

ABSTRACT

Title of Document: INDUCED SECURITY AND THE EXPRESSIVE WRITING PARADIGM: AN ATTACHMENT THEORY PERSPECTIVE ON THERAPEUTIC EFFICACY.

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Research has shown that attachment-related events such as a romantic relationship break-up can activate and/or make more salient the cognitions, affect, and behaviors associated with attachment style. Research has also shown that security primes, which seek to increase the degree of attachment security, can help to mitigate the degree to which insecure attachment style negatively affects key processes and outcomes. The current study tested the impact of attachment style and/or security primes on a single-session expressive writing task. Participants were roughly 150 undergraduates (the actual sample size varied somewhat by the hypotheses) who had recently experienced a romantic relationship break-up were randomly assigned to one of the following three conditions: (a) an expressive writing only task in which participants were asked to delve into their deepest thoughts and feeling related to the break-up, (b) a writing + prime task in which participants were exposed to a security

prime prior to the expressive writing task, (c) a control writing task. The goals of this study were, first, to investigate whether or not the writing samples would reflect participants' attachment styles and, second, to examine the extent to which attachment style or the security prime would affect the results of the expressive writing interventions. Results revealed that attachment style and the security prime did not generally affect the degree to which the expressive writing task promoted psychological and physical health functioning. However, supplementary analysis suggested that attachment style and the security prime did affect some indices of psychological or physical health functioning in a subsample of participants whose ex-partner had reportedly initiated the break-up. Additionally, results reveal that participants' attachment style was reflected in the content of the writing samples.

INDUCED SECURITY AND THE EXPRESSIVE WRITING PARADIGM: AN
ATTACHMENT THEORY PERSPECTIVE ON THERAPEUTIC EFFICACY.

By

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Chapter 1: Introduction

Many psychotherapeutic traditions are based on the premise that exploration is required to work through stressful life events and/or traumas. Exploration of the event is encouraged and facilitated by psychotherapists with the hopes that this facilitated exploration will lead to insight, symptom reduction, and behavior change (Hill, 2006). This process of “working through” stressful life events involves both (a) the ability and motivation to explore painful negative emotions, and (b) the ability to constructively process the experiences. There are many individuals, however, who are either reluctant to experience and express psychological pain or who have difficulty in regulating negative emotions, an important skill for working through stressful life events. These individuals use defensive strategies that may interfere with the therapeutic process of working through and can prevent them from benefiting from therapeutic interventions. Therefore, within the therapeutic context, one goal is to create an environment which reduces the intensity and frequency of defensive strategies that may interfere with the exploration process. In order to accomplish this goal, researchers and clinicians might benefit from understanding the sources of such defensive strategies. One such well-studied and important source is that of early attachment experiences.

Attachment theory is a lifespan developmental theory which provides a useful and comprehensive framework within which to conceptualize the etiology of defensive strategies and may provide a potentially fruitful area for intervention. A basic premise of attachment theory put forth by John Bowlby (1969/1982) and later elaborated by his student Mary Ainsworth (1963) is that infants look toward their

caregiver to provide both a “secure base” from which to safely explore their environment and a “safe haven” to return to in times of distress. From these experiences with the caregiver, the infant develops expectations regarding the availability of the caregiver and perceptions of how worthy they themselves are of protection and care (Ainsworth, Blehars, Water, & Wall, 1978).

These expectations/perceptions are then generalized to new relationships, where they organize thoughts, emotions, and behaviors in interpersonal situations and guide reactions to distress. In an ideal situation, the caregivers’ consistent availability and responsive care facilitates positive internal working models of “self” as good and worthy of care and of “others” as valued and worthy of trust (Bowlby, 1973). The infant is able to capitalize on these positive internal working models through learning how to explore their environment and cope with distressing experiences effectively. This infant is labeled “securely attached” as he/she has a positive view of both self and others. However, there are many infants who are not consistently attended to in times of distress and/or whose exploration attempts are thwarted by significant attachment figures. These infants develop negative internal working models of self and/or others (i.e., insecurely attached infants) and develop secondary strategies or defensive mechanisms to cope with the distress of inconsistent or unavailable care.

There are three types of insecurely attached infants who show characteristic patterns of interpersonal and emotion regulation behaviors indicative of a negative internal working model of attachment. Avoidantly attached infants learn to distance themselves from caregivers and from emotional reactions (Ainsworth et al., 1978). The later characteristic is indicative of a “deactivating strategy” of emotion regulation

in which the infant learns to downplay his/her negative emotions (Cassidy & Kobak, 1988). In contrast, the anxiously attached infant becomes overly attentive to their caregivers' whereabouts and learns to upregulate emotions (Ainsworth et al., 1978). This infant takes on a "hyperactivating strategy" of emotion regulation which is characterized by a heightened emotional reaction in times of distress that is not easily assuaged by caregivers (Cassidy & Kobak, 1988). The third category of insecure attachment is that of disorganized attachment. The infant with a disorganized attachment pattern will show a mixture of both types of emotion regulation strategies and interpersonal behaviors (Main & Solomon, 1986).

The internal working models and emotion regulation strategies associated with infant attachment have been found to remain remarkably consistent and impactful over time (for a review, see Thompson, 2008). These internal working models provide the basis for adult attachment style which is defined as the systematic pattern of relational expectations, emotions, and behavior that results from internalization of the cumulative attachment experiences with a particular emphasis on early attachment experiences (Fraley & Shaver, 2000; Shaver & Mikulincer, 2002). Infants who are more anxiously attached and employ hyperactivating strategies are likely to become adults who employ similar relational and emotion regulation strategies which center around hypervigilance and heightened negative emotionality (Cassidy & Kobak, 1988). Similarly, infants who are more avoidantly attached and employ deactivating strategies are likely to become adults who employ similar distancing strategies both within their emotional and social worlds.

Given that adult attachment is an organizing framework which affects an individual's emotional, behavioral, and cognitive psychological make-up (Cassidy & Shaver, 2008) it is likely that attachment style would affect a variety of psychological outcomes and processes. Decades of research support this assertion as findings have shown that adult attachment styles and their associated hyperactivating and deactivating strategies have been linked to several negative outcomes, including higher rates of psychopathology, negative physical health outcomes, ineffective coping in stressful situations, and difficulties with exploration (Gillath et al., 2005; Mikulincer, Shaver, & Pereg, 2003).

Of particular interest to this study is the detrimental impact of insecure attachment style on the exploratory system. Insecure attachment is theorized to be associated with a decreased sense of comfort with the autonomous exploring self (Cassidy, 2001). Attachment theorists propose that, in a manner similar to securely attached infants, securely attached adults are more open to the exploration process and are better able to regulate anxiety in such situations (Bartholomew & Horowitz, 1991; Hazan & Shaver, 1994; Lopez & Brennan, 2000). Evidence for the link between exploration and adult attachment comes from research that has measured aspects of exploration including curiosity, tolerance for ambiguity, cognitive closure, and dogmatic thinking (Mikulincer, 1997; for a review see Mikulincer & Shaver, 2007b). For example, in one study, results indicated that insecurely attached persons reported a greater preference for cognitive closure and were less likely to incorporate new important information when making social judgments (Mikulincer, 1997). This preference for cognitive closure may thwart the exploration process and make it

difficult for those persons with an insecure attachment style to explore events in an effective manner.

The impairment of the exploratory system may have broad implications in therapeutic settings, as exploration of stressful life events proves to be a vehicle for growth and development (Hill, 2006). The process of exploration and learning from painful experiences necessitates the use of several psychological resources which, unfortunately, may not be readily available for those individuals with an insecure attachment style. Beyond the cognitive barriers to exploration discussed above, insecurely attached adults may also have emotional barriers which can stifle the working-through process. For example, exploration of stressful life events requires an openness to pain that may run counter to avoidant individuals' coping strategies of disengagement (Cassidy & Shaver, 2008). In line with this deactivating emotion regulation strategy, avoidant individuals are liable to deny the negative emotions associated with stressful life experiences. In doing so, those with an avoidant attachment style may stifle exploration and subsequent processing. It is theorized that because of the denial of negative emotion, avoidant individuals will be less likely to engage effectively in information processing thereby hindering their ability to integrate experiences into their cognitive structures (Cassidy, 1994). In support of this view, individuals with avoidant attachment styles have shown less proximity-seeking and support-seeking behaviors in times of stress than do their secure counterparts; this, in turn, is associated with an increased level of distress and decreased levels of well-being after the stressful event (Mikulincer & Florian, 1997; Mikulincer, Florian, & Weller, 1993). Empirical evidence has also linked this

deactivating strategy to an increased occurrence of somatic symptoms, sleep problems, and other health issues following stressful life experiences (Mikulincer & Shaver, 2008). In sum, it appears that a deactivating strategy, which functions to provide a surface level of security and protection through controlling access to negative emotions, may impair a person's ability to confront and cope with stressful life experiences (Mikulincer & Shaver, 2008).

Although anxiously attached individuals may seem to embrace negative emotions, hyperactivation can also be seen as a barrier to the exploration process and to positive mental health outcomes. For example, research has shown that a hyperactivating strategy is associated with global self-report levels of distress, depression, anxiety, eating disorders, conduct disorders, personality disorders, and substance abuse in a variety of samples (Mikulincer & Shaver, 2007a). A hyperactivating strategy requires hypervigilance to the possibility of rejection and abandonment. When threats arise, either true or imagined, anxiously attached individuals tend to demonstrate intense distress and engage in such negative coping strategies as intense self-blame (Mayseless, Danieli, & Sharabany, 1996). This emotional dysregulation may thwart their ability to process stressful life events and hinder the likelihood of engaging effectively in the learning process. In fact, research has shown that intense emotional reactions may interfere with cognitive processing (Ellis & Ashbrook, 1998). In other words, individuals with an anxious attachment style may focus and dwell on the emotional aspects of the issue and ignore or be unable to attend to the more cognitive tasks associated with objective problem solving, meaning making, and insight (Mikulincer & Shaver, 2008).

It appears then that attachment theory may provide a useful explanation of how individuals use particular defensive strategies to cope with the distressing events which may interfere with the working through process. As working through is a central goal of therapy, attachment style may, therefore, prove to be an important moderator of the effectiveness of many therapeutic techniques used following a stressful life event.

One such well researched technique is that of expressive writing, a therapeutic endeavor which seeks to use the written word to help facilitate positive outcomes. Specifically, participants are asked to write about their deepest thoughts and emotions related to stressful or traumatic experiences (Pennebaker & Beall, 1986). This technique has been shown to benefit the writer's psychological and physical health (Pennebaker, Colder, & Sharp, 1990). Given that insecurely attached individuals employ defensive strategies when confronted with stressful events, it is possible that expressive writing is differentially effective for individuals depending on their particular attachment styles. It may be that when asked to write about the deepest thoughts and feelings regarding a stressful life experience, those who are insecurely attached will exhibit greater use of defensive strategies (i.e., hyperactivating or deactivating defense strategies) which will thwart the beneficial effects of expressive writing. The first aim of this research is, therefore, to test the potential moderating effects of attachment style on the physical and psychological health outcomes associated with the traditional expressive writing paradigm.

Given the pervasive impact of attachment style on various mental health indices, researchers have created and tested attachment based interventions which aim

to reduce the need to use defensive strategies and increase the ability to explore and manage stressful situations (Cassidy, Shaver, Mikulincer, & Lavy, 2009). The goal of these interventions is to prime a more secure internal working model so that those individuals with an insecure attachment style can act, at least for a period of time, as if they are more similar to their securely attached counterparts. Preliminary research has shown that these attachment based interventions may be helpful in reducing defensive strategies (Mikulincer & Shaver, 2008) which, in turn, might also help individuals benefit more from therapeutic interventions. The second aim of the proposed research is to test if pairing the expressive writing task with an attachment based intervention helps to increase the degree to which insecurely attached participants benefit from the expressive writing task.

If it is the case that the attachment based intervention is helpful to those who are insecurely attached, it would be interesting and helpful to explore the potential mechanisms behind the effectiveness of such an intervention. Therefore, the last aim of this study is to explore if the attachment based intervention helps insecurely attached participants to better process the stressful life event. Taken together, the purposed research seeks to (a) test if attachment style affects the relationship between expressive writing tasks and several beneficial psychological and health outcomes, (b) test if those participants with an insecure attachment style benefit more from the expressive writing task if randomly assigned to receive an attachment based intervention prior to the writing task, and (c) explore if the effectiveness of the attachment based intervention is contingent upon its ability to help insecurely attached individuals better process stressful life events.

Chapter 2: Literature Review

Therapeutic writing, also referred to in the literature as expressive or experimental writing, capitalizes on the power of expression as a means to recovery and growth. The idea of expression as a means to therapeutic recovery remains a central tenant of psychology (Imel & Wampold, 2008; Hill, 2006). Some evidence shows that the traditional expressive writing task may create a venue for “working through” a particular event, allowing clients to explore thoughts and feelings, make sense of events, create narratives for experiences, and release appropriate affective responses (Lepore & Smyth, 2002). This process of “working through” presupposes that an individual is capable of exploring a painful event—an important skill when attempting to move past the stressful life event (Hill, 2006). From a therapeutic standpoint, therefore, it is worthwhile to study factors which may thwart an individual’s ability to explore effectively and to develop interventions which attenuate such an effect. In line with these goals, the current research will look at insecure adult attachment style as a potential inhibiting factor to the process of exploration and, furthermore, test an intervention which may work to attenuate such negative effects.

The following literature review will be divided into two main sections which will address (a) the theory and research related to adult attachment style and (b) the empirical research on the expressive writing paradigm. In the first section on attachment, I will briefly describe the tenants of attachment theory as it relates to infant development and then later to adult attachment style. Next, I will explore research that seeks to address the intersection between adult attachment style and the

emotion regulation system in the context of everyday situations and stressful life events. Finally, I will discuss security priming—a recent promising intervention that seeks to reduce the defensive strategies associated with insecure attachment styles, thereby potentially increasing the benefits gained from therapeutic interventions.

In the second section, I will review and summarize the literature on the expressive writing paradigm, an important and well studied therapeutic intervention. First, I will examine the research on the expressive writing task in general by reviewing a series of meta-analytic findings. Next, I will review and critique the research on moderators of the efficacy of the expressive writing paradigm which will highlight the necessity to explore with whom and under what conditions the expressive writing paradigm works. Finally, I will present hypotheses regarding the link between attachment style, security priming, and the effectiveness of expressive writing as they relate to physical and psychological health outcomes.

Attachment Style: The Importance of Early Experiences

Attachment theory proposes that the attachment behavioral system evolved to maximize care from attachment figures which, in turn, facilitates protection from threats (Bowlby 1969/1982, 1973, 1980). That is, infants form emotional bonds with caregivers and seek proximity to those caregivers in times of danger in order to best ensure the infant's safety. As human infants are dependent on their caregivers to provide needed resources and protection, from an evolutionary perspective, proximity seeking is key to a human infant's survival (Bowlby, 1969/1982). The bond, therefore, serves an adaptive survival function as it facilitates proximity to caregivers, which increases the probability that the infant will be protected from threats.

The inherently emotional nature of the attachment bond highlights the interrelation between the attachment system and the emotion regulation system. In an ideal situation, the caregiver's responsiveness and "affective attunement" fosters the development of a flexible, open emotional regulation system (Cassidy, 1994). In other words, when caregivers are responsive and sensitive to the infant's emotional needs, they allow the infant to express a full spectrum of both positive and negative emotions that range from joy to sadness and from anger to fear (Stern, Hofer, Haft, & Dore, 1985). In turn, as infants develop, they learn how to recognize, accurately identify, regulate, and effectively communicate a range of emotions (Mikulincer & Shaver, 2008). Based on these experiences with their caregivers, developing infants form internal working models or cognitive representations or schemas of the self and others (Fraley & Shaver, 2000). An ideal situation is one in which the infant is responded to consistently by their caregiver(s) in an appropriate and sensitive manner and thus develops a positive internal working model in which they come to view themselves as broadly "good." In this situation, the infant sees himself/herself as worthy of care and comfort and others as able to provide such care when needed. This internal working model creates the basis for developing a healthy self-concept and good interpersonal relationships (Griffin & Bartholomew, 1994).

In addition to its close relationship to the emotion regulation system, the attachment system is also tied to the exploratory system. The "optimal" situation is one in which the caregiver acts consistently as both a safe haven in times of distress and a secure base from which infants can explore (Mikulincer & Shaver, 2007). These conditions allow infants to be confident in their capacity to receive help from

their caregiver in times of distress. The understanding of the caregivers' availability for protection and comfort results in a "felt security" which permits the infant to explore his/her surroundings (Bowlby, 1969/1982; Stroufe & Waters, 1977). The infant is then free to engage in the range of potential learning experiences the environment has to offer, which is an essential means for learning about their world. Furthermore, over time, they come to internalize this sense of "felt security" which later becomes the foundation for healthy internal working models of both self and others. These infants are said to be securely attached as their attachment relationship is one characterized by a sense of security borne of receiving care and protection in a consistent manner over time.

Although this represents the ideal situation, for many reasons, not all caregivers are able to serve as a consistent secure base/safe haven for their infants. In these situations, caregivers may not be affectively attuned to their infants and, in turn, may not provide their infant with the felt security that contributes to a healthy internal working model of self and others (Bowlby, 1969/1982). In fact, 38% of the infants from low-risk community samples can be categorized as insecurely attached (Campos, Barrett, Lamb, Goldsmith, & Sternberg, 1983; Thompson, 1998). Many of these infants have experienced inconsistent, threatening, or non-existent responsiveness in times of threat (Ainsworth et al., 1973) and are categorized into one of three sub-groups of insecure attachment—that of ambivalent attachment, avoidant attachment, or disorganized attachment. Ambivalent attachment, also referred to in the literature as anxious attachment, describes an attachment pattern characterized by high levels of proximity seeking and distress, and relatively low levels of exploration.

In contrast, avoidant attachment is characterized by a pattern of lower levels of proximity seeking and distress, and relatively high levels of exploration.

