or pronouns among the full sample or among either single-gender sample.

## CHAPTER FOUR

### Discussion

This study provides some of the first data on empirical links between attachment variables and experiential avoidance and mindfulness. In support of recent theories, attachment insecurity was found to be significantly related to higher levels of experiential avoidance and lower levels of mindfulness. This study also contributes to the literature on attachment and language use, as attachment avoidance was found to predict lower frequencies of second- and third-person pronouns in written narratives, though attachment variables did not predict differences in use of emotion words. In addition, the present study adds to the literature on narrative disclosure of personal experiences by demonstrating that attachment avoidance may interfere with the previously observed beneficial effects of writing about daily events on mindfulness. Finally, this study examined the effects of attachment, as moderated by both writing topic and linguistic aspects of narratives, on mindfulness and experiential avoidance outcomes. It was found that both attachment avoidance and attachment anxiety predict negative effects, in the form of increased experiential avoidance and decreased mindfulness, for participants who focus on attachment issues in their narratives. This was especially true for women. Contrary to expectation, there was little evidence that those with specific attachment styles benefit more from writing about traumatic versus neutral events.

#### **Attachment, Experiential Avoidance, and Mindfulness**

This study provided new data regarding the relationship of attachment variables to experiential avoidance and mindfulness. To date, there have been no published

investigations of links between experiential avoidance and attachment. As predicted, in the present study, higher levels of both attachment anxiety and attachment avoidance were associated with higher overall levels of experiential avoidance as measured by the AAQ Total score, and with decreased willingness to remain in contact with negative emotions (AAQ Willingness) and decreased ability to take action in the presence of strong emotions (AAQ Action). This finding is in keeping with the well-established relationships between insecure attachment and deficits in emotion regulation and psychological well-being.

Similar findings were obtained regarding attachment insecurity and low levels of mindfulness. Specifically, as predicted, higher attachment anxiety was associated with lower levels of overall mindfulness as measured by the KIMS Total score, and with lower levels of two specific aspects of mindfulness: *acting with awareness* (KIMS Act), and *accepting without judgment* (KIMS Accept). Higher attachment anxiety was also associated with lower levels of the *describing observed phenomena* (KIMS Describe) component of mindfulness, and with higher levels of the *observing internal and external stimuli* (KIMS Observe) component of mindfulness. Thus, in contrast to the negative correlations between attachment anxiety and total mindfulness scores as well as those between attachment anxiety and the other three components of mindfulness, there is a positive correlation between attachment anxiety and the *observing* aspect of mindfulness. This finding may be understood in light of the hypervigilance that is theorized to accompany attachment anxiety, which may be reflected in higher KIMS Observe scores. These findings indicate that despite this hypervigilant stance, attachment-anxious

individuals have difficulty describing internal and external events, responding behaviorally to those events, and maintaining a nonjudgmental, present-focused attitude. It appears that hyperactivation of the attachment system in response to fears of rejection and abandonment encourages scanning of the environment for threats to attachment security but interferes with processing, reacting to, and accepting information about emotional experience.

These findings largely replicate those of Shaver, Lavy, Saron, and Mikulincer (2007), who found that attachment anxiety was significantly negatively correlated with the *acting with awareness* and *accepting without judgment* components of mindfulness. They also found a negative association between attachment anxiety and a component not examined here called *nonreactivity to inner experience*. As noted, the present findings also suggest an inverse relationship between attachment anxiety and the *describing* components of mindfulness, and a positive relationship between attachment anxiety and the *observing* component, which Shaver and colleagues did not report.

As predicted, attachment avoidance in the present sample was associated with lower levels of overall mindfulness as measured by KIMS Total scores, and with lower scores on KIMS Describe, Act, and Accept subscales. Lower scores on these subscales for participants with higher attachment avoidance were also reported by Shaver and colleagues (2007). The predicted inverse relationship between attachment avoidance and KIMS Observe scores was not found in the present sample. This suggests that attachment-avoidant individuals, who exhibit discomfort with closeness and dependency and tend to minimize their experience of distress, may not differ from those with lower

attachment avoidance in their ability to observe internal and external events that may provoke strong emotions. However, since Shaver and colleagues did find a negative association between attachment avoidance and mindfulness *observing*, further study of this relationship is needed in order to draw any conclusions on this point. The present results do provide support for the prior findings of Shaver and colleagues that higher levels of attachment avoidance are associated with limited ability to describe emotionally salient events and limited ability to accept and respond to those events productively.

Thus, the present findings are generally concordant with those of Shaver, Lavy, Saron, and Mikulincer (2007). They can also be viewed as replication of the finding of Cordon and Finney (2008) that insecurely attached individuals had lower scores on mindfulness measures. The findings in the current study are also congruent with recent theories linking secure attachment histories with mindfulness skills, although it was beyond the scope of this study to test the hypothesized causal role of emotionally-attuned caregiving in the development of self-reflection and mindfulness skills (Ryan, Brown, & Creswell, 2007; Shaver, Lavy, Saron, & Mikulincer, 2007).

### **Attachment, Narrative Content, and Mindfulness Outcomes**

Results provided minimal support for the hypothesis that attachment would interact with writing condition (trauma-focused versus neutral topics) to predict experiential avoidance and mindfulness outcomes following written disclosure. There were no interaction effects of attachment avoidance and writing condition for experiential avoidance outcomes, for overall mindfulness outcomes, or for KIMS Observe, KIMS Describe, or KIMS Act outcomes.

However, an interaction effect was found for attachment avoidance and narrative content as predictors of KIMS Accept scores at follow-up. Among participants with low to average levels of attachment avoidance, writing about neutral events predicted higher KIMS Accept scores at follow-up than did writing about trauma. Among participants with high to very high levels of attachment avoidance, KIMS Accept scores at follow-up did not differ significantly by writing condition. Moore, Brody and Dierberger (2009) previously reported that members of the neutral events writing condition showed significant increases in KIMS Accept scores at follow-up. The present finding suggests that attachment avoidance moderates this effect. While individuals who value intimacy, find it easy to trust others, and seek out close relationships show increases in mindful acceptance after writing about neutral events, this effect is absent among individuals with avoidant attachment. It was hypothesized that individuals with avoidant attachment styles might benefit from writing about traumatic events because the topics would be likely to elicit stronger emotions and encourage greater engagement with painful experiences. Results from the present study do not support this hypothesis, but indicate that high levels of attachment avoidance interfere with the beneficial effects of writing about daily activities.

Contrary to prediction, there were no interaction effects of attachment anxiety and writing condition for experiential avoidance outcomes, or for mindfulness outcomes. This study failed to provide support for the hypothesis that individuals who seek frequent reassurance and experience high levels of distress because of fears of rejection and abandonment would benefit more from writing about neutral events than from writing

about traumatic events. It was theorized that writing about daily activities might help ground attachment-anxious individuals in the present moment, while writing about traumatic events might further stimulate their anxiety and hypervigilance. However, levels of attachment anxiety did not predict mindfulness outcomes differentially for participants in the two writing conditions.

### **Attachment and Language Use**

This study provided little support for hypotheses regarding attachment and language use. It was hypothesized that participants with higher levels of attachment avoidance would use lower frequencies of attachment-related words, negative emotion words, and second- and third-person pronouns than would participants with lower levels of attachment avoidance. There was no effect of attachment avoidance on these word categories in Day 1 narratives. Higher levels of attachment avoidance did predict lower frequencies of second- and third-person pronouns across all three days' narratives. In addition, it was hypothesized that participants with higher levels of attachment anxiety would use higher frequencies of attachment-related words, negative emotion words, and second- and third-person pronouns than participants with lower levels of attachment avoidance. However, there was no effect of attachment anxiety on these word categories in Day 1 narratives, or across all three days' narratives.

These findings contrast with those of Stone (2003), who found that use of pronouns and negative emotion words differentiated Adult Attachment Interview (AAI) transcripts of participants with secure, dismissing, and preoccupied styles. Several factors may explain these divergent findings. First, participants in Stone's study were

classified into categorical attachment styles by trained raters based on AAI transcripts. In contrast, participants in the present study completed a dimensional self-report questionnaire assessing attachment anxiety and attachment avoidance, variables which are theorized to underlie the categorical styles derived from research with the AAI. Thus, different attachment constructs were assessed using different methodology in the two studies. In addition, the AAI involves a lengthy face-to-face interview focused on participants' attachment histories, while the narrative disclosure paradigm used in the present study involves participants' writing, without specific instruction regarding an audience for their narrative, about personal experiences that may or may not relate directly to attachment relationships. It may be that differences in language use based on attachment style are only apparent when the content of the discourse is specific to interpersonal relationships. This could be explored by testing the effects of attachment variables on language use among a subset of narratives that have been rated for content themes focused on relationships.

As an exploratory follow-up analysis, the hypotheses regarding attachment and language use were tested among the trauma group only. Although not all trauma narratives focused on interpersonal problems or losses (and some neutral narratives did discuss such issues, such as a participant describing a fight with her boyfriend in response to a prompt to summarize her activities over the past twenty-four hours), trauma narratives contained higher frequencies of attachment-related words and emotion words than did neutral narratives. As was reported above for the combined sample of both writing conditions, higher levels of attachment avoidance predicted lower frequencies of

second- and third-person pronouns among members of the trauma writing condition ( $\beta = -.19, p < .01$ ). In addition, among members of the trauma writing group, higher levels of attachment anxiety predicted higher frequencies of negative emotion words ( $\beta = .10, p < .05$ ). This additional finding provides some support for the notion that attachment variables have a greater effect on linguistic variables when the content of discourse is relevant to attachment issues.

### **Attachment, Language Use, and Mindfulness Outcomes**

**Attachment Avoidance.** The present study provided partial support for the hypothesis that attachment avoidance interacts with language use in written narratives to predict mindfulness outcomes. A significant interaction effect of attachment avoidance and use of attachment-related words was found for several outcomes, but the direction of the effect was unexpected. It was hypothesized that greater use of attachment-related words in written narratives would lead to greater mindfulness for participants with high levels of attachment avoidance, as processing of attachment-related thoughts and feelings might mitigate these individuals' characteristic denial of strong emotions and threats to attachment security, resulting in greater awareness and acceptance of internal and external events. Contrary to prediction, for participants with high levels of attachment avoidance, greater increases in use of attachment words over the course of writing sessions predicted increased overall experiential avoidance, as measured by AAQ Total scores, and decreased ability to take action in the presence of strong emotions, as measured by AAQ Action scores. Conversely, for participants with low levels of attachment avoidance, greater increases in use of attachment words over the course of

writing sessions predicted decreased overall experiential avoidance and increased ability to take action in the presence of strong emotions at follow-up. A possible interpretation of these findings is that participants with low attachment avoidance were able to make use of the writing exercise to process their concerns about relationships, while participants with high attachment avoidance were not. Spending several minutes thinking about attachment-related issues for several days may have been threatening enough to those with an avoidant attachment style to activate their characteristic avoidant defenses, but not intense enough to elicit significant change in personality or coping style.

*Gender Differences.* There is some evidence that the interaction between attachment avoidance and use of attachment-related words was particularly salient for women. See Table 3.8 for a summary of these findings by gender. The findings discussed above regarding AAQ Total and AAQ Action scores in relation to attachment avoidance were observed among the full sample of men and women. Separate analyses for each gender revealed significant effects among women, but not among men. However, subsequent analyses conducted with the full sample of men and women failed to show significant two-way or three-way interactions of gender with the independent variables of attachment avoidance and change in use of attachment words over the course of writing. Therefore, it would be premature to interpret the AAQ Total and AAQ Action findings as unique to women.

However, a similar finding of an interaction between attachment avoidance and use of attachment-related words predicting to mindfulness scores at follow-up indicated that the significant relationship between these variables was unique to women.

Specifically, among women with high levels of attachment avoidance, greater increases in use of attachment words over time predicted decreased levels of mindfulness, as measured by KIMS Total scores at follow-up. Conversely, among women with low levels of attachment avoidance, greater increases in use of attachment words over time predicted KIMS Total scores at follow-up. This effect was observed at the level of a trend in the full sample, and was not observed among the sample of men. A follow-up regression revealed that this gender difference was significant, so this finding may be interpreted as specific to women in this sample.

Finally, there was a third gender-related pattern of findings for the interaction of attachment avoidance and use of attachment-related words. Specifically, for women with high levels of attachment avoidance, greater use of attachment words over time predicted decreased willingness to remain in contact with negative emotions (AAQ Willingness scores), lower levels of acting with awareness (KIMS Act scores) and lower levels of accepting without judgment (KIMS Accept scores) at follow-up. For women with low levels of attachment avoidance, greater use of attachment words over time predicted higher scores on the AAQ Willingness subscale and on the KIMS Act and KIMS Accept subscales. For these three outcomes, the interaction effect was observed at a trend level among the full sample and was absent among men, but it was statistically significant among women. However, follow-up analyses indicated that this gender difference was not significant, so caution must be used in interpreting these findings as unique to women.

Thus, there was evidence that high levels of attachment avoidance in combination with high frequency of attachment-related words in written narratives led to poorer mindfulness outcomes (higher AAQ Total and lower AAQ Action scores) in this sample, and these results were more pronounced among women (additional finding of lower KIMS Total scores; provisional or tentative additional findings of lower AAQ Willingness, lower KIMS Act and lower KIMS Accept scores). Among men, only one outcome, the KIMS Describe subscale, showed a significant interaction between attachment avoidance and use of attachment-related words, and when this interaction effect was explored by plotting the effects of attachment word use at different levels of attachment avoidance, no significant effects were observed. However, trends were observed at extreme values of attachment avoidance for the outcome of KIMS Describe scores. At very low levels of attachment avoidance, greater increases in attachment words over the course of writing sessions tended to be associated with lower KIMS Describe follow-up scores ( $t = -1.76, p = .08$ ). Meanwhile, at very high levels of attachment avoidance, greater increases in attachment words over the course of writing sessions tended to be associated with higher KIMS Describe follow-up scores ( $t = 1.92, p = .06$ ). Although these results are not statistically significant, they are noted here because the direction of the effect is in the opposite direction from the effects observed among women. In other words, there is a possibility that for men with high levels of attachment avoidance, greater use of attachment-related words in written narratives is beneficial, while it appears to be detrimental for women. However, it is notable that this trend result for men involves a different outcome, the KIMS Describe subscale, which, along with the

KIMS Observe subscale, was one of only two measures that showed no interaction effect of attachment avoidance and attachment word use among women. Further research is required to determine whether attachment avoidance has different moderating effects on the benefits of writing about attachment-related topics for men and women.

**Attachment Anxiety.** This study provided limited support for the hypothesis that attachment anxiety interacts with language use in written narratives to predict mindfulness outcomes. Specifically, as predicted, for participants with high levels of attachment anxiety, greater increases in use of attachment words over the course of writing sessions predicted poorer mindfulness outcomes, as measured by KIMS Total mindfulness scores at follow-up. There was no effect of increased use of attachment words among participants with low to average levels of attachment anxiety. It was hypothesized that participants with high levels of attachment anxiety would benefit more from narrative writing if they showed decreases in their use of attachment-related words over the course of three days, as the writing task might mitigate the hyperactivation of the attachment system that is characteristic of these individuals and allow for greater acceptance and focus on the present moment. The finding that increased use of attachment words led to lower mindfulness scores for those with high attachment anxiety is in keeping with this theory and supports the suggestion of Stroebe, Schut, and Stroebe (2006) that individuals with a preoccupied attachment style might do poorly if they use the narrative exercise to ruminate on negative emotions and painful attachment experiences. As with several of the findings relating to attachment avoidance and increased use of attachment-related words, this finding was significant among the full

sample and, when the two genders were analyzed separately, among women, but not among men. However, follow-up analyses conducted with the full sample of men and women failed to show significant two-way or three-way interactions of gender with the independent variables of attachment anxiety and change in use of attachment words over the course of writing, suggesting that the apparent gender difference should be interpreted with caution.

Finally, there was a trend for a main effect of negative emotion words on AAQ Willingness among participants with very low levels of attachment anxiety, such that greater increases in use of negative emotion words over the course of writing predicted higher AAQ Willingness scores at follow-up ( $t = 1.93, p = .055$ ). In addition, there was a trend for a main effect in the opposite direction at very high values of attachment anxiety, such that greater increases in use of negative emotion words over the course of writing sessions predicted lower AAQ Willingness scores at follow-up ( $t = -1.67, p = .096$ ). This finding, though not statistically significant, is in the same direction as the finding regarding attachment anxiety, increases in use of attachment words, and KIMS Total scores. In both cases, those with a less anxious attachment style had more positive outcomes if they used increasingly emotionally-charged language (higher frequencies of attachment-related words or negative emotion words) over the course of three days' writing. Secure attachment, as compared to anxious attachment, appears to predict greater distress tolerance (AAQ Willingness) for participants whose narratives reflect increasing expression of negative emotions over time. Meanwhile, anxious attachment

appears to predict negative outcomes when written narratives focus increasingly on attachment issues over time.

### **Limitations of the Study**

This study had several features that limit the generalizability of the data. First, the use of self-report questionnaire measures of attachment, experiential avoidance, and mindfulness introduces error from shared method variance and social desirability bias into the data. The attachment questionnaire employed here, the ECR, requires participants to reflect on their feelings and behaviors in close relationships. While the ECR has been widely accepted as a robust and valid measure of self-reported attachment avoidance and attachment anxiety, participants' levels of insight into their attachment behavior may vary significantly. The same is likely true for measures of mindfulness and experiential avoidance. In the case of attachment, the Adult Attachment Interview provides an alternative means of assessing attachment style, and results from studies using self-report versus interview measures of attachment may not be comparable.

In addition, the generalizability of the results is limited by the use of a college student sample, which is constrained by the narrow age range of the participants and skewed towards higher intelligence, education, and socioeconomic status than those of the general population. Latinos and African-Americans were underrepresented in comparison to their numbers in the general population. In addition, young adults may exhibit lower levels of attachment avoidance and higher levels of attachment anxiety than middle-aged and older adults (Fraley, 2005). The generalizability of the present findings

may be further limited by the fact that levels of attachment anxiety in the present sample were slightly higher than those reported in two other studies of undergraduate students.

### **Clinical Implications and Directions for Future Research**

The results of this study suggest that higher levels of attachment avoidance and attachment anxiety predict poorer outcomes following narrative disclosure compared to lower levels of these attachment processes, especially if participants emphasize attachment issues in their writing. A number of researchers have hypothesized that discomfort with, or difficulty expressing emotions, might predict greater benefit from narrative writing, as the task might introduce a novel skill that would serve as an adaptive new coping strategy. However, researchers such as Lumley (2004) have shown that alexithymia leads to poorer outcomes following narrative disclosure, at least among participants with chronic health conditions. The present study suggests that healthy, young adult participants with more secure attachment styles gain more in mindfulness following expressive writing than do young adults with more insecure attachment. As with Lumley's findings, this suggests that rather than serving as a mechanism to teach emotion regulation, narrative disclosure may require a pre-existing level of adaptive emotional functioning in order to be of benefit to participants. If this is the case, personal written disclosure may not be a helpful intervention for participants with relational trauma histories or significant psychopathology. However, a recent meta-analysis found no moderating effect of trauma history or psychological health on narrative disclosure outcomes (Frattaroli, 2006), so it would be premature to recommend limiting expressive writing interventions to high-functioning individuals.

This study found that higher levels of attachment avoidance or attachment anxiety predict increased experiential avoidance and decreased mindfulness for participants, especially women, who focus on attachment issues in their narratives. This may suggest that writing narratives or journals about relationship problems is not a useful intervention for individuals with attachment difficulties. However, because this study involved an experimental intervention that took place outside of the context of a therapeutic relationship, it would be premature to conclude that written homework assignments are not a useful tool in therapy. The opportunity to share a written narrative with a trusted therapist and discuss the thoughts and feelings raised by the exercise adds another dimension to the experience of narrative disclosure, one that is not addressed by research on expressive writing as a stand-alone experimental intervention.

This study did not provide support for the idea of matching participants to specific writing topics based on attachment style. It was theorized that attachment-avoidant participants might benefit from being prompted to write about emotional topics, while attachment-anxious participants might benefit from being prompted to write about their daily lives. This hypothesis was not supported. However, a wide range of topics were written about in both experimental conditions. Trauma narratives discussed issues ranging from conflict with friends to being a victim of sexual assault. Daily events narratives sometimes included discussion of distressing events that occurred around the time of the experiment. Future research might use more specific writing instructions and more fine-grained analyses of written narratives, including trauma severity ratings for the

events described in participants' narratives, in order to further test for interactions of attachment variables with characteristics of narratives.