Disorganized attachment incorporates features of both anxious and avoidant attachment behaviors (Main & Solomon, 1986). Secure attachment, as described above, is characterized by moderate levels of proximity seeking and distress, and relatively high levels of exploration (Ainsworth et al., 1978).

Infants who have not received consistent and/or sensitive care develop secondary or “alternative” emotion regulation strategies of attachment (Cassidy & Kobak, 1988). There are two such secondary strategies, that of a hyperactivating strategy or a deactivating strategy which represent anxious and avoidant attachment styles, respectively (Cassidy & Kobak, 1988). The disorganized attachment style is characterized by a combination of these affect regulation strategies. Both strategies, from an evolutionary perspective, allow the infant to maximize proximity and care within their specific environment (Bowlby, 1969/1982). On an individual level, these strategies help the infants to cope with the lack of felt security which stems from the distress of inconsistent, threatening, or dismissing responses from their caregiver.

The hyperactivating strategy is characterized by a heightened level of emotional arousal and is associated with the behavioral tendency towards greater proximity seeking and difficulties with separation from caregiver(s) (Bowlby 1969/1982, Cassidy & Kobak, 1988). In order to ensure parental attention, these anxiously attached infants appear to pay increased attention to the caregiver’s whereabouts and exhibit increased emotional activation in times of threat (Ainsworth et al., 1978; Cassidy, 1994). When the caregivers do respond, these infants are less

able to be soothed and calmed by their caregivers as compared to their secure counterparts. This strategy is therefore beneficial to the infant within this particular context as it functions to increase the probability of the fickle caregiver's continued response, care, and protection (Bowlby, 1969/1982). Furthermore, the hyperactivating strategy gives the infant a way to ensure some sense of felt security.

In contrast, a deactivating strategy of emotional regulation is characterized by a reduced level of emotional arousal and is associated with the avoidant behavioral tendency towards higher levels of behavioral independence and less observable difficulty with separation from the caregiver (Bowlby 1969/1982; Cassidy & Kobak, 1988). In this case, infants have likely experienced their caregivers as either unresponsive to their needs or as chastising in times of distress (Ainsworth et al., 1978). These avoidantly attached infants have learned that expressions of distress and emotional engagement (particularly with regard to negative emotion) are likely to be met with rejection and pain (Cassidy, 1994). Infants that utilize a deactivating strategy have learned to prevent this rejection and potential abandonment by emotionally minimizing the expression of distress. Parallel to this emotional strategy, behaviorally, these infants have learned not to turn towards their caregivers for protection and comfort in times of distress. It is important to note that the deactivating strategy is categorized not by a decrease in actual reactivity (or the physiological felt emotion) but by both the active suppression and lack of behavioral expression of these negative emotions of anxiety and sadness (Braungart & Stifter, 1991). In other words, these infants do in fact feel distress; however they have learned to suppress negative feelings and to inhibit actively the expression of such

emotions. From an evolutionary perspective, this strategy is effective in that it increases the likelihood that the infant will not be abandoned by his or her caregivers who may censure (either subtly or more explicitly) and reject elicited calls for comfort during times of threat; the infant is thus able to maintain the attachment relationship (Bowlby, 1969/1982).

In conclusion, there are many situations in which caregiver(s) either cannot or do not function sufficiently as a secure base and safe haven for the infants under their care. In such situations, the infant must learn an alternative set of behaviors and strategies (coping and emotional regulation strategies) that preserves and maximizes his/her ability to receive protection and care. Unfortunately, although these secondary strategies are initially adaptive to the infant in helping to maintain protection and care, they are not without costs to the related behavioral systems and they continue to impact negatively the infant as he or she grows into adulthood.

Of particular importance to the proposed research are the lasting effects that these secondary strategies have on the adult emotional regulation and exploratory behavioral systems. As discussed in the next sections, results from research support the theoretical predictions regarding the continued impact of attachment styles across the lifespan. Early experiences with caregivers are theorized to contribute to generalized expectations regarding the caregivers' availability during times of distress. Individual differences in adult attachment orientation are assumed to reflect an internalization of these expectations, which become the basis for individuals' internal working models of attachment (Hazan & Shaver, 1987). These internalized representations, or internal working models, become the organizing basis for the

individual's concepts of self and others. In other words, internal working models may serve as a guiding force which organizes an individual's cognitions, affect, and behaviors in future relationships and reactions to distressing situations (Hazan & Shaver, 1987). In the next section I will introduce adult attachment theory as it relates to infant attachment theory.

Adult Attachment Theory: The Lasting Impact of Early Experiences

As attachment is theorized to impact such core constructs as self-other concepts which are reflected in internal working models, one theoretically based assumption is that the patterns of attachment behavior will extend into later development (Bowlby, 1988). In fact, the internal working models formed during infancy may be the main source of continuity between infants' attachment experiences and later thoughts, feelings, and behaviors in a variety of situations (Hazan & Shaver, 1987). Therefore, adults should differ in the manner in which they form emotional bonds and in how they regulate emotions in ways that are consistent with their earlier attachment status. Although these attachment representations are thought to be changeable to some extent, they are theorized to represent relatively stable underlying working models of interpersonal and intrapersonal dynamics.

Empirical data on stability of attachment representations across time have been somewhat mixed. For example, results from one twenty-year longitudinal study indicated that 72% of the 50 participants originally tested at 12 months of age retained the same secure versus insecure attachment classification in early adulthood at age 18 (Waters, Merrick, Treboux, Crowell, Albersheim, 2000). In this study, which sampled sixty white middle-class infants using Ainsworth's Strange Situation

(Ainsworth, Blehar, Waters, & Hall, 1978), negative life events (e.g., parental divorce, life-threatening illness of parent or child, physical or sexual abuse by a family member, parental psychiatric disorder) were found to be significant and important predictors of change in attachment security classification at young adulthood. This research supports the prototype perspective which asserts that attachment styles represent a system of non-linguistic representations, procedural standards of information processing, and behavioral strategies which carry from childhood experiences into later constructions of working models of self and others utilized in adulthood (Fraley, Vicary, Brumbaugh, Roisman, 2011) Although these “prototypes” are thought to be changeable to some extent, overall, there is a thread of stability which is exhibited in moderate levels of test-retest reliability.

However, other studies, using different points of measurement, found little stability across time (Lewis, Feiring, & Roesenthal, 2000) and suggested that there was no grounding force underlying variation in attachment representation. This perspective, known as the revisionist/contextual perspective, contrasts with the prototype perspective (Stroufe, Egeland, & Kreutzer, 1990). A recent study directly tested these two differing models (i.e., the prototype model which assumed the presence of a latent prototype and the revisionist model which made no such assumption) using a higher-order system of linear structural equations on two samples of college-age students (total N = 591; Fraley, Vicary, Brumbaugh, & Roisman, 2011). Looking specifically at patterns of test-retest reliability across time and relative “fit” of these specified models, the findings indicated that the prototype model of test-retest reliability patterns fit significantly better than did the revisionist

model. Although more research is needed to clarify the stability of attachment style, there is a growing body of evidence which seems to support the assumptions underlying attachment theory. Therefore, the characteristics of attachment in infancy are likely to parallel closely the behavioral and emotional patterns in adulthood. Specifically, individuals with a secure adult attachment style have positive internal working models of self and others which allows them to cope with distress and engage in the environment in a healthier manner (Hazan & Shaver, 1987). Secure attachment style in adulthood has been linked to a variety of positive outcomes, including good interpersonal relationships, positive self-perceptions, the flexible use of positive and appropriately varied coping mechanisms in times of distress, along with other characteristics which point to the benefits of an internalized felt-security (Cassidy & Shaver, 2008).

In regard to insecurely attached infants, the hyperactivating and deactivating emotion regulation strategies also tend to remain relatively consistent over time (Hazan & Shaver, 1987). Infants who are anxiously/ambivalently attached tend to become preoccupied or anxiously attached adults whose main emotion regulation strategy is a hyperactivating one (Cassidy & Kobak, 1988). A hyperactivating strategy in adulthood is characterized by a hypervigilance and attention to close others which parallels the increased proximity behavior of anxiously attached infants. Furthermore, these adults have a higher propensity towards negative emotions within the context of close relationships and, in general, have lower levels of efficacy for dealing with such emotions and in coping with stressful situations (Mikulincer, Shaver, & Pereg, 2003). Preoccupied attachment style is associated with lower levels

of self-esteem and lower levels of relationship satisfaction, which implies a less than optimal internal working model of self.

Avoidantly attached infants tend to become adults with a dismissive attachment style who continue to utilize a deactivating strategy of emotion regulation (Hazan & Shaver, 1987). These individuals tend to exhibit more distance in relationships, paralleling avoidantly attached infants' reduced proximity to caregivers (Ainsworth et al., 1978; Hazan & Shaver, 1987). They tend to be compulsively self-reliant in times of stress, and tend to admit to and express less negative emotion, which may lead to a greater incidence of somatic symptoms (Cassidy & Kobak, 1988). Dismissing adults tend to exhibit higher levels of efficacy in regulating emotions and in coping with stressful situations, which may reflect their propensity towards self-reliance (Birnbaum, Orr, Mikulincer, & Florian, 1997; Hazan & Shaver, 1987). Although "confident" in their ability to cope with stressful situations, research has shown that those individuals with a dismissing attachment style tend to experience greater levels of distress in high stress situations (Mikulincer, Shaver, & Pereg, 2003). The discrepancy in perception versus experience may lie in the type of coping skills that dismissing adults tend to utilize. Dismissing adults tend to be singular and rigid in their approach to coping, using only avoidant strategies and ignoring those coping skills which necessitate reaching out to "trusted" others. Securely attached adults benefit from a variety of coping skills which include both self-focused and other-focused coping skills (Mikulincer, Florian, & Weller, 1993). In other words, individuals with a secure attachment style tend to have "more tools in their tool belt" to effectively cope with distressing events.

Empirical evidence from cluster analysis research has supported the theoretical hypotheses which link particular attachment styles to prototypical constructions of the working models of self and other. For example, one study found that attachment style clustered around the working models of self and others in theoretically relevant ways (Tanaka, Hasui, Uji, Hiramura, Chen, Shikai, & Kitamura, 2008). The secure and avoidant clusters scored high on the first function (i.e., the “self” working model) which indicated that they had generally positive constructions of the self. Fearful and preoccupied styles scored high on the second function (i.e., the “other” working model) which indicated they had generally positive construction of the “other.”

Although these strategies were likely adaptive within the specific context of the original primary attachment figure, they may not be as effective in adulthood when the person is exposed to new experiences and types of relationships. Therefore, the maladaptive internal working models that evolve within the context of the original attachment relationship may lead to less than optimal expectancies, behaviors, and emotional experiences in adulthood.

Of particular theoretical and practical importance to the current study is the link between emotion regulation, coping strategies, and attachment style within the context of stressful attachment-related events that may affect the process of emotional exploration. The following sections will, therefore, address and critique research related to individual differences in the expression and regulation of emotion, memory activation, behavioral coping styles, and mental health outcomes of different attachment orientations. Specifically, I will first present research that addresses the

impact of attachment style on affective experiences in general. Next, I will address research regarding the impact of attachment style on coping strategies utilized in the context of stressful life experiences. Finally, I will address the research and theory regarding the impact of attachment orientation on the emotional exploration process in response to stressful attachment-related experiences.

Adult attachment style and affect regulation. Prior to delving into the adult attachment literature, it is important to explain that throughout the years, there has been a multitude of differing measurements of attachment within the literature. Whenever possible, I will use the most widely accepted conceptualization that characterizes attachment as consisting of two factors—attachment-related anxiety (insecurity about partner availability and the self’s inherent value) and avoidance (discomfort with closeness to and reliance on the relationship partner; Bartholomew & Horowitz, 1991; Brennan, Clark, & Shaver, 1998). These factors are typically measured by the Experience in Close Relationship-Revised Scale (ECR-R; Brennan et al., 1998). These two dimensions are in line with Bowlby’s conceptualization of attachment (Bowlby, 1982/1969) and reflect research which has shown that variation in attachment is best captured via continuous variables rather than categorical ones (Fraley & Waller, 1998; Fraley & Spieker, 2003a, 2003b). Furthermore, research has shown that attachment-related anxiety and avoidance as measured by the ECR-R are associated with relationship functioning and affect regulation in theoretically predicted ways (Sibley, Fischer, & Liu, 2006). I will now turn attention back to the empirical and theoretical literature on the adult attachment system.

The attachment system is an organizing framework for psychological resources and experiences and, therefore, has a pervasive and important impact on a variety of outcomes. As the attachment system is closely linked to the emotion regulation system, differences in attachment style should affect everyday experiences with emotions. In addition to everyday experiences, theoretically, the attachment system should be salient when activated by the three following types of threats: (a) threat to the person (e.g., physical danger), (b) threat to the relationship with an attachment figure, and (c) threat in the form of challenging situations that motivate the individual to utilize attachment figures as a “secure base” (Davis, Shaver, & Vernon, 2003). These sources of distress represent situations which, in childhood, necessitate the need for a safe haven and secure base from which to explore. In adulthood, these situations represent times in which individuals are required to tap their own psychological resources in the form of internalized working models of attachment representations. Converging evidence from studies that utilize multiple levels of analysis (e.g., psychophysiological, neurological, self-report, peer report, and behavioral reports) now points to the pervasive impact of the attachment system on emotion regulation (e.g., Roisman, 2007; Torquatti & Raffaelli, 2004).

In regard to everyday experiences with emotions, evidence has emerged that points to important differences in the way that individuals with secure versus insecure attachment styles experience and regulate emotions. One study explored whether and how the social contexts and self-reported immediate emotional experiences of young adults in their everyday settings differed depending on global attachment style (i.e., secure vs. insecure; Torquatti & Raffaelli, 2004). Sixty-nine participants recruited

from a Midwestern university first completed an adult attachment style questionnaire. Attachment style was assessed using an 18-item self-report measure based on Collins and Read's (1990) classification system which includes the following three distinct dimensions of attachment: (a) comfort depending on others, (b) comfort with closeness, and (c) anxiety. Based on their scores, participants were placed into one of four categories including secure (high close, high dependent, low anxiety), preoccupied (high close, dependent, and anxiety), dismissing (low close, low dependant, low anxiety), and fearful (low close, low dependent, high anxiety).

Next, participants underwent an experience sampling method of data collection which allowed the researchers to capture the immediate moment-to-moment experience of the participants' emotional state and social context. Specifically, participants were required to carry a beeper with them at all times during a one week period. They were instructed to complete the questionnaire each time the beeper sounded which occurred 6-7 times a day. The questionnaire consisted of measures of mood and social context. Mood was assessed by indexing the current degree of positive affect, level of energy, and the level of "connection" or the degree to which the participant felt connected to those around them (a proxy for loneliness). Social context was assessed by asking participants to list those persons who they were with at the time (both the names of those persons and their relationship with each person).

Statistical analysis revealed that secure and insecure participants experienced emotions differently in everyday settings. Results indicated that, regardless of context (i.e., alone or with others), insecure participants were more likely to endorse

higher intensity negative emotions and were less likely to endorse higher intensity positive emotions than their secure counterparts. In addition, there was a nearly significant context-by-attachment-style interaction ($p < .06$) such that, when alone, insecure participants tended to report particularly low moods and endorsed lower levels of connection (e.g., loneliness), energy, and positive affect than did secure participants. This pattern of results suggests that attachment orientation has a generalized influence on emotional experience and that differences in emotional experiences between secure and insecure participants become more pronounced in the absence of others.

It is important to note, however, that this particular sample did not have a single participant with a dismissing attachment style. Therefore, these results are only relevant to those individuals who are high on attachment anxiety or who exhibit a hyperactivating strategy for emotion regulation. Furthermore, although it is valuable to understand the impact of attachment style on everyday experiences, it is also important to explore attachment style differences in the context of transitioning experiences, in which individuals are challenged to adapt to new situations. This context may represent a potentially stressful experience in which affect regulation and coping skills are of particular importance. It is in these situations that individual differences in attachment style may be particularly salient.

One study addressed these concerns by recruiting participants with a dismissing or avoidant attachment style in addition to participants with secure and preoccupied attachment styles. Furthermore, this study looked at the relationship between an individuals' attachment orientation, affect regulation as measured by peer

reports, and representations of “self” and “others” as measured by self-reports within the context of transitioning to college (Kobak & Sceery, 1988). This study therefore tested an important theoretical formulation which links the self-other schema (i.e., views of self as worthy of care and views of others as capable of giving such care) to emotion regulation strategies associated with particular attachment styles.

Fifty-three first-year college students participated in Kobak and Sceery’s (1988) study and were first asked to fill out questionnaires related to self-other representations during their first month of college. These questionnaires were in line with Fraley and Shaver’s (2000) self-other attachment conceptualization. This conceptualization posits that attachment style can be measured by schemas regarding the self and others as either good, worthy, and trustworthy (self-other as good) or bad, unworthy, and untrustworthy (self-other as bad). The representations of self were captured through measures of self-reported distress and self-confidence in social situations. The representations of others were captured through measures of perceived social support from family and friends, and measures of loneliness. Two months later, participants were brought into the lab to complete the Adult Attachment Interview (AAI; George, Kaplan, & Mann, 1985), which measured the participants’ attachment orientation.

The AAI is a commonly used semi-structured interview protocol designed to capture the individuals’ current state of mind with regard to their childhood relationships with their primary caregiver. This one-hour interview consists of a variety of attachment-related questions which require participants to (a) make global evaluations of their early relationship with their parents, (b) provide specific

memories in support of these characterizations, (c) discuss specific instances of rejection, loss, and separation within the context of early attachment relationships, (d) assess the current status of these relationships, and (e) describe any salient changes that may have occurred in these relationships between childhood and maturity. After the interview is completed, trained coders determine if the individuals' verbal responses were indicative of a prototypically secure individual (e.g., responds in a clear, well-organized fashion and is credible and easy to believe) versus a prototypically insecure individual (e.g., the subject responds only minimally to questions or does not remember, or the subject responds in an angrily or passively preoccupied manner).