Table 2.1

*Participant retention rates*

|  | Women            |                   | Men              |                   | Totals    |
|--|------------------|-------------------|------------------|-------------------|-----------|
|  | Trauma Condition | Neutral Condition | Trauma Condition | Neutral Condition |           |
| Enrolled at baseline                         | 112              | 49                | 110              | 55                | 326       |
| Completed Days 1-3                           | 109              | 48                | 108              | 54                | 319       |
| Eliminated due to<br>procedural errors       | 1                | 2                 | 0                | 1                 | 4         |
| Eligible for follow-up                       | 108              | 46                | 108              | 53                | 315       |
| Agreed to follow-up                          | 101              | 44                | 92               | 47                | 284       |
| Completed follow-up<br>(% of those eligible) | 92 (85%)         | 37 (80%)          | 66 (61%)         | 37 (70%)          | 232 (74%) |

Table 2.2

*Ages of study completers and non-completers*

|                        | <i>t</i> | Study Non-Completers<br>( <i>N</i> = 94) | Study Completers<br>( <i>N</i> = 232) |
|------------------------|----------|--|---------------------------------------|
| Mean Age ( <i>SD</i> ) | -2.18*   | 19.20 (1.30)                             | 18.88 (1.17)                          |

\*  $p < .05$

Table 2.3

*Annual household incomes of study completers and non-completers*

| Income Level          | Study Non-Completers |            | Study Completers |            |
|-----------------------|----------------------|------------|------------------|------------|
|                       | Frequency            | Percentage | Frequency        | Percentage |
| < \$25,000            | 13                   | 5.6%       | 5                | 5.3%       |
| \$26,000 - \$50,000   | 20                   | 8.6%       | 9                | 9.6%       |
| \$51,000 - \$75,000   | 46                   | 19.8%      | 9                | 9.6%       |
| \$76,000 - \$100,000  | 57                   | 24.6%      | 20               | 21.3%      |
| \$101,000 - \$150,000 | 42                   | 18.1%      | 20               | 21.3%      |
| > \$150,000           | 46                   | 19.8%      | 31               | 33%        |
| Did not respond       | 8                    | 3.4%       | --               | --         |
| Totals                | 232                  | 100%       | 94               | 100%       |

$\chi^2 = 9.58, n.s.$

Table 2.4

*Ethnicities of U.S. citizen participants*

| Ethnicity                        | Study Non-Completers |            | Study Completers |            |
|----------------------------------|----------------------|------------|------------------|------------|
|                                  | Frequency            | Percentage | Frequency        | Percentage |
| White/European-American          | 51                   | 72.9%      | 140              | 66.7%      |
| Black/African-American           | --                   | --         | 8                | 3.8%       |
| Asian-American                   | 5                    | 7.1%       | 31               | 14.8%      |
| Hispanic/Latino American         | 2                    | 2.9%       | 9                | 4.3%       |
| Indian-American                  | 3                    | 4.3%       | 4                | 1.9%       |
| Middle Eastern American          | 4                    | 5.7%       | 3                | 1.4%       |
| Native Hawaiian/Pacific Islander | --                   | --         | 1                | 0.5%       |
| Two or more ethnicities          | 5                    | 7.1%       | 14               | 6.7%       |
| Totals                           | 70                   | 100%       | 210              | 100%       |

$\chi^2 = 11.0, n.s.$

Table 2.5

*Ethnicities of international student participants*

| Ethnicity                | Study Non-Completers |            | Study Completers |            |
|--------------------------|----------------------|------------|------------------|------------|
|                          | Frequency            | Percentage | Frequency        | Percentage |
| White (European descent) | 7                    | 29.2%      | 5                | 22.7%      |
| Black (African descent)  | 2                    | 8.3%       | 2                | 9.1%       |
| Asian                    | 8                    | 33.3%      | 6                | 27.3%      |
| Hispanic/Latino          | --                   | --         | 5                | 22.7%      |
| Indian                   | 3                    | 12.5%      | 3                | 13.6%      |
| Middle Eastern           | 3                    | 12.5%      | 1                | 4.5%       |
| Two or more ethnicities  | 1                    | 4.2%       | --               | --         |
| Totals                   | 24                   | 100%       | 22               | 100%       |

$\chi^2 = 7.55, n.s.$

Table 2.6

*Attachment-related words and word stems (indicated by asterisk)*


---

|            |             |
|------------|-------------|
| trust*     | compassion* |
| relat*     | concern*    |
| together*  | considerate |
| couple*    | help*       |
| partner*   | support*    |
| lov*       | tender      |
| affection* |             |
| affiliat*  | alone       |
| bond*      | lone*       |
| kinship    | isolat*     |
| companion* | desert*     |
| friend*    | detach*     |
| loyal*     | solitary    |
| united     | disconnect* |
| attached   | separate*   |
| attachment | exile       |
| beloved    | distanc*    |
| fond*      | alienat*    |
| cherish*   |             |
| closeness  | mistrust*   |
| rapport    | distrust*   |
| confide*   | betray*     |
| shar*      | abus*       |
| allegiance | abandon*    |
| ally       | unlovable   |
| belong*    | neglect*    |
| connect*   | reject*     |
| intimate   | disapprov*  |
| intimacy   | mistreat*   |
|            | critic*     |
| sympath*   | unaccept*   |
| paternal   | inadequa*   |
| maternal   | blame*      |
| support*   | blaming     |
| caring     | sham*       |
| empathy*   | vulnerable  |
| nurtur*    | judg*       |
| comfort*   |             |
| encourage* |             |
| aid*       |             |
| approv*    |             |
| accept*    |             |
| depend*    |             |

---

Table 3.1

*Mean scores of male and female study completers on baseline measures*

|  | <i>F</i> (1,230) | Men                | Women              |
|--|------------------|--------------------|--------------------|
|  |                  | Mean ( <i>SD</i> ) | Mean ( <i>SD</i> ) |
| Attachment Anxiety   | 6.99**           | 3.69 (1.10)        | 4.06 (1.21)        |
| Attachment Avoidance   | 0.13             | 2.82 (1.17)        | 2.91 (1.10)        |
| AAQ Total Score  | 6.69*            | 4.67 (0.62)        | 4.48 (0.62)        |
| AAQ Action   | 6.65*            | 4.85 (0.61)        | 4.65 (0.62)        |
| AAQ Willingness  | 3.44             | 4.45 (0.88)        | 4.25 (0.87)        |
| KIMS Total Score   | 1.27             | 3.18 (0.37)        | 3.13 (0.37)        |
| KIMS Observe   | 0.41             | 3.14 (0.57)        | 3.20 (0.68)        |
| KIMS Describe  | 0.16             | 3.43 (0.74)        | 3.39 (0.78)        |
| KIMS Act   | 7.14**           | 2.94 (0.57)        | 2.76 (0.46)        |
| KIMS Accept  | 0.85             | 3.26 (0.68)        | 3.20 (0.74)        |
| Narrative 1: 2 <sup>nd</sup> and 3 <sup>rd</sup> Person Pronouns | 2.83             | 1.43 (1.10)        | 1.72 (1.11)        |
| Narrative 1: Negative Emotions                                   | 0.16             | 0.97 (0.70)        | 1.02 (0.69)        |
| Narrative 1: Attachment Words                                    | 2.57             | 0.48 (0.45)        | 0.60 (0.50)        |
| Narrative 1: Positive Attachment Words                           | 2.35             | 0.44 (0.42)        | 0.54 (0.46)        |
| Narrative 1: Negative Attachment Words                           | 1.00             | 0.05 (0.08)        | 0.06 (0.09)        |

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

Table 3.2

*Mean relative frequencies of word-use categories for men and women*

|  | <i>t</i> | Men                | Women              |
|--|----------|--------------------|--------------------|
|  |          | Mean ( <i>SD</i> ) | Mean ( <i>SD</i> ) |
| Attachment-Related Words                               | -2.9**   | 0.44 (0.30)        | 0.54 (0.36)        |
| Negative Emotion Words                                 | -1.86    | 0.93 (0.60)        | 1.05 (0.61)        |
| Positive Emotion Words                                 | -3.91*** | 0.80 (0.34)        | 0.97 (0.41)        |
| 2 <sup>nd</sup> - and 3 <sup>rd</sup> -Person Pronouns | -4.67*** | 1.19 (0.83)        | 1.66 (1.00)        |

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

Table 3.3

*Mean relative frequencies of word-use categories by writing condition*

|  | <i>t</i> | Trauma Condition   | Neutral Condition  |
|--|----------|--------------------|--------------------|
|  |          | Mean ( <i>SD</i> ) | Mean ( <i>SD</i> ) |
| Attachment-Related Words                               | 6.50***  | 0.57 (0.35)        | 0.32 (0.24)        |
| Negative Emotion Words                                 | 19.76*** | 1.29 (0.46)        | 0.34 (0.24)        |
| Positive Emotion Words                                 | 6.80***  | 0.98 (0.37)        | 0.69 (0.33)        |
| 2 <sup>nd</sup> - and 3 <sup>rd</sup> -Person Pronouns | 10.31*** | 1.70 (0.96)        | 0.73 (0.41)        |

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

Table 3.4

*Correlations among self-report measures at baseline*

|                 | Attach.<br>Avoid. | AAQ<br>Total | AAQ<br>Action | AAQ<br>Willing. | KIMS<br>Total | KIMS<br>Observe | KIMS<br>Describe | KIMS<br>Act | KIMS<br>Accept |
|-----------------|-------------------|--------------|---------------|-----------------|---------------|-----------------|------------------|-------------|----------------|
| Attach. Anxiety | .09               | -.45***      | -.38***       | -.39***         | -.28***       | .14*            | -.13*            | -.23***     | -.45***        |
| Attach. Avoid.  |                   | -.25***      | -.16**        | -.27***         | -.21***       | .01             | -.13*            | -.18**      | -.24**         |
| AAQ Total       |                   |              | .85***        | .86***          | .57***        | .01             | .43***           | .35***      | .57***         |
| AAQ Action      |                   |              |               | .46***          | .53***        | .06             | .39***           | .40***      | .41***         |
| AAQ Willing.    |                   |              |               |                 | .46***        | -.05            | .35***           | .21***      | .56***         |
| KIMS Total      |                   |              |               |                 |               | .53***          | .75***           | .50***      | .56***         |
| KIMS Observe    |                   |              |               |                 |               |                 | .31***           | -.03        | -.20***        |
| KIMS Describe   |                   |              |               |                 |               |                 |                  | .21***      | .26***         |
| KIMS Act        |                   |              |               |                 |               |                 |                  |             | .23***         |

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

Table 3.5

*Mean relative frequencies of attachment-related words in Day 1, 2, and 3 narratives*

|       | Trauma Condition |                |                | Neutral Condition |                |                |
|-------|------------------|----------------|----------------|-------------------|----------------|----------------|
|       | All              | Men            | Women          | All               | Men            | Women          |
| Day 1 | 0.60<br>(0.49)   | 0.51<br>(0.44) | 0.69<br>(0.53) | 0.35<br>(0.29)    | 0.35<br>(0.30) | 0.36<br>(0.28) |
| Day 2 | 0.52<br>(0.41)   | 0.47<br>(0.41) | 0.58<br>(0.41) | 0.25<br>(0.23)    | 0.24<br>(0.21) | 0.27<br>(0.25) |
| Day 3 | 0.60<br>(0.50)   | 0.54<br>(0.49) | 0.67<br>(0.50) | 0.33<br>(0.28)    | 0.33<br>(0.30) | 0.33<br>(0.26) |

Table 3.6

*Mean relative frequencies of negative emotion words in Day 1, 2, and 3 narratives*

|       | Trauma Condition |                |                | Neutral Condition |                |                |
|-------|------------------|----------------|----------------|-------------------|----------------|----------------|
|       | All              | Men            | Women          | All               | Men            | Women          |
| Day 1 | 1.31<br>(0.64)   | 1.28<br>(0.61) | 1.34<br>(0.67) | 0.37<br>(0.33)    | 0.35<br>(0.30) | 0.40<br>(0.36) |
| Day 2 | 1.29<br>(0.62)   | 1.18<br>(0.60) | 1.40<br>(0.63) | 0.43<br>(0.30)    | 0.38<br>(0.28) | 0.48<br>(0.33) |
| Day 3 | 1.23<br>(0.61)   | 1.17<br>(0.63) | 1.23<br>(0.60) | 0.21<br>(0.28)    | 0.16<br>(0.22) | 0.27<br>(0.32) |

Table 3.7

*Mean relative frequencies of 2<sup>nd</sup>- and 3<sup>rd</sup>- person pronouns in Day 1, 2, and 3 narratives*

|       | Trauma Condition |                |                | Neutral Condition |                |                |
|-------|------------------|----------------|----------------|-------------------|----------------|----------------|
|       | All              | Men            | Women          | All               | Men            | Women          |
| Day 1 | 1.86<br>(1.18)   | 1.64<br>(1.15) | 2.08<br>(1.17) | 0.94<br>(0.73)    | 0.91<br>(0.76) | 0.97<br>(0.70) |
| Day 2 | 1.79<br>(1.21)   | 1.37<br>(1.04) | 2.21<br>(1.24) | 0.76<br>(0.59)    | 0.67<br>(0.57) | 0.86<br>(0.60) |
| Day 3 | 1.57<br>(1.16)   | 1.33<br>(1.07) | 1.81<br>(1.20) | 0.48<br>(0.42)    | 0.45<br>(0.38) | 0.53<br>(0.46) |

Table 3.8

*Summary of gender-specific interactions between attachment and linguistic variables*

| Interaction Effect  | Outcome            | Results of Initial Regression Analyses |      |                     | Results of Follow-Up Regression  |
|---|--------------------|--|------|---------------------|--|
|   |                    | All                                    | Men  | Women               |  |
| a) Low attachment avoidance:<br>increased use of attachment<br>words predicts positive change |                    |  |      |                     | Significant 3-way<br>interaction of Gender X<br>Attachment Avoidance X<br>Attachment Words<br>Change Score, $\beta = -.12^*$ |
| b) High attachment  | KIMS Total         | n.s.                                   | n.s. | $\beta = -.17^{**}$ |  |
| avoidance: increased use of   | AAQ Total          | $\beta = -.16^*$                       | n.s. | $\beta = -.22^{**}$ | No significant gender<br>interaction   |
| attachment words predicts   | AAQ Action         | $\beta = -.17^{**}$                    | n.s. | $\beta = -.20^{**}$ | No significant gender<br>interaction   |
| negative change   | AAQ<br>Willingness | n.s.                                   | n.s. | $\beta = -.16^*$    | No significant gender<br>interaction   |
|   | KIMS Act           | n.s.                                   | n.s. | $\beta = -.15^*$    | No significant gender<br>interaction   |

|   |                 |                  |                 |                  |   |
|---|-----------------|------------------|-----------------|------------------|---|
|   | KIMS Accept     | n.s.             | n.s.            | $\beta = -.14^*$ | No significant gender interaction   |
| <hr/>   |                 |                  |                 |                  |   |
| a) Low attachment anxiety,<br>increased use of attachment<br>words over time tends to<br>predict positive change    |                 |                  |                 |                  |   |
| b) High attachment anxiety:<br>increased use of attachment<br>words over time predicts<br>negative change           | KIMS Total      | $\beta = -.10^*$ | n.s.            | $\beta = -.13^*$ | No significant gender interaction   |
| <hr/>   |                 |                  |                 |                  |   |
| a) High attachment avoidance:<br>increased use of attachment<br>words over time tends to<br>predict positive change |                 |                  |                 |                  | Significant 3-way interaction effect of Gender X Attachment Avoidance X Attachment Words Change Score, $\beta = -.12^*$ |
| b) Low attachment avoidance:  | KIMS Describing | n.s.             | $\beta = .13^*$ | n.s.             |   |
| <hr/>   |                 |                  |                 |                  |   |

---

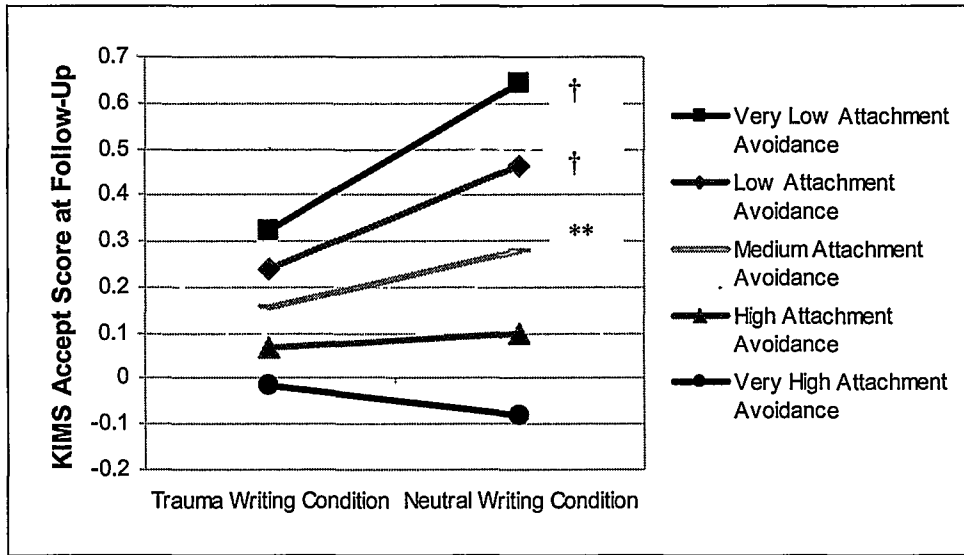
increased use of attachment

words over time tends to

predict negative change

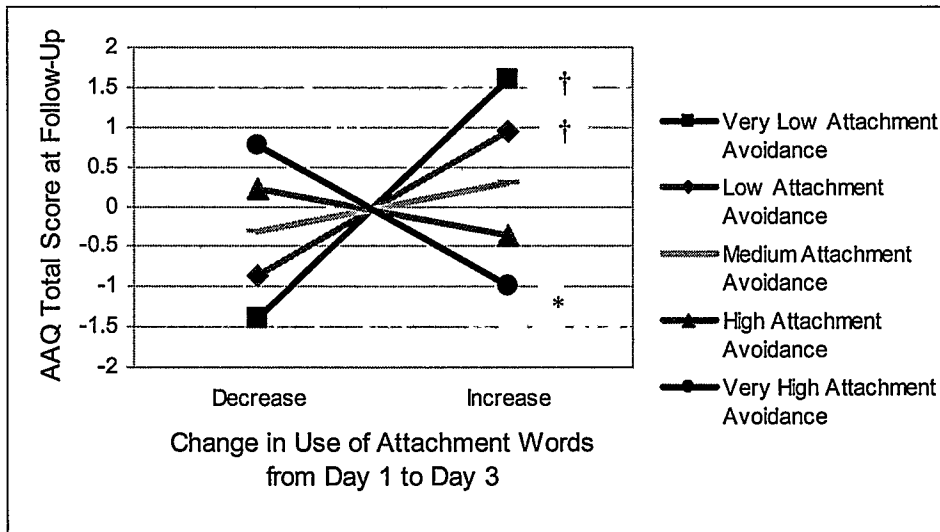
---

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



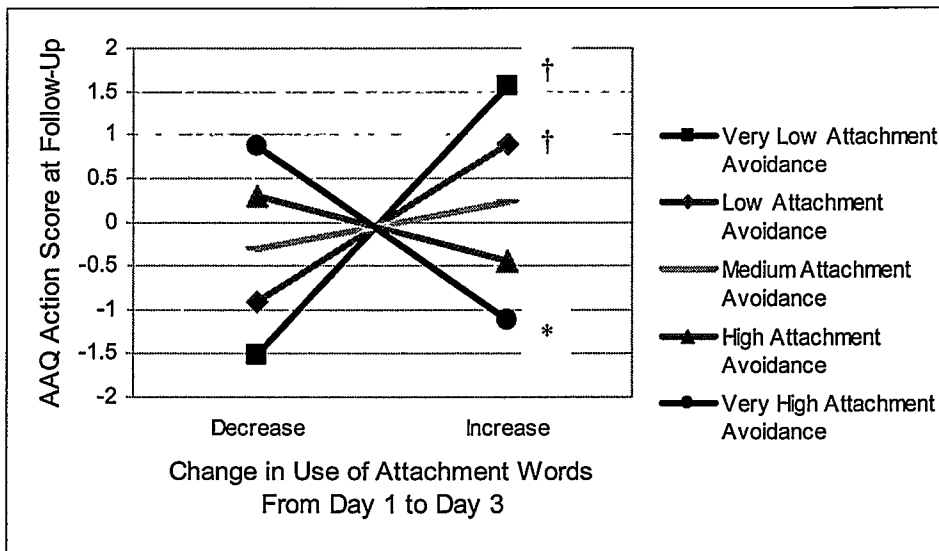
\*\*  $p < .01$       †  $p > .001$

Figure 3.1. Effect of Writing Condition X Attachment Avoidance on KIMS Accept scores