One month following the AAI, during the participants' fourth month in college, participants were asked to fill out self-other representation measures and to list the contact information of college friends. Peers were contacted and asked to complete a Q-sort rating of the targeted participants' level of hostility, anxiety, ego-undercontrol, and ego resilience, which sought to capture the participant's affect regulation. Researchers ran a MANOVA to compare the following groups: (a) Secure versus Dismissing, (b) Secure versus Preoccupied, and (c) Dismissing versus Preoccupied.

Results showed that the secure group, across peer and self-report ratings, appeared to be the most well-adjusted of all three groups. This group seemed to cope constructively as evidenced by a high degree of ego-resilience, or the ability to effectively negotiate negative feelings, in both social contexts and problem-solving contexts, as compared to both the dismissing and preoccupied groups. Furthermore,

secure participants had the lowest degree of anxiety as compared to the insecure groups. They also had lower levels of distress and higher self-reported social competence as compared with the anxiously attached group, as well as higher levels of family support when compared to the dismissing group. Therefore, in line with theory and previous research, the secure participants had positive self-other schemas, lower levels of distress, and appeared better equipped to deal with challenges or emotionally distressing situations.

A very different picture emerged for those participants categorized as insecurely attached. Results revealed that insecure groups were less well-adjusted. Dismissing participants showed a characteristic pattern of greater hostility which, as the authors suggested, may have contributed to greater self-reported loneliness and less familial support at the time 2 follow-up 6 months after the baseline scores, as compared to the secure group. Interestingly, even though participants with a dismissing attachment style were more lonely and hostile, and had lower levels of social support, they reported similar levels of distress and social competence as the secure group. This may highlight the dismissing groups' characteristic bias against acknowledging negative affect, which may thwart the process of seeking help to alleviate such distress. In other words, this may point to a "denial" of distress which is in line with a deactivating emotion regulation strategy. In contrast, the preoccupied group showed a propensity towards anxiety as compared to their dismissing and secure counterparts and lower levels of ego-resilience than the secure group. In addition, participants with a preoccupied attachment style also exhibited (a) higher levels of symptoms at time 2 follow-up than both the secure and dismissing groups

and (b) lower levels of perceived social competence at time 2 follow-up than the secure group. As the author's suggest, this provides initial evidence that those participants with an anxious attachment style who use a hyperactivating emotion regulation strategy may ultimately be unsuccessful at acquiring needed resources to lower anxiety. In other words, the coping style that accompanies anxious attachment may not work as effectively to reduce anxiety.

In discussing their results, the authors' stressed the importance of the affect regulation perspective of the attachment system (Bowlby, 1973, 1980) which proposes that stressful situations require an individual to conjure up internalized representations of one's attachment figure and associated expectations about whether these figures are emotionally available in times of distress. Depending on the quality and nature of these internalized past experiences with attachment figures and the expectations of others' availability derived from these experiences (i.e., the extent to which individuals have an inherent sense of "felt security"; Stroufe & Waters, 1977), various "rules" for governing interpersonal/intrapersonal reactions to stressful life events will emerge.

Attachment researchers have theorized that these rules allow/do not allow for (a) the recognition of felt distress and (b) turning to others for support during challenging times (Kobak & Sceery, 1988; Mikulincer, Florian, & Tolmatz, 1990). The authors theorize that the secure group may be governed by rules that allow for and even encourage the acknowledgment of distress and turning to others for social support. The dismissing group, however, may be characterized by rules which restrict acknowledgment of negative affect and turning to close others for support. The

preoccupied group would have rules which allow for acknowledgment of distress and social support, but this effort is stifled by their lack of ability to regulate negative emotions in an effective way which allows for the alleviation of distress. In other words, these persons may deal with their insecurity by directing attention toward distress in a hypervigilant and ruminative way (Kobak & Sceery, 1988; Mikulincer et al., 1990).

Although suggestive, this study did not assess participants' actual coping mechanisms, an important link in the attachment theoretical formulation. Furthermore, transitioning into college may be a stressful life event to some but not to others. As stressful life events require the use of psychological resources which may vary according to attachment style, it may be important to determine coping mechanisms and affect regulation profiles for those of different attachment styles within the context of an actual, as compared to a potential, stressful life event. Furthermore, how individuals process, make sense of, and are affected by stressful life events is of particular relevance to the therapeutic context as individuals are often motivated to seek treatment during times of stress. In the next section, I will summarize and critique the relevant research regarding the intersection of attachment style, coping strategies, and emotional regulation within the context of stressful life experiences.

Adult attachment and stressful life experiences. Numerous studies have linked attachment style to mental health and relationship behaviors (Gillath et al., 2005). Specifically, Bowlby (1980) claimed that attachment affects not only the interpersonal realm of thoughts, feelings and behaviors in regard to others, but also

the intrapersonal realm including the individual's coping skills and feelings of personal worth and self-esteem. Individual differences in attachment style may, therefore, be particularly salient during times of stress when the need to mobilize internal psychological resources is at its highest (Mikulincer, Florian, & Weller, 1993).

In line with attachment theory, Mikulincer et al. (1993) hypothesized that insecure attachment style may predispose individuals to respond to environmental stress in a maladaptive manner. In this way, insecure attachment style may be a risk factor in recovery from traumatic real-life events in which intrapsychic resources are mobilized. In this study, researchers tested the conceptual link between attachment style and coping mechanisms. One hundred and forty Israeli undergraduate students were recruited for this self-report cross-sectional study and were analyzed in two separate groups. The high threat group consisted of participants who lived in areas designated by the Israeli military authorities as most dangerous or highly vulnerable to missile attacks; the low-threat group consisted of participants who lived in areas designated as less dangerous or less vulnerable to attacks. Two-weeks following a missile attack on Israeli soil, all participants were asked to complete a series of questionnaires which assessed participants' attachment style, coping style, and current levels of somatization, depression, anxiety, hostility, and level of distress following the missile attacks.

The authors hypothesized that attachment style would influence the degree to which individuals experienced posttraumatic maladjustment. Given the hyperactivating emotion regulation strategy, the authors hypothesized that individuals

with an anxious attachment style would have greater levels of generalized distress following the attack, as reflected by measures of anxiety, depression, hostility, and somatization. This follows attachment theory and previous research suggesting that anxious persons tend to focus attention on distress in a hypervigilant and ruminative way (Kobak & Sceery, 1988; Mikulincer et al., 1990). In contrast, it was hypothesized that individuals with an avoidant attachment style would show higher levels of distress focused on hostility and somatization. As it may be threatening for such individuals to recognize that they are depressed and anxious, their distress may be manifested in hostility and anger against a distressing world (Mikulincer et al., 1993). Results indicated that insecure persons reported higher levels of somatization than their secure counterparts. Further, anxious persons reported greater levels of depression and anxiety than did their secure or avoidant counterparts. Anxious persons also reported a higher level of hostility than avoidant persons, who reported higher levels of hostility than secure persons.

A second set of hypotheses revolved around attachment style differences in the posttraumatic process. Previous research has shown that the posttraumatic process is initially marked by a period of oscillation between (a) intrusion, or the penetration of thoughts, images, feelings, and nightmares related to traumatic events, and (b) avoidance, or the propensity towards behavioral avoidance associated with psychic numbing and denial (Horowitz, 1982). After these alternating periods of intrusion and avoidance, ideally an individual will experience a period of “working through” to return to baseline levels of psychological health and behavior. The working through process usually entails exploring and processing the event and

related emotions. As individuals with an insecure attachment style have been found to have difficulty exploring and processing negative emotions, they may be poorly equipped for working through the traumatic event (Mikulincer et al., 1993).

Therefore, on the basis of attachment theory and research, the authors proposed that individuals with an anxious attachment style would show more war-related intrusion and avoidance than their secure counterparts and that individuals with an avoidant attachment style would report more war-related avoidance. The results support this conclusion, as anxious persons reported higher levels of intrusion than avoidant or secure persons and both avoidant and anxious persons had higher levels of behavioral avoidance.

The third set of hypotheses focused on the relation between attachment orientation and coping style. Specifically, the researchers hypothesized that compared with secure persons, anxious persons would use more emotion-focused coping while avoidant persons would use more distancing strategies and that both insecure attachment styles would use less support seeking than the securely attached group. These hypotheses are theoretically in line with the emotion regulation profile (e.g., hyperactivating strategies versus deactivating strategies) of those with avoidant and anxious attachment styles. Results were consistent with these hypotheses, as univariate ANOVA's revealed a significant main effect of attachment style on emotion-focused coping such that anxious persons reported using more emotion-focused coping than the secure group or the avoidant group. The results also confirmed hypotheses regarding distancing strategies. A significant main effect of attachment style was found for such that avoidant persons reported using more

distancing strategies than both secure and ambivalent persons. Regarding social support strategies, results were in line with hypothesized relations such that secure persons reported reaching out to others more than their ambivalent and avoidant counterparts.

Finally, the authors made theory driven hypotheses regarding differences among low-and high-threat situations for each attachment style. Results mostly confirmed the hypothesized relations and a picture emerged as to how individuals of differing attachment styles experience, cope with, and fare after a traumatic event. In regard to posttraumatic processes and outcomes, individuals who fall into the anxiously attached category tended to experience more posttraumatic distress symptoms (hostility, depression, anxiety, and somatization), intrusive thoughts, and behavioral avoidance than their counterparts. These individuals tended to deal with this distress by using proportionately more emotion-focused coping strategies as compared to those who fall into the secure or avoidant categories. Furthermore, these results did not differ depending on the level of danger/threat. This matches the hyperactivating strategy which is marked by an overactivation and attention to negative emotion across contexts.

A different pattern emerged for those individuals with an avoidant attachment style. Similarly to those individuals with an anxious attachment style, avoidantly attached individuals tended to experience more posttraumatic distress symptoms than their secure counterparts; however, this distress manifested differently and was characterized instead by an increase in somatization and hostility. This profile supports the presence of a deactivating emotion regulation strategy in which avoidant

individuals remove anxiety and depression from their emotional responses and express distress through hostility and somatization. Furthermore, avoidantly attached individuals coped with distress by using distancing strategies in situations of high threat. These strategies involve inhibition of emotional displays and denial of painful memories related to the event (Mikulincer et al., 1993). It is important to note that, given that the level of threat moderated the use of distancing strategies, it appears that avoidant persons used distancing strategies only during times of high threat.

Secure individuals were the most well-adjusted as they had the lowest levels of posttraumatic stress, intrusion, avoidance, hostility, somatization, depression, and anxiety. These individuals used the greatest proportion of problem-solving and support seeking behaviors as compared to emotion focused and distancing strategies. This is in line with attachment theory which proposes that positive early attachment experiences may provide individuals with psychological resources that facilitate adaptive responses to future stressful situations. Using the attachment framework, the authors' suggest that through early attachment experiences, secure individuals learn that life's hardships, although painful and challenging, are manageable. This facilitative expectation/attitude may stem from a generalized sense of confidence in coping with such situations and may help to protect against emotional distress. These psychological resources reflect the positive internal working model of a secure base from which to explore and process and a safe haven to turn to in times of distress (self-other comfort; Mikulincer et al., 1993; Bowlby, 1973).

This study provides a window into attachment style differences in self-reported posttraumatic processes and outcomes which are consonant with theoretical

formulations regarding hyperactivating and deactivating strategies. However, it is also important to test the theoretical propositions regarding emotion regulation profiles using more objective indices of emotion. Furthermore, it is important to study individuals' reaction to attachment related stressful life events, which represent a source of threat that, theoretically, might (a) be particularly stressful for those individuals with an insecure attachment style, and (b) most strongly activate attachment related internal working models (Davis, Shaver, & Vernon, 2003).

One important study examined the autonomic reactivity of individuals within the context of a current adult attachment relationship (Roisman, 2007). This study used objective indices of emotional reactions within the context of a stressful attachment-related event. Eighty couples were recruited from a community sample. Participants first completed the Adult Attachment Interview (AAI). Participants were then asked to complete a questionnaire which instructed them to read through a list of 11 common problem areas in a relationship and indicate, on a 10 point scale, the extent to which the problem listed was currently an issue within the context of their relationship. Lastly, the couple was reunited to complete a standard marital interaction task in which couples were instructed to discuss an area of disagreement in their relationship. During this task, researchers hooked the participants up to psychophysiology equipment which measured skin conductance and heart rate. Changes in these measures are thought to indicate behavioral inhibition or behavioral activation (Fowels, 1980, 1988; Gray, 1975) which represents deactivating and hyperactivating strategies, respectively.

Researchers conducted Actor-Partner Independence Model (APIM; Campbell & Kashy, 2002; Kashy & Kenny, 2000) analysis using HLM. Results revealed that, in the context of discussing normatively mild marital stressors with their adult attachment relationship partner in a laboratory setting, individuals with secure attachment style showed lower levels of skin conductance and heart reactivity than their insecure counterparts. Those individuals with a hyperactivating style showed higher levels of heart rate, which is indicative of increased emotional arousal or behavioral activation. In contrast, those individuals who were categorized as having a deactivating style showed higher levels of skin conductance, an indicator of emotional inhibition or behavioral deactivation. These results suggest that in the context of a potentially stressful discussion within an adult attachment relationship (in which, theoretically, attachment-related schemas are activated), attachment style differences are associated with different emotion regulation profiles.

This study examined emotional reactions in relation to an attachment-related stressful event. However, given that the researchers did not assess the behavioral correlates of such emotion regulation profiles, it is difficult to ascertain the real life implications of such strategies. In other words, it is unclear whether the emotion regulation profiles corresponded with more or less effective ways of exploring, discussing, and negotiating stressful topics in a relationship. It may be interesting to investigate how this pattern of emotion regulation affects behaviors in the context of important attachment-related events. Furthermore, Roisman (2007) only looked at level of emotional arousal, and assess various cognitive factors which may be associated with this emotion-regulation profile.

In the next study, researchers sought to explore both cognitive and emotional factors related to attachment-style differences. Specifically, they tested attachment-style difference in the ability to suppress negative thoughts as exhibited by activation of various regions of the brain associated with emotional arousal, emotional regulation, and memory activation (Gillath, Bunge, Shaver, Wendelken, & Mikulincer, 2005). Participants in this study were women in long-term relationships who were pre-selected based on their attachment scores as indexed by the Experiences in Close Relationship Scale (ECR; Brennan et al., 1998). Based on their scores, participants were placed in the secure category (low anxiety, low avoidance), anxious category (high anxiety, low-moderate avoidance), or avoidant category (low anxiety, high avoidance) of attachment style. In addition to attachment style, participants were instructed to fill out measures of neuroticism and general anxiety, as these traits have been associated with attachment anxiety and may represent potential confounds for the findings (Mikulincer & Shaver, 2003).

In line with theoretical predictions, it was hypothesized that those participants with an anxious attachment style would show brain activation patterns associated with negative emotionality as well as greater activation in memory-related regions, as measured by functional magnetic resonance imaging (fMRI). These predictions were based on previous findings that individuals high on attachment anxiety (a) experience heightened negative emotion, (b) have a harder time down-regulating emotional arousal, and (c) have greater access to negative memories. In contrast, those with an avoidant attachment style, as compared to those with a non-avoidant attachment style, were predicted to exhibit neural activation patterns associated with the active

regulation and suppression of thoughts and emotions, a characteristic coping style of this attachment orientation.

Twenty female participants were selected from an undergraduate psychology pool to participate in this experimental study. As this study was a within-groups design, participants were asked to think about different scenarios which represented significant attachment-related events (i.e., the experimental conditions) and emotionally neutral relationship and non-relationship events (i.e., the control conditions). Specifically, participants were asked to think about an actual or imagined event including (a) an emotionally neutral event, (b) an emotionally neutral relationship oriented event, (c) a conflict or argument with their partner, (d) breaking-up with their current partner, or (e) imagining the death of their partner.

During each scenario, participants were given additional instructions designed to assess their ability to suppress particular attachment-related thoughts (Mitchell, Heatherton, Kelley, & Wyland, 2007). First, participants were asked to simply press a button every time a light appeared on the screen to assess general reaction time which was measured by the response latency between the stimulus presentation and pressing the button (the “control block”). Second, participants were asked to think about the scenario, and instructed to press a button whenever they experienced a shift in thoughts or images (the “think block”). This allowed participants to get acclimated to thinking about whatever scenario was presented. Third, participants were asked to not think about the scenario and to press the button whenever they happened to think about the prohibited topic (the “don’t think block”). This block was used to assess the participants’ ability to suppress relevant attachment related and non-attachment

related thoughts. Fourth, the participants were asked to think about whatever it is that came to mind and indicate when they happened to think about the formally prohibited topic, by pressing the button (the “free thinking block”). This block assessed the participants’ level of suppression rebound, or the extent to which previously suppressed information emerges after active suppression of thoughts. During each of the 5 scenarios which each included the four different blocks, fMRI scans were conducted to address the neural correlates underlying emotion regulation and adult attachment orientation.

Results revealed brain activation patterns that were consistent with predictions. Correlational analysis revealed that attachment anxiety was associated with greater activation in various emotion-related brain regions. Specifically, those who scored higher on attachment anxiety showed higher activation of the regions of the brain associated with sadness, subjective distress, social rejection, and neuroticism, and lower activation of a region associated with emotion regulation. This is consonant with theoretical predictions in that self-reports of high attachment anxiety may be based on repeatedly experiencing high emotional arousal and a decreased ability to down-regulate such negative emotions. Attachment anxiety was also found to be associated with heightened activation in memory-related regions of the brain (i.e., the hippocampus) when thinking about negative attachment-related scenarios. Although not conclusive as the design precluded determining the type of memories activated, this result suggests that those with higher attachment anxiety may more readily engage in retrieving and recalling negative memories when attachment anxiety is activated.

In line with predictions, findings indicated that non-avoidant individuals exhibited a more complete or more efficient ability to suppress attachment related thoughts (as indicated by brain activation patterns) than avoidant or ambivalent persons. Specifically, non-avoidant participants were able to allocate more attentional resources to monitoring external stimuli (i.e., the task at hand) than to monitoring internal stimuli (i.e., negative thoughts and feelings). However, individuals who scored higher on attachment avoidance showed a brain activation pattern which lacked such a coordinated response, and indicated a less efficient or incomplete response to the suppression task. This inefficiency was particularly pronounced during the attachment-related suppression tasks, as compared to the non-attachment related suppression tasks. Therefore, suppression appeared to “work” but only relatively superficially.

Importantly, these findings converge with previous cross-sectional and prospective self-report and psychophysiological research on how anxiously and avoidantly attached individuals experience and react to imagined or real stressful life events. They also shed light on the cognitive process involved in addition to the emotional processes associated with attachment styles. However, the authors only included female participants. It would be important to test whether these conclusions hold for men as well as women. Furthermore, although it is interesting to determine underlying neural correlates of emotional experiences, it is also important to explore the real life consequences of attachment style in the context of an attachment rupturing event. The current study will look at one such particularly common and relevant attachment rupturing event, that of a romantic relationship dissolution.

The research reviewed thus far is in line with findings from studies which looked at the emotional, cognitive, and/or behavioral experience of insecurely and securely attached adults who have been through actual relationship dissolutions. Davis et al. (2003) found that those individuals with an anxious attachment style self-reported higher levels of distress reactions and greater preoccupation with thoughts of the ex-partner following a relationship break-up. Furthermore, individuals with an avoidant attachment style experienced less self-reported distress than their anxious counterparts, which is in line with the previous research that highlights the discrepancy between felt and recognized/admitted negative emotion. In another cross-sectional study, married and divorced couples were examined to test the association between adult attachment style and reactions to the crisis of divorce (Birnbaum, Orr, Mikulincer, & Florian, 1997). Following divorce, anxiously attached individuals had higher levels of distress, tended to doubt their ability to cope with the distress (e.g., they reported low self-efficacy for coping with divorce), and appraised divorce as a more serious threat than did securely attached individuals. Furthermore, anxiously attached individuals had higher levels of distress when married than either of the other attachment groups, showing a higher level of general distress regardless of the particular context. In contrast, avoidantly attached individuals showed a more situation-specific pattern of distress. Findings revealed that avoidantly attached individuals had comparable levels of distress to anxiously attached individuals when going through a divorce yet similar levels of distress to their secure counterparts when married. In line with the previous studies reviewed in this literature, this finding may indicate that avoidantly attached individuals do relatively well unless

they are confronted with a stressful situation which requires more psychological resources. Interestingly, although they experienced greater levels of distress following divorce and a tendency to appraise divorce as a higher threat than their secure counterparts, they had equivalent appraisals of coping ability. This is in line with previous research and theory which suggests that avoidantly attached individuals have low stress mastery and high self-reliance in times of threat.

Put together, these findings paint a picture of how individuals of different attachment styles experience and cope with emotions, both in everyday experiences and in a variety of stressful life situations. Anxiously attached individuals tend to use a hyperactivating strategy which is characterized by a propensity towards interpreting events as more threatening; this is associated with a pattern of heightened negative emotionality and general difficulties with emotion regulation. Avoidantly attached individuals tend to utilize a deactivating emotion regulation strategy which seems to be most prominent during attachment-related events in which perceived threat is high. In these situations, avoidantly attached individuals have learned to suppress attachment related thoughts, and to minimize negative emotions. In contrast, securely attached individuals have a positive internal working model of attachment, which provides them with a felt security and may lead them to interpret events as less threatening and distressing. These individuals are practiced in successfully recognizing, expressing, and regulating negative affect, which may lead to better mental health outcomes.

In sum, there is converging evidence that insecurely attached individuals have difficulty confronting, exploring, and processing stressful life situations. Following

this line of research, a parallel agenda has emerged that aims to explore potential interventions that might work to attenuate the link between insecure attachment and difficulties with stressful life situations. Through these findings, researchers hope to determine what facilitative conditions might help to decrease the use of defensive strategies and the negative mental health outcomes associated with insecure attachment. This review will next highlight the impact of one such promising intervention, security priming, on factors related to the emotional exploration process.

Security Priming: A Promising Attachment Intervention

Attachment researchers have begun to explore how triggering mental images of available and responsive attachment figures (secure base/safe haven representations) might help increase exploratory behaviors and decrease defensive responsiveness in times of threat (Bowlby, 1978). Priming studies have shown that temporarily priming an individual's secure base scripts can increase a person's emotional stability and adaptability, even under relatively stressful ego-threatening conditions (Mikulincer & Shaver, 2008). These studies, therefore, may provide an important window into the power of the secure base and safe haven functions.

Kumashiro and Sedikides (2005) investigated the effects of security priming on individuals' openness to potentially ego-threatening information. Participants first completed an intellectual aptitude test and were then given a security prime in which they were asked to visualize a person with whom they were in a relationship. Participants were randomly assigned to one of three groups in which participants were instructed to describe (a) a neutral relationship (neutral condition), (b) a cold and negative relationship (negative condition), or (c) a warm and positive relationship

(close positive condition). Participants were then instructed to imagine that this person was sitting next to them at that moment.

Next, all participants received the ego-threatening information that they performed poorly on the intellectual ability test. They were then asked if they would like to receive more information on their poor performance and underlying intellectual ability. This offer represented an occasion to increase self-knowledge and was conceptualized as exploratory and growth enhancing in nature. In rejecting this opportunity, participants would be choosing to defend themselves against further ego-threatening information but also denying themselves a chance to explore and potentially gain more information regarding their own abilities. Therefore, it was predicted that those participants in the security priming condition would be more likely to accept this offer to explore this potentially ego-threatening information. As predicted, participants in the close positive condition were more open to potentially threatening information than were those in the close negative or the neutral conditions. Findings showed that although the participants still perceived the prospect of viewing this information as unpleasant, they were able to tolerate this ego-threatening information instead of shielding themselves against it. In other words, those participants in the security prime condition were better able to endure the prospect of a potentially unpleasant yet valuable exploration process.

Miterany (2004) explored the impact of induced security on trauma-related thoughts. The frequency of these trauma-related thoughts is considered a marker of Post Traumatic Stress Disorder (PTSD; Emilien et al., 2000) and is often categorized as rumination. High ruminators, or those who exhibit a high frequency of repetitive

trauma-related thoughts, may have difficulties effectively exploring, processing, and integrating information regarding the trauma into their cognitive structure (Gortner, Rude, & Pennebaker, 2006). As high rumination is associated with an insecure attachment style, it was hypothesized that priming security would help to mitigate the accessibility of trauma related thoughts. Miterany tested this hypothesis using a sample of 140 Israeli undergraduates who were randomly assigned to either an experimental group, in which participants were primed with security, or a control group, in which no such prime was given. Participants were then asked to complete the Stroop color-naming task, a measure whose purpose is to determine the level of cognitive accessibility of a particular thought (Macleod, 1991).

In the Stroop color-naming task, participants were presented with both trauma related words and neutral words. Trauma related words were those thought to invoke stressful thoughts, in this context, words related to terrorism and Hamas. Neutral words were those words thought to evoke no such emotional reaction. The participants were then asked to name the color of the word and researchers recorded whether or not their response was correct and their reaction time (i.e., how long it took the participant to name the color of the word). In this task, reaction time or response latency is operationalized to be an indicator of cognitive accessibility such that the longer it takes for a participant to correctly name the color of the word, the greater the salience or accessibility of that particular word. Researchers predicted that participants in the security priming condition would have shorter response latencies to trauma-related words, indicating less accessibility to trauma-related thoughts. As predicted, participants in the security priming group fared better than

those in the control group and had significantly shorter response latencies in the trauma-related word condition.

Miterany (2004) also analyzed data from a subsample of participants who endorsed many PTSD symptoms in a self-report measure. These participants were thought to more likely resemble those individuals who meet diagnostic criteria for PTSD. Results revealed that those participants who endorsed many PTSD symptoms exhibited less accessibility to trauma-related thoughts in the experimental group than those in the control group. The security priming condition appeared to have attenuated accessibility, a diagnostic criterion of PTSD. This study highlighted the potential power of such an intervention to attenuate trauma symptoms which are related to psychological pain.

Cassidy, Shaver, Mikulincer, and Lavy (2009) sought to measure more directly the impact of induced security by testing the interactional effects of attachment style and security priming on responses to psychological pain. They tested the hypothesis that security priming would differentially predict participants' reactions to hurt feelings depending on attachment style. Specifically, it was hypothesized that security priming would augment avoidant individuals' receptiveness and openness to psychological pain. Therefore, it was predicted that avoidant individuals would use the defensive maneuver of distancing less and show an increased receptivity to hurt feelings after being primed with security. In contrast, it was predicted that anxious individuals would profit from the priming intervention in a different way such that anxiously attached individuals in the priming condition would exhibit a reduced tendency towards using a hyperactivating strategy. In other

words, these participants would report a more tempered appraisal of hurt feelings when given a security prime.

Participants (70 undergraduate students at a large American University) first completed the Experiences in Close Relationship Questionnaire. Second, they were instructed to write about a situation in which a close relationship partner had hurt their feelings. Third, participants were subliminally primed with a secure base representation, given under the guise of a “cognitive categorization” computer task. In this task, participants were asked to rate 20 pieces of furniture; however, before seeing each pair, they were subliminally exposed either to the words love, secure, and affection (i.e., the security prime) or lamp, staple, or building (i.e., the neutral prime). Lastly, participants were instructed to (a) recall the hurtful incident they had written about, and (b) answer a series of questions as if the event had just occurred (i.e., hypothetical reactions to the event). The goal of this last step was to access the participants’ current emotional and behavioral reactions to this event.

In keeping with attachment theory and research, results from hierarchical regressions revealed that in the control group (the neutral prime condition), attachment anxiety was positively associated with stronger negative emotions and stronger feelings of rejection. Avoidance was associated with lower projected appraisals of the hurtful event, less projected feelings of rejection and less crying, and stronger projected hostile behavioral reactions to the event. However, a very different pattern of results emerged for those participants who were randomly assigned to the security priming condition.

Findings showed that participants who had been primed with security had more constructive emotional and behavioral reactions to psychological pain following the security priming than those in the control condition. Following the security prime, the relationship between hyperactivating reactions (i.e., high levels of anxiety, feelings of rejection, negative emotions, frequency of crying, and frequency of non-constructive behavioral reactions) and anxiety was attenuated. Furthermore, the relationship between deactivating strategies and attachment avoidance was also attenuated. Therefore, avoidantly attached individuals in the security prime group were able to (a) appraise the event as more hurtful, (b) admit to more feelings of rejection, and (c) exhibit less hostile reactions in response to the hurtful event. Therefore, those participants categorized as insecurely attached had more constructive emotional and behavioral reactions to psychological pain in the security priming condition than those in the control condition. These results provide evidence that security priming can help to increase the effectiveness of reactions to psychological pain. Furthermore, these studies provide evidence that induced security may attenuate the need for a defensive strategy in potentially ego-threatening conditions and/or painful experiences, which in turn can reduce rumination and improve responses to psychological pain.

In addition to these individual empirical studies, there have been several reviews within the security priming literature. For example, Gillath, Selcuk, and Shaver (2008) points out that a variety of priming methods seem to be effective in creating short-term changes in people's sense of security. These methods can vary greatly (e.g., subliminal versus supraliminal primes) and yet all seem to be effective

at invoking the secure base/safe haven functions of secure attachment. In a related vein, Carnelley and Rowe (2010) conducted a qualitative analysis which sought to determine how security primes were experienced by the individual and if security primes could be distinguished from other related primes. The authors found that security priming was associated with thoughts related to felt security, positive care, a sense of merging with another, and positive emotion. In addition, the effects of induced security could be differentiated from the effects of positive affect and other relationship-related primes.

In sum, the accumulating body of research points to the effectiveness of a variety of security priming interventions on a diverse set of mental health outcomes (Mikulincer, Shaver, & Horesh, 2006). The current study is intended to build on the previous literature by testing an induced security prime's effect in the more applied context of therapeutic endeavors. Furthermore, this study will examine the effects of security priming on the exploration of a common and potentially ego-threatening attachment related situation, a romantic break-up. Following a romantic break-up, individuals often experience a variety of emotions and may be confronted with potentially ego-threatening information. This may prove particularly challenging for those individuals with an insecure attachment style (Mikulincer & Shaver, 2008; Shaver, Mikulincer, Lavy, & Cassidy, 2009).

In addition to these challenges, a break-up represents an attachment-related "rupture," creating a situation in which attachment thoughts are likely particularly accessible and salient. Attachment theorists have hypothesized that situations like a romantic dissolution will activate attachment needs and the emotions related to these

working models (Simpson & Simpson, 2004). It is likely, then, that thoughts related to an attachment related event such as a break-up will increase the activation level of the individual's working model of attachment. Exploring such an event, therefore, requires a willingness to delve into some possibly painful, ego-threatening, attachment related material. As attachment theory and research has indicated that it may be more difficult for those with an insecure attachment style to cope with such an event, it is predicted that these individuals will profit from a security prime. Specifically, induced security may prove facilitative in helping people to conjure up those mental representations of secure others that serve the dual-function of providing both a secure base for exploration and a safe haven for the pain and threat that this exploration process may incur. It may be that the felt security associated with a security prime facilitates the exploration of such painful attachment-related topics as romantic dissolution. For these reasons, the proposed study will examine how a secure prime might benefit individuals who have recently experienced a break-up within the context of a therapeutic intervention.

Next, I will review the literature on expressive writing, a therapeutic intervention whose aim is to help participants explore the thoughts and feelings associated with stressful life events. I will first introduce the expressive writing paradigm and then review the previous literature on moderators of expressive writing. Finally, I will present various hypotheses regarding induced security, attachment style, and relevant dependent variables.

Expressive Writing Paradigm

In therapy individuals are encouraged to explore and delve deeper into their situation in order to make sense of and learn from those experiences which can create distress or confusion. Like traditional talk therapy, the expressive writing paradigm serves as a non-threatening venue in which to explore difficult topics (Pennebaker, 1997). In the traditional expressive writing paradigm, participants are asked to write about their deepest thoughts and feelings regarding either a specific stressful experience or, more generally, the most traumatic experience they have encountered. Over 20 years of research support the conclusion that the expressive writing paradigm may be a beneficial therapeutic intervention, with significant effects on a variety of physical and mental health outcomes (Pennebaker, 2004).

In as little as three twenty minute expressive writing sessions, participants experience improvements in cognitive, affective, and behavioral functioning (Frattaroli, 2006). This conclusion has been supported by results derived from several meta-analyses that address if the intervention works, how well it works, and when and with whom it works. Smyth (1998) was the first to use meta-analysis to synthesize the data of 13 experimental writing studies that were conducted with generally healthy samples. Using Cohen's (1988) rules of thumb for r effect sizes (small effect = .10; medium effect = .30; large effect = .50), the author found an average r of .23, indicating a small overall effect of expressive writing on a variety of outcomes including mental health, physical health, and general functioning. Frisna, Borod, and Lepore (2004) conducted a meta-analysis on the effects of the expressive writing paradigm on medically or psychiatrically defined samples. Nine studies were included in this meta-analysis (one of which was included in the Smyth meta-

analyses), which revealed a smaller, though significant overall average effect size across outcomes of .10.

Although these two meta-analyses provide a useful gauge of the overall effects of expressive writing, the generalizeability of their results and conclusions are limited. In using a fixed-effects analysis which treats the participant as the unit of analysis, the results and conclusions can only be applied to the participants in the studies that were included in the meta-analysis (Raudenbush, 1994). In contrast, the random-effects approach is not as restrictive as it uses the study as the unit of analysis. In doing so, researchers can generalize findings beyond the studies included in the analysis. Furthermore, these meta-analyses included only a small fraction of the studies in the literature. Given the recent growth of interest within this area, there seemed a need to reassess the literature and conduct a more comprehensive and current meta-analysis.

In response to this need, the third meta-analysis reviewed here was a large-scale random-effects meta-analysis (Frattaroli, 2006). The two concurrent goals of this meta-analysis were to (a) determine the overall effect size of expressive writing on a number of dependent variables, and (b) investigate what facilitative features allow for these beneficial effects to emerge. A total of 146 treatment-control studies were meta-analyzed and results revealed that the overall average effect size across outcomes was relatively small yet significant at .08. Frattaroli also explored the potential moderating effects of such factors as setting variables, participant variables, treatment variables, and methodological factors across a wide range of dependent variables. After determining these facilitative features, the author sub-sampled eight

studies that administered the expressive writing intervention under the most facilitative conditions (e.g., those studies that used at least 3 disclosure sessions, required participants to engage in at least 15 minutes of writing, had participants write about more recent events, and gave participants specific examples of what to disclose).

Frattaroli (2006) found a larger but still modest average effect size across outcomes ($r = .20$) when optimal conditions were utilized. This finding also highlights the importance of determining the boundary conditions within which this paradigm may be most effective. Importantly, Frattaroli's results revealed that moderator variables had a substantial impact on the effect size of resulting outcomes. This is in line with Pennebaker's (2004) suggestion that future research should focus on moderators which may elucidate the optimal conditions for administering the expressive writing task.

Lastly, Harris (2006) conducted a meta-analysis to address the question of whether expressive writing, as compared to a no-writing or neutral writing condition, reduced health care utilization (HCU). This meta-analysis included only those studies which contained a measure of HCU, such as number of clinic or doctor visits. A total of 30 studies were meta-analyzed and the effects were divided into three separate groups depending on the type of sample tested within the study. Results revealed that within the group of studies that used healthy samples, there was a significant average effect size of .16. Within the groups of studies that contained samples of participants with preexisting medical or psychological conditions, non-significant overall average effect sizes, respectively, of .21 and .06 were found. Although the authors admit this

non-significance may be to do a lack of power, it may also indicate that some groups may find more benefit from the expressive writing task than do others.