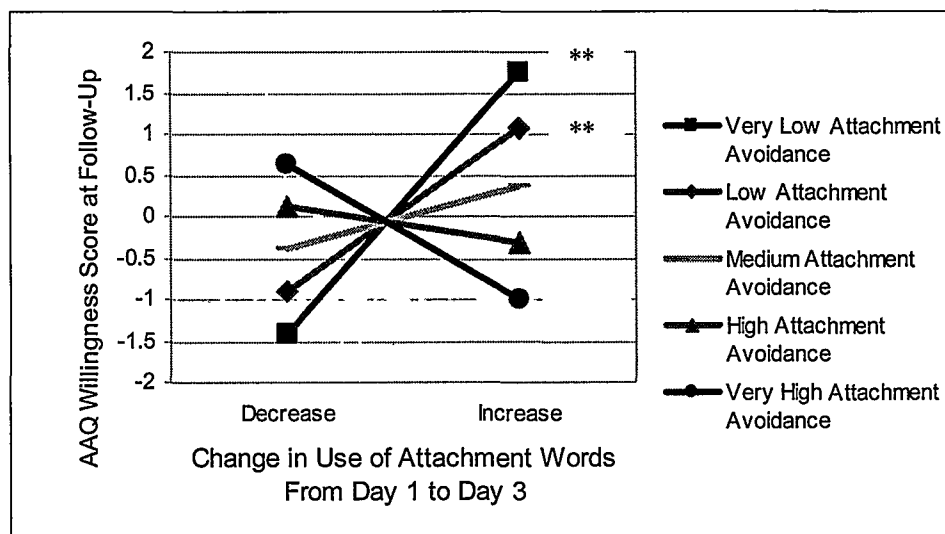
\*  $p < .05$  †  $p < .001$

Figure 3.2. Effect of Attachment Words Change Score X Attachment Avoidance on AAQ Total scores



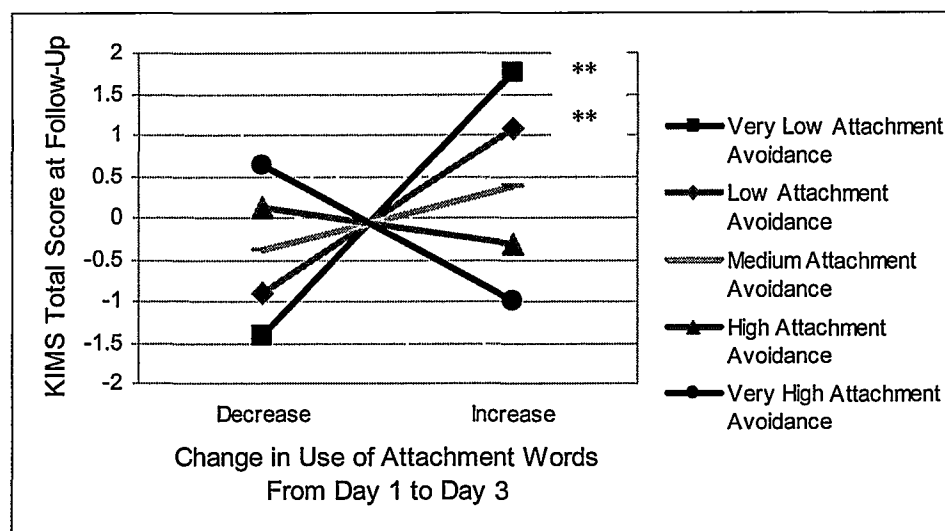
\*  $p < .05$  †  $p < .001$

Figure 3.3. Effect of Attachment Words Change Score X Attachment Avoidance on AAQ Action scores



\*\*  $p < .01$

Figure 3.4. Effect of Attachment Words Change Score X Attachment Avoidance on women's AAQ Willingness scores



\*\*  $p < .01$

Figure 3.5. Effect of Attachment Words Change Score X Attachment Avoidance on women's KIMS Total scores

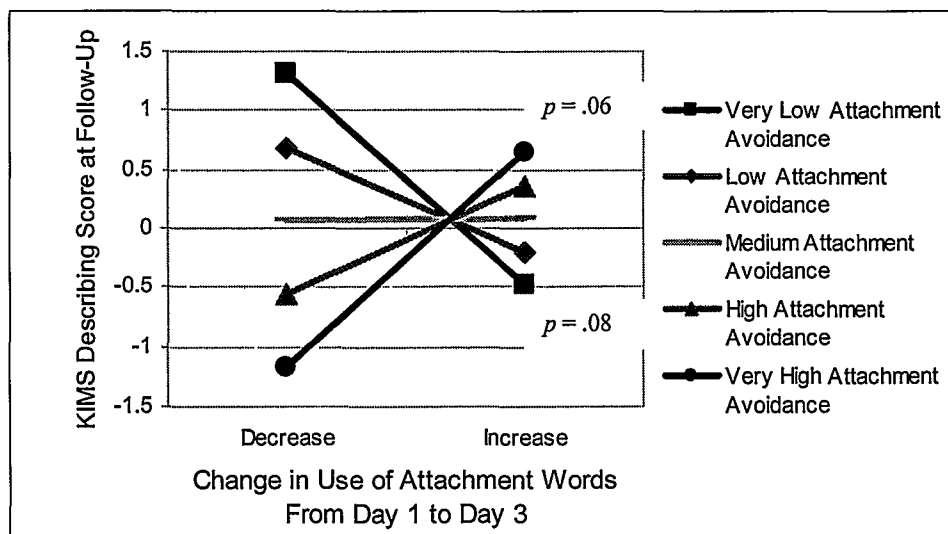
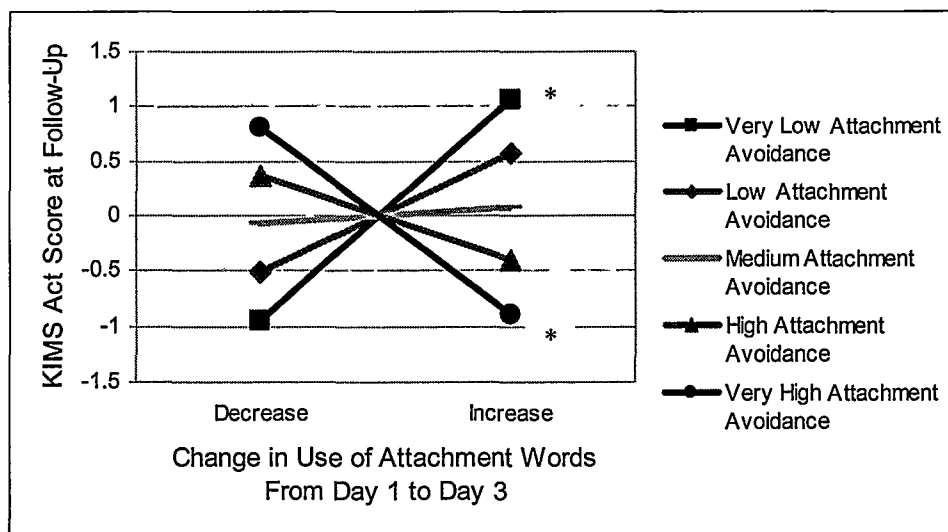
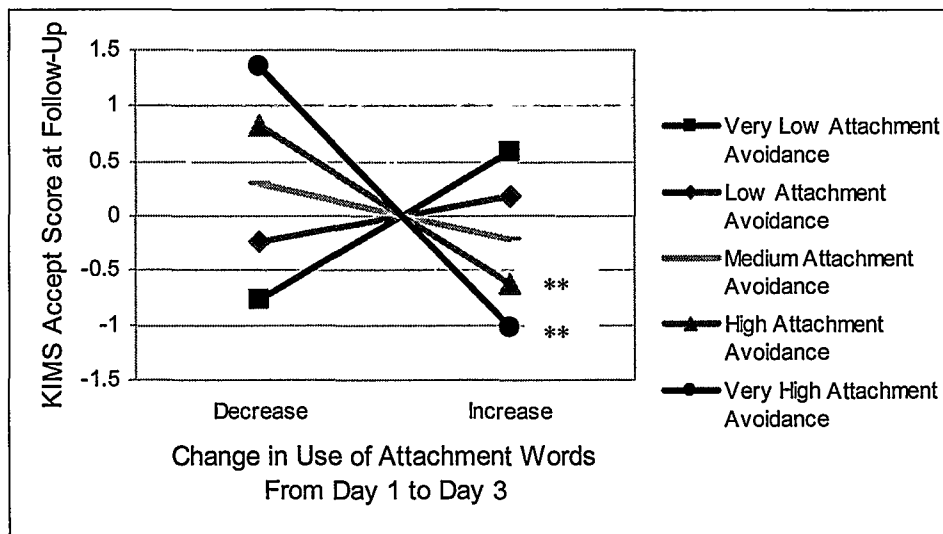


Figure 3.6. Effect of Attachment Words Change Score X Attachment Avoidance on men's KIMS Describing scores



\*  $p < .05$

Figure 3.7. Effect of Attachment Words Change Score X Attachment Avoidance on women's KIMS Act scores



\*\*  $p < .01$

Figure 3.8. Effect of Attachment Words Change Score X Attachment Avoidance on women’s KIMS Accept scores