The finding that, overall, the average effect size was not significant for those participants who had pre-existing issues with psychological distress or who met diagnostic criteria for mental illness is particularly relevant to the current study. There are two possible avenues of research that may help explain this curious finding. First, it may be that there are important moderators within these populations. In other words, it may be that some individuals experiencing psychological distress gain benefit from the expressive writing paradigm but some do not. This is consistent with Pennebaker's (2004) argument that the next best direction for expressive writing research is to explore the practical question of when and for whom expressive writing does and does not work. In line with this reasoning, the first aim of the current study is to test if one such theoretically relevant moderator, that of attachment security, may impact the degree to which participants benefit from the writing intervention. If it follows that attachment impacts the relationship between expressive writing and psychological/physical health, then exploring an attachment based intervention may represent the next logical step. Therefore, the second aim of the current research is to test an additional attachment based intervention that may strengthen the effects gained from expressive writing. In regards to the first aim, I will now review the existing literature on moderators of the expressive writing paradigm.

Moderators of the Expressive Writing Paradigm

To date, there has been relatively little research on participant variables within the expressive writing research literature. Some examples of participant

variables that have been investigated include such factors as situational components (e.g., type of trauma experience), stable trait components (e.g., the Big Five personality factors), or different cognitive, affective, and behavioral styles (Frattaroli, 2006). This review will summarize and critique the relevant research on participant variables in expressive writing.

One study examined the Big Five dispositional traits and the quality of social relationships as two possible moderators of the self-reported health outcomes of expressive writing (Sheese, Brown, & Graziano, 2004). Five hundred and forty-six undergraduates were randomly placed into either a control or experimental group. Participants in the neutral-topic control condition wrote about the occurrences of the day, while those in the experimental condition wrote about the most traumatic experiences of their lives. Regression analyses revealed that the dispositional trait of extraversion as well as degree of social support moderated the effects of expressive writing on self-reported general health functioning. Follow-up analysis revealed that participants with greater extraversion and higher degrees of social support tended to benefit more from treatment than did those reporting lower levels of extraversion and social support. Therefore, it may be that those individuals who prefer to express themselves socially, and have the resources to do so, benefit more from expressive writing than those who do not.

Cameron and Nicholls (1998) explored the extent to which the level of dispositional optimism affected the benefits gained from expressive writing task. In this study, 122 incoming freshman undergraduates were randomly assigned to one of three groups, including the traditional disclosure task, a neutral-topic control task, and

an emotional regulation writing task. The emotional regulation writing task resembled the traditional disclosure task in that it instructed participants to explore thoughts and feelings related to their adjustment to college; however, in addition, this task asked participants to attend to, enact, and appraise coping strategies in regard to adjustment difficulties. The researchers hypothesized that pessimists would profit more from the self-regulation condition than the traditional disclosure condition. The researchers reasoned that pessimists may lack self-regulation ability and therefore might benefit more from a task that enhances these skills. Findings supported this compensatory model such that pessimists in the self-regulation condition showed a pre-post decrease in health clinic visits ($r = .13$); however, pessimists in the traditional disclosure condition showed no such decrease in health clinic visits ($r = .02$).

Although researchers have made progress in identifying some moderator variables, relatively little attention has been given to potential client variables that may affect the benefits gained from the expressive writing task. First, I will test the effects of a client variable which seems particularly relevant to the exploration process, that of attachment style. Second, I will test if and how induced security may help those who are insecurely attached benefit more from the expressive writing task.

Specifically, I predict that those individuals with an insecure attachment style (both types) will profit less from the expressive writing task than those with a secure attachment style. In line with attachment theory and previous research, I hypothesize that writing samples will reflect the emotion regulation strategies associated with the participants' attachment style. I predict there will be a positive relationship between

the number of negative emotion words and the level of attachment anxiety. In contrast, there will be a negative relationship of both the number of negative emotion words and the length of the writing sample to the level of attachment avoidance. In addition, I hypothesize that participants with an insecure attachment style will benefit more from the expressive writing task if they receive a security prime prior to engaging in the task than if they do not. More specific hypotheses are listed below.

Research Questions and Hypotheses

Research Question 1

Does the content of the writing samples provide evidence that the manipulation (i.e., the expressive writing task) worked?

Hypothesis 1

There will be significant differences in the percentage of negative emotion words between the two writing conditions and the control condition.

Hypothesis 1a. The expressive writing conditions will produce a significantly greater percentage of negative emotion words than the control condition.

Hypothesis 1b. The expressive writing conditions will produce a significantly higher percentage of words that describe sad emotions than the control condition.

Hypothesis 1c. The expressive writing conditions will produce a significantly higher percentage of words that describe anxious emotions than the control condition.

Rationale for Hypothesis 1

The manipulation check was designed to examine the extent to which the writing the intervention affected immediate, theoretically expected process variables that are assumed to underlie changes in the primary outcome variables.

Research Question 2

Do the writing samples reflect the emotion regulation strategies associated with higher levels of attachment-anxiety and attachment avoidance?

Hypothesis 2

The writing samples will reflect the hyperactivating and deactivating emotion regulation styles associated with higher levels of attachment anxiety and attachment avoidance.

Hypothesis 2a. For those participants who engage in the expressive writing task only, there will be a positive relationship between levels of attachment anxiety and the percentage of negative emotion words.

Hypothesis 2b. For those participants who engage in the expressive writing task only, there will be a negative relationship between levels of attachment avoidance and the percentage of negative emotion words.

Hypothesis 2c. For those participants who engage in the expressive writing task only, there will be a negative relationship between levels of attachment avoidance and the length of the writing sample.

Rationale for Hypothesis 2

Previous research has shown that expressive writing samples can reflect an individual's personality and relevant psychological processes. Specifically, findings reveal that writing samples can reflect individuals' honesty, depressive tendencies, age, sex, and cognitive processing abilities (Pennebaker & Lee, 2002). In addition, evidence from research suggests that writing samples can reflect personality (Chung & Pennebaker, 2008) and individuals' predominant coping strategies (Lee & Cohn,

2010). Given that attachment anxiety and attachment avoidance reflect a stable trait-like way of approaching relationship and attachment-rupturing events and the writing instructions ask participants to discuss such topics, it follows that the words contained within the writing samples may reflect participants' attachment style.

Research Question 3

Do participants in the expressive writing only group have greater psychological health at follow-up than those participants in the neutral writing condition?

Hypothesis 3

Those participants randomly assigned to the expressive writing only condition will have significantly greater levels of self-reported psychological and physical health (as indicated by a decrease in depression, distress, and physical symptoms and an increase in subjective well-being) at follow-up than those participants assigned to the neutral writing condition.

Hypothesis 3a. Those participants in the expressive writing only group will have higher levels of subjective well-being at follow-up than those participants in the neutral writing condition.

Hypothesis 3b. Those participants in the expressive writing only condition will have lower levels of depressive symptomology at follow-up than those participants in the neutral writing condition.

Hypothesis 3c. Those participants in the expressive writing only condition will have lower levels of distress over the break-up at follow-up than those participants in the neutral writing condition.

Hypothesis 3d. Those participants in the expressive writing only condition will have lower levels of self-reported health symptoms at follow-up than those participants in the neutral writing condition.

Hypothesis 3e. Immediately following the writing intervention, those participants in the expressive writing only condition will have higher levels of self-reported health symptoms than those participants in the neutral writing condition.

Rationale for Hypothesis 3

Years of programmatic research on expressive writing suggests that the writing task is helpful in reducing psychological symptoms and health functioning issues while increasing well-being (Frattaroli, 2006). In addition, research has noted the immediate costs of the writing task which include reductions in health functioning and increases in distress when measured directly following the writing task (Baik & Wilhelm, 2005). Some evidence also suggests that in as little as one writing session, participants can experience beneficial effects of the expressive writing task (Henry, Schlegel, Talley, Molix, & Bettencourt, 2010). Taken together, these hypotheses are based on previous empirical finding and seek to extend knowledge regarding the impact of a single writing session on important psychological and health variables.

Research Question 4

Does the level of attachment anxiety/avoidance moderate the level of psychological health for those participants who are randomly assigned to the expressive writing condition versus the control condition?

Hypothesis 4

The level of attachment anxiety/avoidance will moderate the level of psychological health for those participants who are randomly assigned to the expressive writing condition versus the control condition. Specifically, participants higher in attachment anxiety/avoidance will have significantly lower levels of psychological and physical health in the expressive writing only task as compared to the neutral writing task at follow-up while participants lower in attachment anxiety/avoidance will have significantly higher levels of psychological and physical health in the expressive writing only task as compared to the neutral writing task at follow-up.

Hypothesis 4a. Levels of attachment anxiety/avoidance will interact with condition (i.e., expressive writing versus control) to impact levels of subjective well-being at follow-up. Specifically, participants higher in attachment anxiety/avoidance will have significantly lower levels of subjective well-being in the expressive writing only condition as compared to the neutral writing condition at follow-up while participants lower in attachment anxiety/avoidance will have significantly higher levels of subjective well-being in the expressive writing only task as compared to the neutral writing task at follow-up.

Hypothesis 4b. Levels of attachment anxiety/avoidance will interact with condition (i.e., expressive writing versus control) to impact levels of depressive symptoms at follow-up. Specifically, participants higher in attachment anxiety/avoidance will have significantly higher levels of depressive symptomology in the expressive writing only condition as compared to the neutral writing condition

at follow-up while participants lower in attachment anxiety/avoidance will have significantly lower levels of depression in the expressive writing only task as compared to the neutral writing task at follow-up. .

Hypothesis 4c. Levels of attachment anxiety/avoidance will interact with condition (i.e., expressive writing versus control) to impact levels of distress at follow-up. Specifically, participants higher in attachment anxiety/avoidance will have significantly higher levels of distress over the break-up in the expressive writing only condition as compared to the neutral writing condition at follow-up while participants lower in attachment anxiety/avoidance will have significantly lower levels of distress in the expressive writing only task as compared to the neutral writing task at follow-up.

Hypothesis 4d. Levels of attachment anxiety/avoidance will interact with condition (i.e., expressive writing versus control) to impact levels of self-reported health symptoms at follow-up. Specifically, participants higher in attachment anxiety/avoidance will have significantly higher levels of self-reported health symptoms in the expressive writing only condition as compared to the neutral writing condition at follow-up while participants lower in attachment anxiety/avoidance will have significantly lower levels of self-reported health symptoms in the expressive writing only task as compared to the neutral writing task at follow-up.

Hypothesis 4e. Levels of attachment anxiety/avoidance will interact with condition (i.e., expressive writing versus control) to impact levels of self-reported health symptoms when measured directly after the writing intervention. Specifically, participants higher in attachment anxiety/avoidance will have significantly higher

levels of self-reported health symptoms immediately following the writing intervention in the expressive writing only condition as compared to the neutral writing condition. Participants lower in attachment anxiety/avoidance will also exhibit higher levels of self-reported symptoms immediately following the intervention; however, there will be less of a difference between conditions for these participants than for those participants higher in attachment anxiety/avoidance.

Rationale for Hypothesis 4

Level of attachment anxiety/avoidance has been found to moderate a number of important relationships found within psychological research (Cassidy & Shaver, 1999). In addition, attachment theory would suggest that the emotion regulation strategies utilized by individuals with insecure attachment styles (i.e., higher levels of attachment-related anxiety and attachment-related avoidance) might impact how individuals process a potentially attachment-rupturing event such as a relationship break-up (Bakermans-Kranenburg, & Van Ijzendoorn, 1997). It is, therefore, hypothesized that attachment anxiety/avoidance will moderate the degree to which individuals can benefit from a processing activity such as the expressive writing task.

Research Question 5

Do participants who receive a security prime prior to the expressive writing task have better psychological health at follow-up than those in the expressive writing only condition?

Hypothesis 5

Those participants randomly assigned to the writing + prime group will have significantly greater levels of self-reported psychological and physical health (as

indicated by a decrease in depression, distress, and physical symptoms and an increase in subjective well-being) than those assigned to the expressive writing only group at follow-up.

Hypothesis 5a. Those participants randomly assigned to the writing + prime group will have significantly higher levels of subjective well-being than those assigned to the expressive writing only group at follow-up.

Hypothesis 5b. Those participants randomly assigned to the writing + prime group will have significantly lower levels of depressive symptomology than those assigned to the expressive writing only group at follow-up.

Hypothesis 5c. Those participants randomly assigned to the writing + prime group will have significantly lower levels of distress over the break-up than those assigned to the expressive writing only group at follow-up.

Hypothesis 5d. Those participants randomly assigned to the writing + prime group will have significantly lower levels of self-reported health symptoms than those assigned to the expressive writing only group at follow-up.

Hypothesis 5e. Immediately following the writing intervention, those participants randomly assigned to the writing + prime group will have significantly lower levels of self-reported health symptoms than those assigned to the expressive writing only group.

Rationale for Hypothesis 5

Evidence from previous research suggests that security primes can create short-term changes in people's sense of security and have been shown to influence a wide variety of variables including mood, anxiety, aggression, compassion, and

altruism (Gillath, Selcuk, & Shaver, 2008). Therefore, this cluster of hypotheses extend previous research findings by testing whether or not a security prime can augment the benefits gleaned from the expressive writing task.

Research Question 6

Does the level of attachment anxiety/avoidance moderate the level of psychological health at follow-up for those participants randomly assigned to receive a security prime prior to the expressive writing task as compared to those who receive no such prime. Hypothesis 6: The level of attachment anxiety/avoidance will moderate the level of psychological health for those participants who are randomly assigned to receive a prime prior to the expressive writing task. Specifically, participants higher in attachment anxiety/avoidance will have significantly higher levels of psychological and physical health at follow-up when randomly assigned to receive a prime prior to the expressive writing task. Those participants lower in attachment anxiety/avoidance will also benefit from the prime; however, they will benefit less from the prime than their counterparts.

Hypothesis 6a. Levels of attachment anxiety/avoidance will interact with condition (i.e., writing + prime versus expressive writing only) to impact levels of subjective well-being at follow-up. Specifically, participants higher in attachment anxiety/avoidance will have significantly higher levels of subjective well-being when randomly assigned to the writing + prime condition than those who receive no such prime prior to the expressive writing task. Participants lower in attachment anxiety will also do better, in terms of subjective well-being, when randomly assigned to the writing + prime condition than those who receive no such prime; however, they will

benefit less from the prime than those participants higher in attachment anxiety/avoidance.

Hypothesis 6b: Levels of attachment anxiety/avoidance will interact with condition (i.e., writing + prime versus expressive writing only) to impact levels of depressive symptoms at follow-up. Specifically, participants higher in attachment anxiety/avoidance will have significantly lower levels of depression when randomly assigned to the writing + prime condition than those who receive no such prime prior to the expressive writing task. Participants lower in attachment anxiety will also exhibit lower levels of depression when randomly assigned to the writing + prime condition than those who receive no such prime; however, they will benefit less from the prime than those participants higher in attachment anxiety/avoidance.

Hypothesis 6c: Levels of attachment anxiety/avoidance will interact with condition (i.e., writing + prime versus expressive writing only) to impact levels of distress at follow-up. Specifically, participants higher in attachment anxiety/avoidance will have significantly lower levels of distress when randomly assigned to the writing + prime condition than those who receive no such prime prior to the expressive writing task. Participants lower in attachment anxiety will also exhibit higher lower levels of distress when randomly assigned to the writing + prime condition than those who receive no such prime; however, they will benefit less from the prime than those participants higher in attachment anxiety/avoidance.

Hypothesis 6d. Levels of attachment anxiety/avoidance will interact with condition (i.e., writing + prime versus expressive writing only) to impact levels of self-reported health symptoms at follow-up. Specifically, participants higher in

attachment anxiety/avoidance will have lower levels of self-reported health symptoms when randomly assigned to the writing + prime condition than those who receive no such prime prior to the expressive writing task. Participants lower in attachment anxiety will also exhibit higher lower levels of self-reported health symptoms when randomly assigned to the writing + prime condition than those who receive no such prime; however, they will benefit less from the prime than those participants higher in attachment anxiety/avoidance.

Hypothesis 6e. Levels of attachment anxiety/avoidance will interact with condition (i.e., writing + prime versus expressive writing only) to impact levels of self-reported symptoms measured directly after the completion of the writing task. Specifically, participants higher in attachment anxiety/avoidance will have significantly lower levels of self-reported health symptoms immediately following the writing intervention when randomly assigned to the writing + prime condition than those who receive no such prime prior to the expressive writing task. Participants lower in attachment anxiety will also exhibit lower levels of self-reported health symptoms immediately following the writing intervention when randomly assigned to the writing + prime condition than those who receive no such prime; however, they will benefit less from the prime than those participants higher in attachment anxiety/avoidance.

Rationale for Hypothesis 6

Empirical findings are somewhat mixed in regards to whether or not the effectiveness of the security prime is moderated by attachment anxiety/avoidance. Some research findings indicate that the security prime is equally effective at

impacting important variables regardless of the level of attachment anxiety/avoidance (Mikulincer & Shaver, 2007). Other results have indicated that individuals with higher levels of attachment anxiety/avoidance benefit more from security primes than do individuals with secure attachment styles (Arndt, Schimel, Greenberg, & Pyszczynski, 2002). Although the research results are generally inconclusive, the current researcher reasoned that individuals with higher levels of attachment anxiety/avoidance were more apt to benefit from the additional sense of felt security afforded by the security prime when exploring a potentially attachment-rupturing event.

Chapter 3: Methods

Sample

The sample for this study initially consisted of 183 students at a large Mid-Atlantic university who had recently experienced a romantic break-up. However, the sample size used to test specific hypotheses ranged from 147 to 152, given attrition and the presence of univariate outliers found within the data set. Specifically, 16 participants or 8.5% of the initial sample were excluded from analysis due to attrition over the course of the study. Eleven participants completed the pre-test (i.e., time 1), which consisted of demographic data and a measure of attachment style, but did not complete the writing session (i.e., time 2) or post-test follow-up (i.e., time 3), resulting in a pre-test to writing session attrition rate of approximately 6%. Of the 177 participants who complete the writing session at time 2, 5 participants failed to complete the follow-up measure, resulting in a writing session to follow-up attrition rate of 3%.