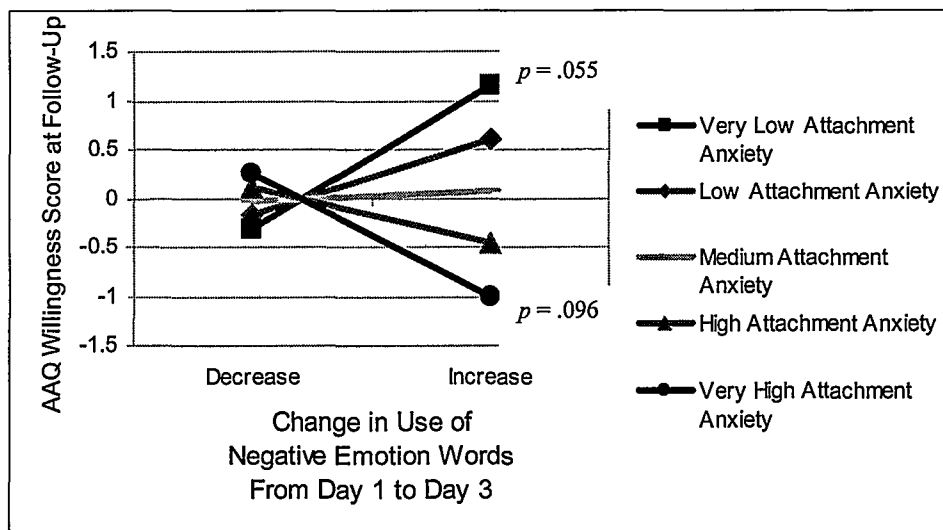
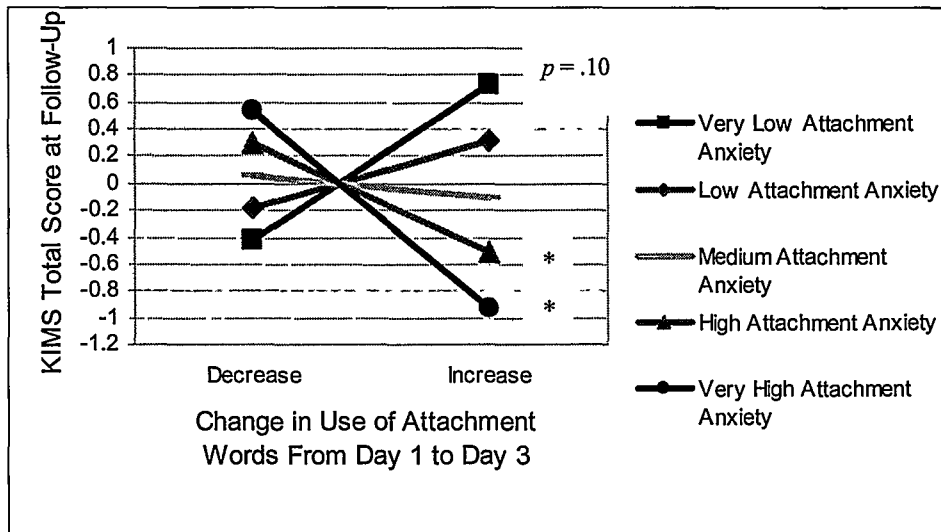


Figure 3.9. Effect of Negative Emotion Words Change Score X Attachment Anxiety on AAQ Willingness scores



\*  $p < .05$

Figure 3.10. Effect of Attachment Words Change Score X Attachment Anxiety on KIMS Total scores

### **Appendix: Instructions to All Participants<sup>1</sup>**

This study is a project looking at writing. Over the next three days, you will be asked to write about one of several different topics for 20 minutes each day. I will give you your instructions for the day. You will then be escorted to a small office where you will be alone to write. The person who takes you to the office will close the door, which will be your signal to start writing. At the end of the 20 minutes, the person will knock on your door to let you know that the 20 minutes are up.

The only rule we have about your writing is that you write continuously for the entire time. If you run out of things to say, just repeat what you have already written. In your writing, don't worry about grammar, spelling, or sentence structure. Just write. Different people will be asked to write about different topics. Because of this, I ask that you not talk with anyone about the experiment. I can't tell you what other people are writing about or anything about the nature or predictions of the study. Once the study is complete, however, we will tell you everything. Right now, we expect the study to be complete in about 8 weeks. Another thing is that sometimes people feel a little sad or depressed after writing. If this happens, it is completely normal. Most people say that these feelings go away in an hour or so. If at any time over the course of the experiment you feel upset or distressed, please contact me or any of the other experimenters immediately. (All participants will be given a sheet with contact information on it.)

---

<sup>1</sup> Adapted from James Pennebaker's "Suggestions for Running a Confession Study", <http://homepage.psy.utexas.edu/homepage/faculty/pennebaker/reprints/Hints.DOC>

Also, your writing is completely anonymous and confidential. We ask you to put your subject number on your writing samples when you turn them in. Some people in the past have felt that they didn't want anyone to read them. That's OK. If you don't feel comfortable turning in your writing samples, you may keep them. We would prefer if you turned them in, however, because we are interested in what people write. I promise that none of the experimenters will link your writing to you. The one exception is that if your writing indicates that you intend to harm yourself or others, we are legally bound to match your ID with your name. This is typically a very rare occurrence. Above all, we respect your privacy. Do you have any questions at this point? Do you still wish to participate?

### Instructions to Trauma Writing Group

Over the next three days, I would like you to write continuously about the most upsetting or traumatic experiences of your entire life. In your writing I would like you to really let go and explore your very deepest emotions and thoughts. You may write about the same experience on all three days or about different experiences each day. In addition to a traumatic experience, you can also write about major conflicts or problems that you have experienced or are experiencing now. Whatever you choose to write, however, it is critical that you really delve into your deepest thoughts and emotions. Ideally, we would also like you to write about significant experiences or conflicts that you have not discussed in great detail with others. Remember that you have three days to write. You might tie your personal experiences to other parts of your life. How is it related to your

childhood, your parents, people you love, who you are, or who you want to be. Again, in your writing, examine your deepest emotions and thoughts.

(Day 2.) Today, I want you to continue writing about the most traumatic experiences of your life. It could be the same topic that you wrote about yesterday or it could be something different. Remember to explore your very deepest emotions and thoughts.

(Day 3.) In your writing today, I want you to again explore your deepest thoughts and feelings about the most traumatic experiences of your life. Remember that this is the last day and so you may want to wrap everything up. For example, how is this experience related to your current life and your future? But feel free to go in any direction you feel most comfortable with and delve into your deepest emotions and thoughts.

#### Instructions to Neutral Events Writing Group

Over the next three days, I would like you to write continuously about how you use your time. Each day I will give you different writing assignments on the way you spend your time. In your writing, I want you to be as objective as possible. I am not interested in your emotions or opinions. Rather I want you to try to be completely objective. Feel free to be as detailed as possible. In today's writing, I want you to describe what you did yesterday from the time you got up until the time you went to bed. For example, you might start when your alarm went off and you got out of bed. You could include the things you ate, where you went, which buildings or objects you passed

by as you walked from place to place. The most important thing in your writing, however, is for you to describe your days as accurately and as objectively as possible.

(Day 2.) Today I would like you to describe what you have done today since you woke up. Again, I want you to be as objective as possible to describe exactly what you have done up until coming to this experiment.

(Day 3.) This is the last day of the experiment. In your writing today, I would like you to describe in detail what you will do as soon as the experiment is over until you go to bed tonight. Remember to be as objective and accurate as possible.

#### Instructions After Narrative-Writing

Congratulations. You have completed the most time-consuming phase of the experiment. As you know, different people will be participating in this same study at other times during the semester. PLEASE, do not talk with anyone about your experiences in this study until the semester is over. Because we are interested in your attitudes and behaviors, we will be contacting you one more time in about four weeks to fill out some questionnaires. We will pay you \$20 for completing those questionnaires at that time. Your cooperation so far is appreciated more than you know. For many people, this has been a difficult experiment. If you have any questions, problems, or would like to talk, please feel free to contact Dr. Leslie Brody during the day at (phone number).

## Debriefing

Purpose of the study: Over the past 20 years, research has shown that writing about traumatic experiences is good for people's health. In this study, we were interested in how the different factors of social support networks, a personality style of putting your own needs before those of others, and a personality style of putting others' needs before your own, might affect the benefits of this exercise.

Procedures used in this study: Overall, 326 students were randomly assigned to write about one of two topics for three consecutive days. The experimental group wrote about their deepest thoughts and feelings about traumatic or upsetting experiences; the control group wrote about non-emotional topics such as how they were spending their day. Overall, we were most interested in the effects of writing on measures of psychological adjustment (measured by the questionnaires) and writing style (from the narratives that participants wrote).

Preliminary results (if available). If you would like a synopsis of our findings, please give us your name and email or mailing address. Your name and address will not be a part of our report; they are just for us to send our findings to you.

Implications: As we learn more about what affects the benefits from writing about traumatic experiences, this knowledge will assist in a better understanding of the design and implementation of therapeutic interventions. This knowledge may help practitioners to target interventions to people who are most likely to benefit from them.

## References

- Ainsworth, M.D.S., Blehar, M.C., Waters, E., & Wall, S. (1978). *Patterns of attachment: Assessed in the Strange Situation and at home*. Hillsdale, NJ: Erlbaum.
- Avihou, N. (2006). *Attachment orientations and dreaming: An examination of the unconscious components of the attachment system*. Unpublished doctoral dissertation, Bar-Ilan University, Ramat Gan, Israel.
- Baer, R.A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice, 10*, 125-143.
- Baer, R.A., Smith, G.T., & Allen, K.B. (2004). Assessment of mindfulness by self-report: The Kentucky Inventory of Mindfulness Skills. *Assessment, 11*, 191-206.
- Baer, R.A., Smith, G.T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27-45.
- Bartholomew, K., & Horowitz, L.M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61*, 226-244.
- Bartholomew, K., Kwong, M.J., & Hart, S.D. (2001). Attachment. In J.W. Livesley (Ed.), *Handbook of personality disorders: Theory, research, and treatment* (pp. 196-230). New York: Guilford Press.
- Begotka, A.M., Woods, D.W., & Wetterneck, C.T. (2004). The relationship between experiential avoidance and trichotillomania in a nonreferred sample. *Journal of Behavior Therapy, 35*, 17-24.

- Birnbaum, G.E., Orr, I., Mikulincer, M., & Florian, V. (1997). When marriage breaks up: Does attachment style contribute to coping and mental health? *Journal of Social and Personal Relationships*, *14*, 643-654.
- Bond, F.W., & Bunce, D. (2003). The role of acceptance and job control in mental health, job satisfaction, and work performance. *Journal of Applied Psychology*, *88*, 1057-1067.
- Bowlby, J. (1969/1982). *Attachment and loss: Vol. 1. Attachment* (2<sup>nd</sup> ed.). New York: Basic Books.
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. New York: Basic Books.
- Brennan, K.A., & Bosson, J.K. (1998). Attachment-style differences in attitudes toward and reactions to feedback from romantic partners: An exploration of the relational bases of self-esteem. *Personality and Social Psychology Bulletin*, *24*, 699-714.
- Brennan, K.A., Clark, C.L., & Shaver, P.R. (1998). Self-report measurement of adult romantic attachment: An integrative overview. In J.A. Simpson & W.S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46-76). New York: Guilford Press.
- Brennan, K.A., & Morris, K.A. (1997). Attachment styles, self-esteem, and patterns of seeking feedback from romantic partners. *Personality and Social Psychology Bulletin*, *23*, 23-31.
- Brennan, K.A., Shaver, P.R., & Tobey, A.E. (1991). Attachment styles, gender and parental problem drinking. *Journal of Social and Personal Relationships*, *8*, 451-

466.

Brody, L.R., & Park, S.H. (2004). Narratives, mindfulness, and the implicit audience.

*Clinical Psychology: Science and Practice, 11*, 147-154.

Brown, K.W., & Ryan, R.M. (2003). The benefits of being present: Mindfulness and its

role in psychological well-being. *Journal of Personality and Social Psychology,*

*84*, 822-848.

Brown, K.W., Ryan, R.M., & Creswell, J.D. (2007). Mindfulness: Theoretical

foundations and evidence for its salutary effects. *Psychological Inquiry, 18*, 211-

237.

Burton, C.M., & King, L.A. (2004). The health benefits of writing about intensely

positive experiences. *Journal of Research in Personality, 38*, 150-163.

Campbell, L., Simpson, J.A., Boldry, J., & Kashy, D.A. (2005). Perceptions of conflict

and support in romantic relationships: The role of attachment anxiety. *Journal of*

*Personality and Social Psychology, 88*, 510-531.

Campbell, R.S., & Pennebaker, J.W. (2003). The secret life of pronouns: Flexibility in

writing style and physical health. *Psychological Science, 14*, 60-65.

Chawla, N., & Ostafin, B. (2007). Experiential avoidance as a functional dimensional

approach to psychopathology: An empirical review. *Journal of Clinical*

*Psychology, 63*, 871-890.

Chung, C.K., & Pennebaker, J.W. (2008). Variations in the spacing of expressive

writing sessions. *British Journal of Health Psychology, 13*, 15-21.

Collins, N.L., Cooper, M., Albino, A., & Allard, L. (2002). Psychosocial vulnerability

from adolescence to adulthood: A prospective study of attachment style differences in relationship functioning and partner choice. *Journal of Personality*, *70*, 965-1008.

Collins, N.L., & Feeney, B.C. (2000). A safe haven: An attachment theory perspective on support seeking and caregiving in intimate relationships. *Journal of Personality and Social Psychology*, *78*, 1053-1073.

Cooper, M.L., Shaver, P.R., & Collins, N.L. (1998). Attachment styles, emotion regulation, and adjustment in adolescence. *Journal of Personality and Social Psychology*, *74*, 1380-1397.

Cordon, S.L., & Finney, S.J. (2008). Measurement invariance of the Mindful Attention Awareness Scale across adult attachment style. *Measurement and Evaluation in Counseling and Development*, *40*, 228-245.

Crawford, T.N., Shaver, P.R., Cohen, P., Pilkonis, P.A., Gillath, O., & Kasen, S. (2006). Self-reported attachment interpersonal aggression, and personality disorder in a prospective community sample of adolescents and adults. *Journal of Personality Disorders*, *20*, 331-351.

Dozier, M. (1990). Attachment organization and treatment use for adults with serious psychopathological disorders. *Development and Psychopathology*, *2*, 47-60.

Eames, V., & Roth, A. (2000). Patient attachment orientation and the early working alliance: A study of patient and therapist reports of alliance quality and ruptures. *Psychotherapy Research*, *10*, 421-434.

- Feeney, J.A. (1994). Attachment style, communication patterns, and satisfaction across the life cycle of marriage. *Personal Relationships, 1*, 333-348.
- Feeney, J.A. (1995). Adult attachment and emotional control. *Personal Relationships, 2*, 143-159.
- Feeney, J.A. (1998). Adult attachment and relationship-centered anxiety: Responses to physical and emotional distancing. In J.A. Simpson & W.S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 189-218).
- Florian, V., Mikulincer, M., & Bucholtz, I. (1995). Effects of adult attachment style on the perception and search for social support. *Journal of Psychology: Interdisciplinary and Applied, 129*, 665-676.
- Fonagy, P., & Target, M. (1997). Attachment and reflective function: Their role in self-organisation. *Development and Psychopathology, 9*, 679-700.
- Fraley, R.C. (December 10, 2005). *Information on the Experiences in Close Relationships-Revised (ECR-R) Adult Attachment Questionnaire*. Retrieved from <http://internal.psychology.illinois.edu/~rcfraley/measures/ecrr.htm>.
- Fraley, R.C., Fazzari, D.A., Bonanno, G.A., & Dekel, S. (2006). Attachment and psychological adaptation in high exposure survivors of the September 11<sup>th</sup> attack on the World Trade Center. *Personality and Social Psychology Bulletin, 32*, 538-551.
- Francis, M.E., & Pennebaker, J.W. (1992). Putting stress into words: The impact of writing on physiological, absentee, and self-reported emotional well-being measures. *Stress Management, 6*, 280-287.

- Frattaroli, J. (2006). Experimental disclosure and its moderators: A meta-analysis. *Psychological Bulletin, 132*, 823-865.
- Frisina, P.G., Borod, J.C., & Lepore, S.J. (2004). A meta-analysis of the effects of written emotional disclosure on health outcomes in clinical populations. *Journal of Nervous and Mental Disease, 192*, 629-634.
- Greenberg, M.A., Stone, A.A., & Wortman, C.B. (1996). Health and psychological effects of emotional disclosure: A test of the inhibition-confrontation approach. *Journal of Personality and Social Psychology, 71*, 588-602.
- Hart, J.J., Shaver, P.R., & Goldenberg, J.L. (2005). Attachment, self-esteem, worldviews, and terror management: Evidence for a tripartite security system. *Journal of Personality and Social Psychology, 88*, 999-1013.
- Hayes, S.C., Follette, V.M., & Linehan, M.M. (Eds.). (2004). *Mindfulness and acceptance: Expanding the cognitive-behavioral tradition*. New York: Guilford Press.
- Hayes, S.C., Strosahl, K., Wilson, K.G., Bissett, R.T., Pistorello, J., Toramino, D., et al. (2004). Measuring experiential avoidance: A preliminary test of a working model. *Psychological Record, 54*, 553-578.
- Hayes, S.C., Wilson, K.G., Gifford, E.V., Follette, V.M., & Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology, 64*, 1152-1168.
- Hazan, C., & Zeifman, D. (1994). Sex and the psychological tether. In K. Bartholomew

& D. Perlman (Eds.), *Advances in personal relationships: Attachment processes in adulthood* (Vol. 5, pp. 151-177). London: Jessica Kingsley.

Kashdan, T.B., Barrios, V., Forsyth, J.P., & Steger, M.F. (2006). Experiential avoidance as a generalized psychological vulnerability: Comparisons with coping and emotion regulation strategies. *Behaviour Research and Therapy*, 9, 1301-1320.

Kenny, M.E., & Hart, K. (1992). Relationship between parental attachment and eating disorders in an inpatient and a college sample. *Journal of Counseling Psychology*, 39, 521-526.

Kim, Y. (2006). Gender, attachment, and relationship duration on cardiovascular reactivity to stress in a laboratory study of dating couples. *Personal Relationships*, 13, 103-114.

Korfmacher, J., Adam, E., Ogawa, J., & Egeland, B. (1997). Adult attachment: Implications for the therapeutic process in a home visitation intervention. *Applied Developmental Science*, 1, 43-52.

Larose, S., Bernier, A., Soucy, N., & Duchesne, S. (1999). Attachment style dimensions, network orientation, and the process of seeking help from college teachers. *Journal of Social and Personal Relationships*, 16, 225-247.

Lepore, S.J. (1997). Expressive writing moderates the relation between intrusive thoughts and depressive symptoms. *Journal of Personality and Social Psychology*, 73, 1030-1037.

Levy, K.N., Blatt, S.H., & Shaver, P.R. (1998). Attachment styles and parental representations. *Journal of Personality and Social Psychology*, 74, 407-419.

- Lopez, F.G., & Brennan, K.A. (2000). Dynamic processes underlying adult attachment organization: Toward an attachment theoretical perspective on the healthy and effective self. *Journal of Counseling Psychology, 47*, 283-300.
- Lopez, F.G., & Gormley, B. (2002). Stability and change in adult attachment style over the first-year college transition: Relations to self-confidence, coping, and distress patterns. *Journal of Counseling Psychology, 49*, 355-364.
- Lopez, F.G., Gover, M.R., Leskela, J., Sauer, E.M., Schirmer, L., & Wyssmann, J. (1997). Attachment styles, shame, guilt, and collaborative problem-solving orientations. *Personal Relationships, 4*, 187-199.
- Lopez, F.G., Mauricio, A.N., Gormley, B., Simko, T., & Berger, E. (2001). Adult attachment orientations and college student distress: The mediating role of problem coping styles. *Journal of Counseling and Development, 79*, 459-464.
- Lopez, F.G., Mitchell, P., & Gormley, B. (2002). Adult attachment and college student distress: Test of a mediational model. *Journal of Counseling Psychology, 49*, 460-467.
- Lumley, M.A. (2004). Alexithymia, emotional disclosure, and health: A program of research. *Journal of Personality, 72*, 1271-1300.
- Ma, Y. (2009). *Attachment security, mindfulness, and psychotherapy: Testing a mediational model*. Dissertation Abstracts International: Section B: The Sciences and Engineering, 69 (8-B).
- Magai, C., Distel, N., & Liker, R. (1995). Emotion socialization, attachment, and patterns of adult emotional traits. *Cognition and Emotion, 9*, 461-481.