In addition to the data excluded due to attrition, 16 participants were identified as outliers and excluded from the analyses (see Results section for further detail). In addition, 9 students indicated that their break-up had occurred more than 6 months prior to their participation in the study. Therefore, the tests related to Hypotheses 2 and to those hypotheses related to pre-post writing session measures of physical health (i.e., all of those tests which utilized the PSS scale) involved a sample of 152 participants who had completed at least the writing session (N= 49 for the control group, N = 51 for the writing group only, and N = 53 for the writing + prime group). For the tests related to Hypotheses 3-6, a total of 147 participants were used in the

analysis to represent those participants who completed all time points including the post-test follow-up session (N= 47 for the control group, N = 49 for the writing group only, and N = 51 for the writing + prime group).

The mean age of the participants was 19.4 years (SD = 2.38). Of the entire sample (N=152), 94 of the participants identified as white (60%), 21 identified as African American (13%), 28 identified as Asian (17%), 13 identified as Latino/a (8%), and five described themselves as “other” (2%). Thirty-seven participants (24%) were men and 114 (75%) were women. In regard to the relationship variables, the average length of the previous romantic relationship was 16 months (range = 1 to 66 months) and the average indicated level of commitment in the previous relationship was 7.3 on a 0-9 likert type scale (0 = no commitment, 9 = high commitment; SD = 1.53). Sixty-five participants (43%) indicated that their ex relationship partner initiated the break-up, 47 participants (31%) indicated that they initiated the break-up, and 38 participants (25%) indicated that both partners initiated the break-up. Of the entire sample, 121 participants (80%) indicated they were currently single, while 30 (20%) indicated they were currently in a relationship. A power analysis was performed using G*Power, an online calculation tool used to determine sample sizes in social sciences research (Fault, Erdfelder, Buchner, & Lang, 2009). To achieve a power of .80 with a significance level of .01 to find medium effect sizes using multiple regression analysis (MRA) with nine independent variables (including interaction terms), G*Power suggested 154 participants. A separate a priori power analysis was conducted to determine the target sample size for the correlational analyses used to test Hypothesis 2. To achieve a power of .80 with a

significance level of .01 to find medium effect sizes using a one-tailed test for bivariate correlations, G*Power recommends 105 participants. It should be noted that only the expressive writing condition used to test Hypothesis 2. Since the n of 51 in this condition was less than the recommended target, the test for Hypothesis 1 should be considered as underpowered.

Measures

The following self-report scales were used in this study: (a) the Experience in Close Relationship-Revised Scale, (b) the Impact of Event Scales, (c) the Center for Epidemiological Studies Depression Scale, (d) the Satisfaction with Life Scale, and (e) the Symptom Check List. These scales represent dependent variables that have been found to reflect the impact of therapeutic writing in prior research (Frattaroli, 2006). In addition to the measures detailed below, a brief demographic questionnaire was included to obtain information regarding the nature of the sample including age, race, ethnicity, and gender (see Appendix A). Information regarding the dissolved relationship was also included so as to better describe the sample. This information included length of the relationship, who initiated the break-up, level of perceived commitment, and time since break-up. It was presented at the end of the first writing session (see Appendix B).

The Experience in Close Relationship-Revised Scale (Fraley, Waller, & Brennan, 2000). The ECR-R (see Appendix C) is a 36-item self-report instrument used to assess attachment. The ECR-R is a revised version of Brennan, Clark, and Shaver's (1998) Experiences in Close Relationships (ECR) questionnaire. The ECR-R assesses the dimensions of attachment-related avoidance (e.g., "I prefer not to show

my partner how I feel deep down”) and anxiety (e.g., “I’m afraid that if a romantic partner gets to know me, he or she won’t like who I really am”). Participants are asked to rate the extent to which they agree/disagree with each statement according to a 7-point likert scale (1 = strongly disagree; 7 = strongly agree). All items are either averaged or summed within each of the subscales to create separate scores for anxiety and avoidance. Each subscale contains 18 items and the averaged subscales can potentially range from 1-7.

This scale has yielded good psychometric estimates. The estimates of internal consistency reliability were found to be between .91 and .94 for the two ECR-R scales (Fraley et al., 2000) which have been replicated across more recent studies (Sibley & Liu, 2006). Sibley and Lieu (2006) found good test-retest reliability over a 6-week period. This measure also showed sufficient criterion-related validity. For example, validity estimates supported the predicted correlation between attachment anxiety and loneliness ($r = .53$), and attachment anxiety and worry ($r = .39$; Fairchild & Finney, 2006). Validity estimates supported the predicted correlation between attachment avoidance and affectionate proximity (i.e., the degree of comfort with physical proximity), and attachment avoidance and touch avoidance ($r = -.51$; $r = .51$, respectively; Fairchild & Finney, 2006). In addition to its statistical properties, this self-report measure appears to capture Bowlby’s (1969/1982) conceptualization of adult attachment. The internal consistency reliability estimate for attachment-related avoidance and attachment-related anxiety subscales in the current study were .88 and .92, respectively.

Impact of Events Scales (IES; Horowitz, Wilner, & Alverez, 1979). The IES (see Appendix D) is a 15-item measure of distress symptoms related to trauma and/or stressful life events. The IES is comprised of two subscales that measure the frequency of intrusive and avoidant thoughts relating to a stressful event and have 8 and 7 items, respectively. In this measure, respondents are presented with a series of distressing thoughts and asked to indicate how frequently each thought has occurred within the last seven days. Each of the items of this scale is rated on the following 4-point scale: not at all = 0, rarely = 1, sometimes = 3, and often = 5. Scores range from 0 to 75, with higher scores indicating more intrusive thoughts and attempts at avoidance.

The IES demonstrates good internal and test-retest reliability and validity estimates. For example, one study found high internal consistency estimates for the intrusive subscale ($\alpha = .86$) and the avoidant subscale ($\alpha = .90$; Corcoran & Fisher, 1994). Test-retest reliability estimates were examined over the period of one week and were found to be acceptable ($\alpha = .87$ for the total score, $.89$ for the intrusion subscale, and $.79$ for the avoidance subscale; Horowitz et. al, 1979). The IES also demonstrates satisfactory criterion-related validity for both the intrusive and avoidant subscales (Hodgkinson & Joseph, 1995; Spurrell & McFarlane, 1995). For example, the intrusive and avoidant sub-scales, respectively, have been found to correlate with depression ($r = .44$, $r = .52$; Spurrell & McFarlane, 1995), anxiety ($r = .53$, $r = .37$; Spurrell & McFarlane, 1995) and global symptom level of distress as measured by the General Health questionnaire ($r = .60$, $r = .44$; Hodgkinson & Joseph, 1995).

The IES is constructed so that it can refer to any type of stressful life experience. This study used Lepore and Greenberg's (2000) adaptation of this scale in order to assess intrusive and avoidant thoughts related specifically to a relationship break-up. In this scale, the term "it" (referring to the event) was replaced with "the break-up"; however, the rest of the scale remained unchanged. Sample items include "My feelings about the break-up were kind of numb" and "I tried not to think about the break-up." The internal consistency reliability estimates for the intrusion subscale of the IES were .87 for the pre-test and .89 for the one-week follow-up. The internal consistency reliability estimates for avoidance subscale for the IES were .64 for the pre-test and .71 for the one-week follow-up. The IES scale (i.e., both subscales taken together for a composite distress score) had an internal consistency reliability estimate of .86 and .87 for pre-test and one-week follow-up, respectively.

The Center for Epidemiological Studies – Depression Scale (CES-D: Radloff, 1977). The CES-D (see Appendix E) is a commonly used measure used of depression. This 20 item self-report instrument created by the Center for Epidemiological Studies (Radloff, 1977) assesses the frequency of experienced depressive symptoms over the past week on the following four point scale: 0 indicates rarely or none of the time (less than one day), 1 is some of the time (1-2 days), 3 is occasionally (3-4 days), and 4 indicates most or all of the time (5-7 days). Sample items include "I felt fearful" and "I was bothered by things that don't usually bother me." Total scores range from 0 – 80, with 15-21 indicating mild to moderate levels of depression and a score of over 21 indicating more severe depression.

The CES-D yields a sufficient test-retest reliability of .59 over an 8 week period and an acceptable internal consistency alpha of .85 in a community based sample (Radloff, 1977). In addition, The CES-D demonstrates sufficient convergent validity with the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), another commonly used instrument to assess depressive symptoms ($r = .58$; Wilcox, Field, & Prodromidis, 1998). For the current study, the reliability coefficient of the CES-D scale was .91 for both the pretest and posttest assessments.

Satisfaction with Life Scales (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The 5-item SWLS (see Appendix F) measures respondents' level of satisfaction with their life as a whole. The items (e.g., “In most ways my life is close to my ideal”) are rated on 7-point Likert-type scales ranging from 1 (strongly disagree) to 7 (strongly agree). Total scores range from 7-35, with higher scores indicating a higher degree of satisfaction with life.

The SWLS yields good reliability estimates. For example, Diener et al. (1985) tested this measure in a community based sample of older individuals and found both high internal consistency ($\alpha = .87$) and high test-retest reliability over two-week period and one-month periods (for both, $r = .84$). This scale also demonstrates satisfactory convergent validity with both peer- and self-report instruments of life satisfaction. For example, the SWLS correlated sufficiently with the Life Satisfaction Index-A (LSI-A; Neugarten, Havighurst, & Tobin, 1961) in a sample of older individuals ($r = .82$; Diener et. al, 1985). In this same study, peer reports were also obtained by having a close other respond to the LSI-A for the target participant. The relationship between these peer ratings and the target participants'

SWLS was then assessed. SWLS showed substantial convergence with the peer reports of life satisfaction ($r = .51$). The SWLS is a frequently used scale of subjective well-being in the expressive writing literature (Fratraroli, 2006). For the current study, the reliability coefficient of the SWLS scale was .85 and .89 for the pretest and posttest assessment, respectively.

Pennebaker Physical Symptom Scale (PSS; Pennebaker, 1982). A modified version of the PSS (see Appendix G) was used in this study. The PSS measures a variety of physical symptoms and emotions thought to capture the immediate experience of the participant. Pennebaker (1982) provided a list of possible physical symptoms and emotional responses to assess for the participants' emotional and physical experience in the moment. He recommended that researchers modify the symptoms/emotions listed and degree of granularity in the scale response set in order to best address the research questions posed within a particular study. The current researcher maintained a majority of the suggested symptoms but added headache and dizziness as two possible physical symptoms. This scale was chosen for its flexibility, face validity, and ability to capture changing emotional/physical responses.

The scoring strategy used in the current study is similar to the strategies utilized in prior research aimed at generalizing to undergraduate populations (Barclay & Skarlicki, 2009; Páez, Velasco & González, 1999). In the current study, the PSS included a list of 8 physical symptoms (i.e., upset stomach, headache, racing heart) and 8 mainly negative emotions (i.e., sad, nervous, fatigued). Participants were asked to indicate the degree to which they were currently experiencing these

emotions/physical symptoms on a scale which ranged from 1 (not at all) to 5 (a great deal). Scores for each subscale (i.e., physical symptom and emotions) were summed and ranged from 8 to 40 with greater values signifying higher levels of physical symptomology and negative emotions. For the negative emotion subscale, the positive emotion items were reversed scored.

These scales have been found to be sufficiently reliable, with Chronbach alphas ranging from .74 to .89. Pennebaker (1982) reported a test-retest reliability of .21 over a one-month interval. Although this reliability estimate is low, the scale's apparent sensitivity to situational influence is a strength within the context of the current study as it was the intention of the researcher to capture the participants' immediate physiological/emotional experiences. For the current study, the reliability coefficient of the PSS physical symptom subscale were .80, .79, and .73 for the pretest, post writing, and one-week follow-up assessment, respectively. The reliability coefficient's for the PSS emotion subscale were .75, .83, and .81 for the pretest, post writing, and one week follow-up assessment, respectively.

Procedure

Participant recruitment. Participants were recruited from the undergraduate psychology pool at a major public university. To recruit participants an advertisement was posted to the university's undergraduate psychology website which is used specifically for the purposes of study recruitment. The advertisement (see Appendix H) recruited psychology students to participate in a study related to the break-up experience. Specifically, this study recruited those students who (a) had experienced a relationship break-up in the last six months and (b) were continuing to

feel some ongoing distress over this break-up. In exchange for their participation in the study, participants were given extra credit. In order to ensure that the participants recruited were, in fact, in some distress over the break-up, post-hoc analyses were conducted comparing baseline scores for the sample on the Impact of Events Scale to normative data (see the Results section for details). These posthoc tests were used to help determine the range of generalizability of the findings (i.e., is the level of distress in this sample normative and indicative of a stressful life event?).

Experimental design. Subjects who agreed to participate in this research (see Appendix I for Informed Consent) were asked to complete 3 separate portions of the study which are detailed in the experimental procedures section below. The first and third portions of this study were completed online while the second portion was completed in the laboratory. In order to protect the integrity of the priming intervention, participants completed the attachment questionnaire and demographics questionnaire (i.e., “time 1 - online”) in the first online portion of the study.

In the second portion of the study, participants completed baseline measures on the dependent variables of interest, were subjected to the manipulated priming intervention, and completed an expressive writing session (i.e., “time 2 - laboratory”). In an attempt to maintain consistency and control for the impact of extraneous variables on the manipulated conditions, participants came into the laboratory to participate in this portion of the experiment. Finally, in the third portion of the study, participants completed follow-up measures on the dependent variables of interest (i.e., “time 3 - online”). The experimental design of the study is outlined in Figure 1, below.

Experimental conditions. The participants were randomly assigned to one of three conditions: the neutral writing condition, the expressive writing only condition, and the security prime + expressive writing condition. In the neutral writing condition which contained no active treatment, participants received instructions to write about a neutral topic for thirty minutes. In the expressive writing only condition, participants received the active expressive writing intervention which required them to write about their deepest thoughts and feelings regarding the break-up (detailed below) for thirty minutes. Finally, those participants in the security prime + expressive writing condition were subjected to a security prime prior to engaging in the expressive writing intervention. The prime was presented as a guided visual imagery task. The participants in this group were asked to (a) identify a person to which they feel most securely attached, (b) answer a series of questions about this person, and (c) imagine sitting next to this person . The totality of these instructions represents the prime (identifying, thinking about, and visualizing an individual who most closely resembles a person who functions as a secure base and safe haven for the participant).

Time 1 – Online. The first portion of the study was completed online in Survey Monkey and required participants to fill out the attachment questionnaire and a demographics questionnaire.

Time 2 – Laboratory. In the laboratory portion of this study, a trained research assistant was present to (a) greet and sign in participants to the experiment, (b) ensure randomization of the assigned conditions, and (c) help maintain consistency within the laboratory setting. Once seated at a computer, all participants were asked to

complete the initial pre-test measures of distress, depression, self-reported physical health, and subjective well-being. After the pre-test measures had been filled out, participants received different instructions depending on the group to which they had been randomly assigned. Random assignment was accomplished by using the output generated by the “research randomizer” a free online service offered to students and researchers interested in conducting random assignment and random sampling (website: <http://www.randomizer.org/form.htm>). This program requires the researcher to input the following information: How many sets of numbers to generate (one in the current study), how many numbers per set (e.g., 200), and the number range (1 to 3 in the current study, which corresponds to the number of conditions). The program then generates an output of numbers that will dictate the order in which participants will be randomly assigned to particular groups. For example, if the output indicated that the first 4 numbers were 3,3,2,1, then the first participant to come to the lab will be assigned to condition 3, the second participant to condition 3, the third participant to condition 2, and the fourth to condition 1. At the end of time 2, information about the counseling services on campus was made available to all participants.

The Control Group. Approximately one third of the participants were assigned to the control group where they received instructions to complete a neutral writing task in which they wrote about impersonal relationship topics. As an introduction to the task, the participants received these initial instructions (adapted from Lewis, Derlega, Clarke, & Kuang, 2006):

Next, you will participate in a writing task. In this task, you will be asked to write for at least 30 minutes. This portion of the study is aimed to help us understand how people talk and think about relationship issues. Your writing is confidential. We are very interested in what you say. We assure you that none of your writing will be linked to you personally. The one exception is that, if what you say indicates that you intend to harm yourself or others, we are legally and ethically bound to match your ID with your name. It is very important that you feel confident about our promise to maintain your privacy. On the next screen, participants received instructions for the control writing task itself (Lepore & Greenberg, 2002).

For the next thirty minutes, we want you to try to develop rational or logical arguments, and do not express your feelings or emotional reactions to this issue. Do not worry about grammar and spelling. Please write about this issue on campus: Should universities promote 'safe sex' materials, even though this may offend some students' religious views?

At the end of the writing session, the participants were reminded of the follow-up questionnaire which they were to receive via email one-week following their completion of this (the Time 2) portion of the study.

The Expressive Writing Only Condition. About one-third of the participants were randomly assigned to this group and received the same initial instructions detailed in the neutral writing control condition regarding confidentiality. On the next screen, participants were presented with instructions which detailed the expressive writing task itself (Pennebaker & Bealle, 1986).

We want you to let go and write for thirty minutes about your deepest thoughts and feelings about the relationship. You can write about your thoughts and feelings regarding the relationship, how the relationship affected your life when you were in it, or the effect of the relationship on your life in the present. The important thing is that you dig down into your deepest emotions and explore them in your writing. Do not worry about grammar and spelling.

Similarly to the neutral writing condition, participants in the expressive writing only condition were reminded that they would receive the follow-up questionnaire via email one week after the completion of the T2 writing session.

The Security Prime + Expressive Writing Condition. Participants assigned to this group received an introduction to this portion of the study which included a cover story regarding the nature of the investigation. The cover story was implemented as previous research has shown that security priming interventions benefit from cover stories (Baldwin, 2007). The introduction/cover story was as follows:

Thank you again for your participation in this study. In the next portion of the study, you will participate in a guided imagery visualization task.

Visualization has been found to help people relax. Please be sure to carefully read over the instructions presented and to do your best to “get into” the imagery process.

Next, participants were exposed to a supraliminal prime which required the participants to both identify and think about a particular person. Those participants assigned to the security prime condition received instructions which were adapted

from Kumashiro and Sedikides's (2005) security prime instructions. To make the instructions more explicit, participants were provided with a description of a secure relationship (Hazan & Shaver, 1987) prior to identifying such a relationship in the context of their own life. Specifically, participants in the experimental group received the following description so that they could identify a close other:

Now, we will ask you to identify a person with whom you have a warm, positive relationship. Please read the description of such a relationship presented below.

I find it relatively easy to be close with this person and am comfortable depending on them and having them depend on me. I never worry that this person will abandon me or get too close to me.

Please pick one individual who most closely resembles this description for you. Then, please indicate that person's initials and the nature of your relationship with them.

Next, participants were asked to think about their secure relationship. In this set of instructions, only three of the five questions originally presented in Kumashiro and Sedikides's (2005) priming instructions were included. The number of questions was reduced to help protect against participant fatigue as the participants were required to write for thirty minutes (i.e., the expressive writing task) following the prime. Each question was presented on a different screen with instructions and a text box for writing. Participants received the following set of instructions:

Now, please spend three minutes answering each of the following three questions about your relationship with this person.

What does this relationship personally mean to you?

What are the most wonderful aspects of this relationship for you?

Imagine this person sitting next to you at this very moment. How would you feel?

In keeping with the cover story, all participants were then asked to indicate, on a 7-point Likert scale, the degree to which they found the visualization task to be vivid (1 = not at all vivid; 7 = very vivid) and the degree of difficulty they had in imagining the person sitting next to them (1 = not very difficult; 7 = very difficult). The prime itself lasted approximately 10 minutes. After the priming task was complete, all participants engaged in the same expressive writing task as detailed in the expressive writing only condition (see above) and were reminded of the follow-up online portion of the study.

Time 3 – Online. One week following the laboratory portion of the experiment, participants received an email from the experimenter which contained a link to Survey Monkey. Directly following completion of the time 3 follow-up questionnaire, which included the outcome measures of interest, participants received course credit for their participation in the study and were thanked for their participation. Information about the counseling services on campus was again made available to all participants. So as not to compromise the integrity of the priming condition, respondents were fully debriefed (see Appendix J) regarding the nature of the study after data collection was complete.

All writing samples were saved into the university experiment website to conduct manipulation checks. Researchers matched participant responses across the

various time points via their student ID number. After this match process was completed, all identifying information was erased.

Chapter 4: Results

Results of the statistical analyses will be presented in this chapter. First, I describe the preliminary data screening process to check for the accuracy of data entry, scale reliability, the normality of the distribution, and variable intercorrelations. Second, I describe the general analytic strategy, including the process of standardization of the variables, contrast coding of conditions, and the creation of interaction terms. Next, the hypothesis-testing analyses are reported. Finally, results of the manipulation check and additional analyses are presented.

Data Screening, Outliers, and Descriptive Statistics

All the variables of interest were entered into SPSS 17.0 and checked for distributional properties (i.e., skewness and kurtosis), internal consistency reliability, and univariate outliers. The values of all scales fell in the appropriate range as indicated by the minimum and maximum data values within each scale (see Table 1). All of the scales yielded acceptable reliability estimates, with alpha coefficients ranging from .86-.93. Means and standard deviations of the original scales are also presented in Table 1. There were no missing item values as the participants could not continue unless they provided an answer to each question. To identify univariate outliers, the raw scores were converted to standardized scores (i.e., z-scores) to determine if any scores existed which deviated from the mean of all cases. Fifteen scores were found to be two or more standard deviations away from the mean and were eliminated from subsequent analyses as recommended by Heppner and Heppner (2004). The outliers were removed on the scale level rather than the subject level in that only the scales on which the participants scored in the “extreme” range were

eliminated. The data was also examined for multiple outlier cases or cases in which a single respondent had several outliers. No subjects were outliers on more than one scale.

The skewness and kurtosis for all of the individual items and scales used in this analysis were less than 1, suggesting that the scores were, for the most part, fairly normally distributed (see Table 2). Note that the predictor and moderator variables were all standardized, as recommended by Frazier, Tix, and Barron (2006). The correlations, means, and standard deviations for the variables used in testing hypotheses 1-3 are shown in Table 1. Note that T2 and T3 denote pretest and follow-up scores, respectively. All of the correlations were in the expected direction.

Manipulation Check

Research Question 1: Does the content of the writing samples provide evidence that the manipulation (i.e., the expressive writing task) worked?

Hypothesis 1: There will be significant differences in the percentage of negative emotion words between the two writing conditions and the control condition.

The Linguistic Inquiry and Word Count (LIWC; Pennebaker et. al, 2001) was used to calculate the percentage of total words that fall into particular categories within each writing sample. The categories of interest in this analysis were words that describe sad emotion, words that describe anxious emotions, and words that describe negative emotions in general. Independent t-test was run to test the differences between the two writing conditions and the control condition in terms of the mean percentage of each word category (i.e., the average percentage of negative emotion words within the writing samples). The results are summarized in Table 3.

Hypothesis 1a. The expressive writing conditions will produce a significantly greater percentage of negative emotion words than the control condition. On average, the expressive writing conditions produced a significantly greater average percentage of negative emotions words than the control condition, thereby supporting the hypothesis.

Hypothesis 1b. The expressive writing conditions will produce a significantly higher percentage of words that describe sad emotions than the control condition. On average, the expressive writing conditions produced a significantly higher average percentage of words that describe sad emotions than the control condition, which was consistent with the hypothesis.

Hypothesis 1c. The expressive writing conditions will produce a significantly higher percentage of words that describe anxious emotions than the control condition. On average, the expressive writing conditions produced a significantly higher average percentage of words that describe anxious emotions than the control condition. This difference was consistent with the hypothesis.

In sum, support was found for each of the sub-hypotheses of Hypothesis 1 and each of the obtained effect sizes ranged from small (anxious emotion) to very large (sad emotion), according to Cohen's (1992) criteria for the d statistic.

General Analytic Strategy

Hypothesis 2, which predicted that the writing sample will reflect the emotion regulation style of the participants, was tested using correlational analyses. The remaining primary predictions (hypotheses 3-6) regarding the outcomes of the writing interventions were tested by means of a moderated multiple regression analysis

(Baron & Kenny, 1986). Regression was chosen, as opposed to analysis of variance, to preserve the continuous nature of attachment-related anxiety and attachment-related avoidance scores and to avoid the use of artificial cut points that may reduce power to detect interactions (Aiken & West, 1991; Frazier et al., 2006). Specifically, moderated multiple regression analyses were used to test for differences between post intervention scores (T2), controlling for pre-treatment (T1) baseline scores on the following variables: depression (as measured by the CES-D), distress experienced in response to the event (as measured by the IES), self-reported physical health symptoms and emotions (as measured by the PSS), and psychological well-being (as measured by the SWLS). In addition, self-reported physical health symptoms were also assessed immediately following the writing intervention.

In preparation for the analyses, all predictor and moderator variables were normalized to reduce the potential for multicollinearity among the variables entered into the equation (West, Aiken, & Krull, 1996). In addition, the categorical condition variable (i.e., experimental group assignment) was contrast coded so as to create two separate variables—a standard and recommended procedure when analyzing differences among three conditions (Aiken & West, 1991). These variables represent the contrast between the neutral writing group versus the expressive writing only group, and the expressive writing only group versus the writing + prime. Contrast coding was chosen as experts suggest that it may best capture between group differences in the case of complex (more than one group) orthogonal contrasts and is easily interpretable (Davis, 2010).

The regression strategy was used to predict follow-up scores, controlling for pretest scores. Five regressions analyses, each representing predictions regarding the dependent variables of interest (i.e., distress, depression, subjective well-being, physical symptoms measured directly following the intervention and at follow-up) were conducted using three hierarchical steps. To control for pretest scores, T2 scores (measured prior to the writing intervention) were entered in the first step of each regression equation. Next, the main variables of interest (i.e., attachment-related anxiety, attachment related avoidance, and condition) were entered into the second step of the equation. For the third step, the two-way product scores were created by multiplying attachment-related anxiety and attachment-related avoidance with each contrast code. These terms represented the interaction between attachment-related anxiety/attachment-related avoidance and the two planned comparisons (i.e., the neutral writing condition versus expressive writing only condition and the expressive writing condition versus the writing + prime condition). A total of five regression analyses were conducted (one for each of the dependent variables) to test both the direct effects and interactive effects presented in hypothesis 3-6. Depending on the particular question addressed by each hypothesis, either step two or step three was examined for overall significance. If the model summary indicated that the step added a significant amount of additional variance to the equation,, specific coefficients were examined for significance.

Tests of Hypothesis 2

Research Question 2: Do the writing samples reflect the emotion regulation strategies associated with higher levels of attachment anxiety and attachment avoidance?

Hypothesis 2: The writing samples will reflect the hyperactivating and deactivating emotion regulation styles associated with higher levels of attachment anxiety and attachment-related avoidance.

The data from 51 participants randomly assigned to the expressive writing only condition were used to analyze data to test Hypothesis 2. The prediction that the writing sample will reflect the emotion regulation style of the participants was tested using three correlational analyses. First, the Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2001) was used to (a) count the number of total words within each writing session, and (b) calculate the mean percentage of negative emotion words within the writing samples. These totals were then entered into three correlational analyses. Pearson product-moment correlation coefficient was used to test the strength of linear dependence between the variables of interest.

Hypothesis 2a. For those participants who engage in the expressive writing task only there will be a positive relationship between levels of attachment anxiety and the percentage of negative emotion words.

The correlation between attachment anxiety and the percentage of negative words was small, negative, and non-significant [$r(51) = -.03, p = .42$].

Hypothesis 2b. For those participants who engage in the expressive writing task only there will be a negative relationship between levels of attachment avoidance and the percentage of negative emotion words.

The relationship between attachment avoidance and the percentage of negative emotion words was small, negative and non-significant [$r(51) = -.01, p = .49$].

Hypothesis 2c. For those participants who engage in the expressive writing task only there will be a negative relationship between levels of attachment avoidance and the length of the writing sample.

The correlation between attachment avoidance and the length of the writing sample was small and non-significant but in the expected direction [$r(51) = -.22, p = .06$]. In sum, support was not found for Hypotheses 2a, 2b, or 2c, though the correlation between attachment avoidance and length of the writing sample (2c) was close to significant at the .05 level, one-tailed.

Tests of Hypotheses 3-6

The data from 147 participants (N= 47 for the control group, N = 49 for the writing group only, and N = 51 for the writing + prime group) were used to test those predictions that predicted follow-up scores one-week following the writing intervention. The data from 152 participants (N= 49 for the control group, N = 51 for the writing group only, and N = 53 for the writing + prime group) were used to test those predictions regarding the immediate change in self-reported health symptoms measured directly after the writing intervention (i.e., hypothesis 3e, 4e, 5e, and 6e). The pretest scores were assessed just before the writing session (T2) and follow-up (T3) scores were measured either one week following the last writing session or, in the case of immediate changes in self-reported health symptoms, directly following the writing intervention. The regression strategy was used to predict follow-up

scores, controlling for pretest scores. Specifically, (a) pretest scores were entered into the first step of each regression equation followed by (b) the experimental condition and attachment anxiety and attachment avoidance scores at the second step. Lastly, the two interaction terms (i.e., attachment anxiety x condition and attachment avoidance x condition) were entered into the third step of the regression equation .

Research Question 3: Do participants in the expressive writing only condition have greater psychological health at follow-up than those participants in the neutral writing condition?

Hypothesis 3: Those participants randomly assigned to the expressive writing only condition will have greater psychological health and lower self-reported physical outcomes at follow-up than those participants assigned to the neutral writing condition. Because Hypothesis 3 is concerned with main effects (i.e., the impact of the condition on the dependent variables of interest), step two was examined for significance.

Hypothesis 3a. Those participants in the expressive writing only condition will have higher levels of subjective well-being at follow-up than those participants in the neutral writing condition.

As shown in Table 4, the condition term did not account for significant, unique variance in the prediction of subjective well-being scores after controlling for

Hypothesis 3b. Those participants in the expressive writing only condition will have lower levels of depressive symptoms at follow-up than those participants in the neutral writing condition.

As shown in Table 5, the condition term did not account for significant, unique variance in the prediction of depression scores after controlling for pretest depression scores. Thus, Hypothesis 3b was not supported by the current data, though there was a trend toward significance at the .05 level at the second step ($p < .09$).

Hypothesis 3c. Those participants in the expressive writing only condition will have lower levels of distress over the break-up at follow-up than those participants in the neutral writing condition.

As shown in Table 6, the condition term did not account for significant, unique variance in the prediction of distress scores after controlling for pretest distress scores. Thus, Hypothesis 3c was not supported.

Hypothesis 3d. Those participants in the expressive writing only condition will have lower levels of self-reported health symptoms at follow-up than those participants in the neutral writing condition.

As shown in Table 7, the condition term did not account for significant, unique variance in the prediction of self-reported health symptom scores after controlling for pretest scores. Thus, Hypothesis 3d was not supported.

Hypothesis 3e. Immediately following the writing intervention, those participants in the expressive writing only condition will have higher levels of self-reported health symptoms than those participants in the neutral writing condition. In the regression predicting self-reported health symptoms scores immediately following the writing intervention, the main effects term explained significant, unique variance after controlling for pretest scores (see Table 8). Results indicated that those

participants in the expressive writing only condition had higher self-reported health symptoms scores immediately following the writing intervention than those participants in the control group. Thus, the predicted relationship stated in hypothesis 3e was supported.

Research Question 4: Does the level of attachment anxiety/avoidance moderate the level of psychological health for those participants who are randomly assigned to the expressive writing condition versus the control condition?

Hypothesis 4: The level of attachment anxiety/avoidance will moderate the level of psychological health for those participants who are randomly assigned to the expressive writing condition versus the control condition. Specifically, participants higher in attachment anxiety/avoidance will have significantly lower levels of psychological and physical health in the expressive writing only task as compared to the neutral writing task at follow-up while as participants lower in attachment anxiety/avoidance will have significantly higher levels of psychological and physical health in the expressive writing only task as compared to the neutral writing task at follow-up.

As the same regression was used to test hypothesis 4 as was used to test hypothesis 3 the hypothesis 4 results section will reference the tables presented in the hypothesis 3 results section. For the current set of hypotheses (i.e., hypotheses 4a-4e), which detail predictions regarding interaction effects, the third step was examined for significance.

Hypothesis 4a. Levels of attachment anxiety/avoidance will interact with condition (i.e., expressive writing versus control) to impact levels of subjective well-

being at follow-up. Participants higher in attachment anxiety/avoidance will have significantly lower levels of subjective well-being in the expressive writing only condition as compared to the neutral writing condition at follow-up while as participants lower in attachment anxiety/avoidance will have significantly higher levels of subjective well-being in the expressive writing only task as compared to the neutral writing task at follow-up.

As shown in Table 4, the model with the interaction term did not account for significant, unique variance in the prediction of subjective well-being scores after controlling for pretest subjective well-being scores. Thus, Hypothesis 4a was not supported.

Hypothesis 4b. Levels of attachment anxiety/avoidance will interact with condition (i.e., expressive writing versus control) to impact levels of depressive symptoms at follow-up. Participants higher in attachment anxiety/avoidance will have significantly higher levels of depressive symptoms in the expressive writing only condition as compared to the neutral writing condition at follow-up while as participants lower in attachment anxiety/avoidance will have significantly lower levels of depression in the expressive writing only task as compared to the neutral writing task at follow-up. .

As shown in Table 5, the model with the interaction term did not account for significant, unique variance in the prediction of depression scores after controlling for pretest depression scores. Thus, Hypothesis 4b was not supported.

Hypothesis 4c. Levels of attachment anxiety/avoidance will interact with condition (i.e., expressive writing versus control) to impact levels of distress at

follow-up. Participants higher in attachment anxiety/avoidance will have significantly higher levels of distress over the break-up in the expressive writing only condition as compared to the neutral writing condition at follow-up while as participants lower in attachment anxiety/avoidance will have significantly lower levels of distress in the expressive writing only task as compared to the neutral writing task at follow-up.

As shown in Table 6, the model with the interaction term did not account for significant, unique variance in the prediction of distress scores after controlling for pretest distress scores. Thus, Hypothesis 4c was not supported.

Hypothesis 4d. Levels of attachment anxiety/avoidance will interact with condition (i.e., expressive writing versus control) to impact levels of self-reported health symptoms at follow-up. Participants higher in attachment anxiety/avoidance will have significantly higher levels of self-reported health symptoms in the expressive writing only condition as compared to the neutral writing condition at follow-up while as participants lower in attachment anxiety/avoidance will have significantly lower levels of self-reported health symptoms in the expressive writing only task as compared to the neutral writing task at follow-up.

As shown in Table 7, the model with the interaction term did not account for significant, unique variance in the prediction of self-reported health symptom scores after controlling for pretest self-reported scores. Thus, Hypothesis 4d was not supported.

Hypothesis 4e. Levels of attachment anxiety/avoidance will interact with condition (i.e., expressive writing versus control) to impact levels of self-reported

health symptoms when measured directly after the writing intervention. Immediately following the writing intervention, participants higher in attachment anxiety/avoidance will have significantly higher levels of self-reported health symptoms immediately following the writing intervention in the expressive writing only condition as compared to the neutral writing condition. Participants lower in attachment anxiety/avoidance will also exhibit higher levels of self-reported symptoms immediately following the intervention; however, there will be less of a difference between conditions for these participants than for those participants higher in attachment anxiety/avoidance.

As shown in the third step of Table 8, the interaction term predicting self-reported health symptom scores immediately following the writing intervention did not account for significant, unique variance after controlling for pretest scores. Thus, Hypothesis 4e was not supported.