- Main, M. (1995). Attachment: Overview with implications for clinical work. In S. Goldberg, R. Muir, & J. Kerr (Eds.), *Attachment theory: Social, developmental, and clinical perspectives* (pp. 407-474). Hillsdale, NJ: Erlbaum.
- Main, M. & Hesse, E. (1990). Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism? In M.T. Greenberg, D. Cicchetti, & E.M. Cummings (Eds.), *Attachment in the preschool years: Theory, research, and intervention* (pp. 161-182). Chicago: University of Chicago Press.
- Mickelson, K.D., Kessler, R.C., & Shaver, P.R. (1997). Adult attachment in a nationally representative sample. *Journal of Personality and Social Psychology, 73*, 1092-1106.
- Mikulincer, M. (1997). Adult attachment style and information processing: Individual differences in curiosity and cognitive closure. *Journal of Personality and Social Psychology, 75*, 420-435.
- Mikulincer, M. (1998). Adult attachment style and affect regulation: Strategic variations in self-appraisals. *Journal of Personality and Social Psychology, 75*, 420-435.
- Mikulincer, M., & Arad, D. (1999). Attachment working models and cognitive openness in close relationships: A test of chronic and temporary accessibility effects. *Journal of Personality and Social Psychology, 77*, 710-725.
- Mikulincer, M., & Erev, I. (1991). Attachment style and the structure of romantic love. *British Journal of Social Psychology, 30*, 273-291.
- Mikulincer, M., & Florian, V. (1998). The relationship between adult attachment styles

- and emotional and cognitive reactions to stressful events. In J.A. Simpson and W.S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 143-165). New York: Guilford Press.
- Mikulincer, M., Florian, V., & Weller, A. (1993). Attachment styles, coping strategies, and posttraumatic psychological distress: The impact of the Gulf War in Israel. *Journal of Personality and Social Psychology, 64*, 817-826.
- Mikulincer, M., & Shaver, P.R. (2007). *Attachment in adulthood: Structure, dynamics, and change*. New York: Guilford Press.
- Moore, S.D., Brody, L.R., & Dierberger, A.E. (2009). Mindfulness and experiential avoidance as predictors and outcomes of the narrative emotional disclosure task. *Journal of Clinical Psychology, 65*, 971-988.
- Nofle, E.E., & Shaver, P.R. (2006). Attachment dimensions and the Big Five personality traits: Associations and comparative ability to predict relationship quality. *Journal of Research in Personality, 40*, 179-208.
- Norman, S.A., Lumley, M.A., Dooley, J.A., & Diamond, M.P. For whom does it work? Moderators of the effects of written emotional disclosure in a randomized trial among women with chronic pelvic pain. *Psychosomatic Medicine, 66*, 174-183.
- Orcutt, H.K., Pickett, S., & Pope, E. (2005). Experiential avoidance and forgiveness as mediators in the relation between traumatic life events and PTSD symptoms. *Journal of Social and Clinical Psychology, 24*, 1003-1029.
- Paez, D., Velasco, C., & Gonzalez, J.L. (1999). Expressive writing and the role of

alexithymia as a dispositional deficit in self-disclosure and psychological health.

*Journal of Personality and Social Psychology*, 77, 630-641.

Pennebaker, J.W. (1993). Putting stress into words: Health, linguistic, and therapeutic implications. *Behavior Research and Therapy*, 31, 539-548.

Pennebaker, J. W. (1994). *Hints on running a writing experiment*. Retrieved from <http://homepage.psy.utexas.edu/homepage/faculty/Pennebaker/Reprints/Hints.DOC>.

Pennebaker, J.W., & Beall, S.K. (1986). Confronting a traumatic event: Toward an understanding of inhibition and disease. *Journal of Abnormal Psychology*, 95, 274-281.

Pennebaker, J.W., & Chung, C.K. (2007). Expressive writing, emotional upheavals, and health. In H. Friedman & R. Silver (Eds.), *Handbook of health psychology* (pp. 263-284). New York: Oxford University Press.

Pennebaker, J.W., & Francis, M.E. (1996). Cognitive, emotional, and language processes in disclosure. *Cognition and Emotion*, 10, 601-626.

Pennebaker, J.W., Kiecolt-Glaser, J.K., & Glaser, R. (1988). Disclosure of traumas and immune function: Health implications for psychotherapy. *Journal of Consulting and Clinical Psychology*, 56, 239-245.

Pennebaker, J.W., Mayne, T.J., & Francis, M.E. (1997). Linguistic predictors of adaptive bereavement. *Journal of Personality and Social Psychology*, 72, 863-871.

Plumb, J.C., Orsillo, S.M., & Luterek, J.A. (2004). A preliminary test of the role of

- experiential avoidance in post-event functioning. *Journal of Behavior Therapy and Experimental Psychiatry*, 35, 245-257.
- Raz, A. (2002). *Personality, core relationship themes, and interpersonal competence among young adults experiencing difficulties in establishing long-term relationships*. Unpublished doctoral dissertation, Haifa University, Haifa, Israel.
- Roemer, L., Salters, K., Raffa, S.D., & Orsillo, S.M. (2005). Fear and avoidance of internal experiences in GAD: Preliminary tests of a conceptual model. *Cognitive Therapy and Research*, 29, 71-88.
- Ryan, R.M. (2005). The developmental line of autonomy in the etiology, dynamics and treatment of borderline personality disorders. *Development and Psychopathology*, 17, 987-1006.
- Ryan, R.M., Brown, K.W., & Creswell, J.D. (2007). How integrative is attachment theory? Unpacking the meaning and significance of felt security. *Psychological Inquiry*, 18, 177-182.
- Schachner, D.A., Shaver, P.R., & Mikulincer, M. (2005). Patterns of nonverbal behavior and sensitivity in the context of attachment relationships. *Journal of Nonverbal Behavior*, 29, 141-169.
- Scharfe, E., & Bartholomew, K. (1994). Reliability and stability of adult attachment patterns. *Personal Relationships*, 1, 23-43.
- Shaver, P.R., Lavy, S., Saron, C.D., & Mikulincer, M. (2007). Social foundations of the capacity for mindfulness: An attachment perspective. *Psychological Inquiry*, 18, 264-271.

- Sloan, D.M., & Marx, B.P. (2004a). A closer examination of the structured written disclosure procedure. *Journal of Consulting and Clinical Psychology, 72*, 165-175.
- Sloan, D.M., & Marx, B.P. (2004b). Taking pen to hand: Evaluating theories underlying the written disclosure paradigm. *Clinical Psychology: Science and Practice, 11*, 121-137.
- Smyth, J.M. (1998). Written emotional expression: Effect sizes, outcome types, and moderating variables. *Journal of Consulting and Clinical Psychology, 66*, 174-184.
- Smyth, J.M., Anderson, C.F., Hockemeyer, J.R., & Stone, A.A. (2002). Does emotional non-expressiveness or avoidance interfere with writing about stressful life events? An analysis in patients with chronic illness. *Psychology and Health, 17*, 561-569.
- Smyth, J.M., & Pennebaker, J.W. (2008). Exploring the boundary conditions of expressive writing: In search of the right recipe. *British Journal of Health Psychology, 13*, 1-7.
- Solano, L., Donati, V., Pecci, F., Persichetti, S., & Colaci, A. (2003). Postoperative course after papilloma resection: Effects of written disclosure on the experience in subjects with different alexithymia levels. *Psychosomatic Medicine, 65*, 477-484.
- Stanton, A.L., Danoff-Burg, S., Sworowski, L.A., Collins, C.A., Branstetter, A.D., Rodriguez-Hanley, A., et al. (2002). Randomized, controlled trial of written emotional expression and benefit finding in breast cancer patients. *Journal of Clinical Oncology, 20*, 4160-4168.

- Stone, L.D.A. (2003). Using language to detect and change attachment style. (Doctoral Dissertation, University of Texas at Austin, 2003). *Dissertation Abstracts International*, 64, 6381.
- Stroebe, M., Schut, H., & Stroebe, W. Who benefits from disclosure? Exploration of attachment style differences in the effects of expressing emotions. *Clinical Psychology Review*, 26, 66-85.
- Tidwell, M.O., Reis, H.T., & Shaver, P.R. (1996). Attachment, attractiveness, and social interaction: A diary study. *Journal of Personality and Social Psychology*, 71, 729-745.
- Trinke, S.J., & Bartholomew, K. (1997). Hierarchies of attachment relationships in young adulthood. *Journal of Social and Personal Relationships*, 14, 603-625.
- Ullrich, P.M., & Lutgendorf, S.K. (2002). Journaling about stressful events: Effects of cognitive processing and emotional expression. *Annals of Behavioral Medicine*, 24, 244-250.
- Vogel, D.L., & Wei, M. (2005). Adult attachment and help-seeking intent: The mediating roles of psychological distress and perceived social support. *Journal of Counseling Psychology*, 52, 347-357.
- Wallin, D. (2007). *Attachment in psychotherapy*. New York: Guilford Press.
- Walsh, J.J., Balint, M.G., Smolira, S.J., Fredericksen, L.K., & Madsen, S. (2009). Predicting individual differences in mindfulness: The role of trait anxiety, attachment anxiety and attentional control. *Personality and Individual Differences*, 46, 94-99.

- Ward, A., Ramsay, R., Turnbull, S., Benedettini, M., & Treasure, J. (2001). Attachment patterns in eating disorders: Past in the present. *International Journal of Eating Disorders, 28*, 370-376.
- Waters, E., Merrick, S., Treboux, D., Crowell, J., & Albersheim, L. (2000). Attachment security in infancy and early adulthood: A twenty-year longitudinal study. *Child Development, 71*, 684-689.
- Wei, M., Russell, D.W., Mallinckrodt, B., & Vogel, D.L. (2007). The Experiences in Close Relationships (ECR)-Short Form: Reliability, Validity, and Factor Structure. *Journal of Personality Assessment, 88*, 187-204.
- Wei, M., Vogel, D.L., Ku, T.Y., & Zakalik, R.A. (2005). Adult attachment, affect regulation, negative mood, and interpersonal problems: The mediating roles of emotional reactivity and emotional cut-off. *Journal of Counseling Psychology, 52*, 14-24.
- Westrup, D. (1999). *Experiential avoidance and alcohol dependence relapse* (Doctoral Dissertation, West Virginia University, 1999). *Dissertation Abstracts International, 62*, 568.

**Curriculum Vitae**