Research Question 5: Do participants who receive a security prime prior to the expressive writing task have better psychological health at follow-up than those in the expressive writing only condition?

Hypothesis 5: Those participants randomly assigned to the writing + prime group will have significantly greater levels of self-reported psychological and physical health (as indicated by a decrease in depression, distress, and physical symptoms and an increase in subjective well-being) than those assigned to the expressive writing only group at follow-up.

As the same regression was used to test hypothesis 5 as was used to test hypothesis 3, the hypothesis 5 results section will reference the tables presented in the

hypothesis 3 results section. For the current set of hypotheses (i.e., hypotheses 5a-5e), which detail predictions regarding main effects, the second step was examined for significance.

Hypothesis 5a. Those participants randomly assigned to the writing + prime group will have significantly higher levels of subjective well-being than those assigned to the expressive writing only group at follow-up.

As shown in Table 4, the condition term did not account for significant, unique variance in the prediction of subjective well-being scores after controlling for pretest subjective well-being scores. Thus, Hypothesis 5a was not supported.

Hypothesis 5b. Those participants randomly assigned to the writing + prime group will have significantly lower levels of depressive symptoms than those assigned to the expressive writing only group at follow-up.

As shown in Table 5, the condition term did not account for significant, unique variance in the prediction of depression scores after controlling for pretest depression scores. Thus, Hypothesis 5b was not supported. However, there was a trend ($p < .10$) for the condition term (i.e., contrast 2 that reflects the difference between the expressive writing only group and the writing + prime group) to explain unique variance beyond pretest depression scores.

Hypothesis 5c. Those participants randomly assigned to the writing + prime group will have significantly lower levels of distress over the break-up than those assigned to the expressive writing only group at follow-up.

As shown in Table 6, the condition term did not account for significant, unique variance in the prediction of distress scores after controlling for pretest distress scores. Thus, Hypothesis 5c was not supported.

Hypothesis 5d. Those participants randomly assigned to the active writing + prime group will have significantly lower levels of self-reported health symptoms than those assigned to the expressive writing only group at follow-up.

As shown in Table 7, the condition term did not account for significant, unique variance in the prediction of self-reported health symptom scores after controlling for pretest self-reported health scores. Thus, Hypothesis 5d was not supported.

Hypothesis 5e. Immediately following the writing intervention, those participants randomly assigned to the active writing + prime group will have significantly lower levels of self-reported health symptoms than those assigned to the expressive writing only group.

As shown in the second step of Table 8, the main effects term predicting self-reported health symptom scores immediately following the writing intervention did not account for significant, unique variance after controlling for pretest scores. Thus, Hypothesis 5e was not supported.

Research Question 6: Does the level of attachment anxiety/avoidance moderate the level of psychological health at follow-up for those participants randomly assigned to receive a security prime prior to the expressive writing task as compared to those who receive no such prime.

Hypothesis 6: The level of attachment anxiety/avoidance will moderate the level of psychological health for those participants who are randomly assigned to receive a prime prior to the expressive writing task. Specifically, participants higher in attachment anxiety/avoidance will have significantly higher levels of psychological and physical health at follow-up when randomly assigned to receive a prime prior to the expressive writing task. Those participants lower in attachment anxiety/avoidance will also benefit from the prime; however, they will benefit less from the prime than their counterparts (i.e., participants higher in attachment anxiety/avoidance).

As the same regression was used to test hypothesis 6 as was used to test hypothesis 3 the hypothesis 6 results section will reference the tables presented in the hypothesis 3 results section. For the current set of hypotheses (i.e., hypotheses 6a-6d), which detail predictions regarding interaction effects, the third step was examined for significance.

Hypothesis 6a. Levels of attachment anxiety/avoidance will interact with condition (i.e., writing + prime versus expressive writing only) to impact levels of subjective well-being at follow-up. Participants higher in attachment anxiety/avoidance will have significantly higher levels of subjective well-being when randomly assigned to the writing + prime condition than those who receive no such prime prior to the expressive writing task. Participants lower in attachment anxiety will also do better, in terms of subjective well-being, when randomly assigned to the writing + prime condition than those who receive no such prime; however, they will

benefit less from the prime than those participants higher in attachment anxiety/avoidance.

As shown in Table 4, the model with the interaction term did not account for significant, unique variance in the prediction of subjective well-being scores after controlling for pretest subjective well-being scores. Thus, Hypothesis 6a was not supported.

Hypothesis 6b. Levels of attachment anxiety/avoidance will interact with condition (i.e., writing + prime versus expressive writing only) to impact levels of depression at follow-up. Participants higher in attachment anxiety/avoidance will have significantly lower levels of depression when randomly assigned to the writing + prime condition than those who receive no such prime prior to the expressive writing task. Participants lower in attachment anxiety will also exhibit higher lower levels of depression when randomly assigned to the writing + prime condition than those who receive no such prime; however, they will benefit less from the prime than those participants higher in attachment anxiety/avoidance.

As shown in Table 5, the model with the interaction term did not account for significant, unique variance in the prediction of depression scores after controlling for pretest depression scores. Thus, Hypothesis 6b was not supported.

Hypothesis 6c. Levels of attachment anxiety/avoidance will interact with condition (i.e., writing + prime versus expressive writing only) to impact levels of distress at follow-up. Participants higher in attachment anxiety/avoidance will have significantly lower levels of distress when randomly assigned to the writing + prime condition than those who receive no such prime prior to the expressive writing task.

Participants lower in attachment anxiety will also exhibit higher lower levels of distress when randomly assigned to the writing + prime condition than those who receive no such prime; however, they will benefit less from the prime than those participants higher in attachment anxiety/avoidance.

As shown in Table 6, the model with the interaction term did not account for significant, unique variance in the prediction of distress scores after controlling for pretest distress scores. Thus, Hypothesis 6c was not supported.

Hypothesis 6d. Levels of attachment anxiety/avoidance will interact with condition (i.e., writing + prime versus expressive writing only) to impact levels of self-reported health symptoms at follow-up. Participants higher in attachment anxiety/avoidance will have lower levels of self-reported health symptoms when randomly assigned to the writing + prime condition than those who receive no such prime prior to the expressive writing task. Participants lower in attachment anxiety will also exhibit higher lower levels of self-reported health symptoms when randomly assigned to the writing + prime condition than those who receive no such prime; however, they will benefit less from the prime than those participants higher in attachment anxiety/avoidance.

As shown in Table 7, the model with the interaction term did not account for significant, unique variance in the prediction of self-reported health symptom scores after controlling for pretest scores. Thus, Hypothesis 6d was not supported.

Hypothesis 6e. Levels of attachment anxiety/avoidance will interact with condition (i.e., writing + prime versus expressive writing only) to impact levels of self-reported symptoms measured directly after the completion of the writing task.

Immediately following the writing intervention, participants higher in attachment anxiety/avoidance will have significantly lower levels of self-reported health symptoms when randomly assigned to the writing + prime condition than those who receive no such prime prior to the expressive writing task. Participants lower in attachment anxiety will also exhibit higher lower levels of self-reported health symptoms immediately following the writing intervention when randomly assigned to the writing + prime condition than those who receive no such prime; however, they will benefit less from the prime than those participants higher in attachment anxiety/avoidance.

As shown in the third step of Table 8, the interaction effects term predicting self-reported health symptom scores immediately following the writing intervention did not account for significant, unique variance after controlling for pretest scores. Thus, Hypothesis 6e was not supported.

Supplementary Analyses

Three sets of additional analyses were conducted. First, t-tests were conducted to compare the level of distress and attachment-anxiety/attachment-avoidance in the current sample to that of other samples. Second, an additional set of analyses were performed in order to determine if the main hypotheses might be more applicable to a certain subgroup of participants. These analyses were performed in order to gain more information regarding potential directions for future research. Specifically, these analyses examined a subsample of those individuals whose ex-partner had initiated the break-up. Initiator status was examined because it has been

found to be a significant factor associated with distress following the breakup of a close relationship (Sprecher, Felmlee, Metts, Fehr, & Vanni, 1998).

Third, as the primary analyses for hypothesis 2 were underpowered, correlational analyses were re-run with a larger sample of participants, which included participants from both active writing conditions (i.e., the expressive writing only condition and the writing + prime condition). These analyses tested whether the emotional content of the writing samples differed depending on the participants' level of attachment-related anxiety/avoidance for those participants in an active writing condition.

Comparison to normative data. Normative data on the level of distress (as measured by the IES) in both clinical and non-clinical samples were compared to the current sample in order to determine the population to which the data may be generalizable. The current sample's mean baseline level of distress ($M = 38.34$, $SD = 13.61$) was not significantly different than the level of distress found in a clinical sample of 66 individuals' seeking outpatient treatment for depression ($M = 39.50$; $SD = 17.20$; Horowitz, 1979), $t(101) = -0.51$, $p > .05$. The current sample's mean baseline level of distress was also not significantly different than a non-clinical sample of 56 undergraduate students in an introductory psychology class who acknowledged having "a significant romantic relationship end during the past 2 weeks" ($M = 39.4$, $SD = 11.72$; Smith & Cohen, 1993), $t(113) = -.58$, $p > .05$. In sum, the current sample shows comparable levels of distress to a clinical sample and to a sample of distressed undergraduates.

In addition, normative data on attachment-related anxiety and attachment-related avoidance were compared to the current sample. The current sample's mean baseline level of attachment-related anxiety ($M = 3.55$, $SD = .99$) was not significantly different than the levels found in a recently published study which sampled 199 college students ($M = 3.37$; $SD = 1.15$), Goodall, Trejnowska, & Darling, 2011), $t(344) = 1.5$, $p > .05$. In regards to attachment-related avoidance, the current sample's mean ($M = 3.12$, $SD = 1.06$) was also not significantly different than the mean found in the same college student sample ($M = 3.07$, $SD = 1.08$), $t(345) = .45$, $p > .05$.

Subsample of participants who did not initiate the break-up.

The second set of analyses was run to determine if the hypotheses in this study were more applicable to those participants who indicated that their partner had initiated the break-up. This subsample of 45 participants was drawn from a one-item question which asked participants to indicate who initiated the break-up. Those participants who indicated "My ex-partner did" were included in this analysis and those who indicated "I did" or "It was mutual" were excluded. The main analyses, as described in the hypothesis section, were replicated using only the data from this subsample of participants. No significant interactions were found for those regressions predicting subjective well-being or self-reported health symptoms; however, significant or near significant results were found for the other dependent variables. Given (a) the low power of these analyses, (b) the exploratory nature of these tests, and (c) the function of these results to spur future research, results with a p-value of .10 or lower will be interpreted.

Distress over the break-up. Analyzing only the data from those participants who indicated that their partner initiated the break-up, some significant and near-significant results emerged when predicting distress over the break-up. Results from the multivariate test indicated a trend toward significance at the second step [$R^2 = .50$, $\Delta R^2 = .16$, $F(1, 45) = 2.35$, $p = .08$]. The univariate analyses reveal that two univariate predictor terms, contrast 1 and contrast 2, showed a trend toward significance (see Table 9). The results for the univariate predictor contrast 1 (i.e., the term that represents the comparison of the control group to the expressive writing group) were unlike the prediction stated in hypothesis 3c. The results revealed that across conditions, those individuals randomly assigned to the expressive writing group had higher, as compared to lower, levels of distress than those randomly assigned to the control group. The results for the univariate predictor contrast 2 (i.e., the term which contrasts the expressive writing group to the writing + prime group) supported the predictions stated in hypothesis 5c. Results revealed that those individuals in the writing + prime group had lower levels of distress than those in the expressive writing only group.

The model entered into the third step accounted for significant, unique variance in the prediction of distress after controlling for pretest scores [$R^2 = .66$, $\Delta R^2 = .12$, $F(1, 45) = 24.04$, $p = .01$]. Univariate results revealed that one univariate predictor, contrast 1 x attachment anxiety, reached significance at the .01 alpha level (see Table 9). Figure 2 plots the significant interactions by using the cut-off of one standard deviation below and above the mean for low and high attachment anxiety scores, respectively. As shown in the graph of the criss-crossed interaction (see

Figure 2), those with lower attachment anxiety scores reported having lower levels of distress when participating in the expressive writing as compared to the neutral writing task; however, those with higher attachment anxiety scores reported having higher levels of distress when participating in the expressive writing task as compared to the neutral writing task. Therefore, hypothesis 4c was supported when analyzing only the results from those participants whose ex-partner initiated the break-up. In addition, the results from the univariate analyses revealed that there was a trend toward significance for the interaction between contrast 2 and attachment anxiety scores ($p = .09$; see Table 9); however, the trend was in the opposite direction of what was predicted in hypothesis 5c. As shown in Figure 2, there is a criss-crossed interaction between level of distress and attachment-related anxiety. Specifically, those with lower attachment anxiety scores reported having significantly lower levels of distress when participating in the writing + prime as compared to the expressive writing only task; however, those with higher attachment anxiety scores reported having slightly lower levels of distress when participating in the expressive writing task as compared to the writing + prime task. In contrast to the predictions of hypothesis 5c, this result indicated that the security prime was less beneficial, in terms of reductions in distress, than the expressive writing only condition for those with higher attachment anxiety but more beneficial for those with lower attachment anxiety.

Immediate pre-post changes in self-reported health symptoms. Analyzing only the data from those participants who indicated that their partner initiated the break-up, some significant results emerged when predicting immediate changes in

self-reported health symptoms. The model entered into the third step accounted for significant, unique variance in the prediction of distress after controlling for pretest scores [$R^2 = .72$, $\Delta R^2 = .09$, $F(1, 45) = 2.88$, $p = .04$]. Univariate results revealed that one univariate predictor, contrast 2 x attachment avoidance, reached significance at the .01 alpha level (see Table 10). Figure 3 plots the significant interactions by using the cut-off of one standard deviation below and above the mean for low and high attachment anxiety scores, respectively. As shown in the graph of the interaction (see Figure 3), the predicted direction of the interaction stated in hypothesis 6e was partially supported by the results (see Table 10). Unlike the predictions specified in hypothesis 6e, the results indicated that the higher the participants' attachment avoidance, the higher the level of self-reported health symptoms immediately following the writing intervention in the writing + prime condition as compared to the expressive writing only condition. However, in line with hypothesis 6e, those participants lower in attachment avoidance had lower levels of self-reported health symptoms immediately following the writing intervention in the prime + writing group as compared to the expressive writing only group. This result indicated that those participants with lower attachment avoidance did better, in terms of levels of self-reported health symptoms, when given a security prime prior to the expressive writing task while participants higher in attachment avoidance did worse when primed with security prior to engaging in the expressive writing task.

Depression. Analyzing only the data from those participants who indicated that their partner initiated the break-up, significant results emerged when predicting the level of depressive symptoms. The results from the multivariate test indicated a

trend towards significance in predicting depressive symptoms at follow-up after controlling for pretest scores [$R^2 = .69$, $\Delta R^2 = .09$, $F(1, 45) = 2.45$, $p = .07$]. Univariate results revealed that two interaction terms (i.e., contrast 1 x attachment anxiety and contrast 2 x attachment anxiety) reached significance at the .05 and .01 alpha levels, respectively (see Table 11). Figure 4 plots the significant interactions by using the cut-off of one standard deviation below and above the mean for low and high attachment anxiety scores, respectively. In regards to the interaction term contrast 1 x attachment anxiety (contrast 1 = neutral writing condition versus the expressive writing only condition), hypothesis 4b was partially supported. Participants high in attachment anxiety had nearly comparable levels of depressive symptoms in both the expressive writing condition and in the neutral writing condition. Conversely, participants low in attachment anxiety had slightly lower levels of depressive symptoms in the expressive writing only condition as compared to the neutral writing condition (see Figure 4).

The predicted direction of the interaction represented by contrast 2 (contrast 2 = expressive writing only group versus prime + writing group) x attachment anxiety was partially supported by the results. Unlike the predictions specified in hypothesis 6b, the results indicated that participants' with higher levels of attachment anxiety had higher levels of depressive symptoms in the writing + prime condition as compared to the expressive writing only condition. Conversely, those participants lower in attachment anxiety exhibited lower levels of depressive symptoms in the writing + prime group as compared to the expressive writing only group. This result

indicated that the security prime benefitted those with lower attachment anxiety and did not benefit those with higher attachment anxiety.

Post-hoc tests for writing sample

Pearson r bivariate correlations were run to explore differences in level of emotionality and word count using data from both of the expressive writing conditions (i.e., the expressive writing only condition and the writing + prime condition). Specifically, the tests aimed to see if there were differences in the proportion of negative and positive emotions and overall word count within the writing samples of individuals who differed along the attachment-related anxiety/avoidance dimension. No significant associations emerged between level of attachment-related anxiety and the variables of interest. Attachment-related avoidance was, however, significantly associated with proportion of positive emotion words contained within the writing samples. Specifically, a small negative correlation emerged between attachment-related avoidance and proportion of positive emotion in the writing samples [$r(103) = -.22, p = .03$]. Results indicate that as attachment-related avoidance increased, the number of positive emotion words in the sample decreased. In addition, the relationship between word count and attachment-related avoidance showed a trend towards significance [$r(103) = -.18, p = .07$], suggesting a trend for the number of words in the writing sample to decrease as attachment-related avoidance increases. These results are consistent with hypothesis 2, which states that the writing samples may reflect the attachment style of the participants.

Chapter 6: Discussion

This chapter will summarize and interpret the study's findings within the context of the broader literature. Implications for future research will be explored and limitations of the study will be noted.

Summary of Hypothesis Testing and Supplementary Findings

Hypothesis 1. This cluster of hypotheses represents the manipulation checks for the expressive writing task and the neutral writing task. All hypotheses were supported in that the expressive writing task produced a significantly greater percentage of (a) negative emotion words, (b) sad emotion words, and (c) anxious emotion words than the neutral writing task. These results suggest that the expressive writing intervention “worked” as it was intended to.

Hypothesis 2. This cluster of hypotheses predicted that the writing samples would reflect the hyperactivating and deactivating emotion regulation styles associated with higher levels of attachment anxiety and attachment-related avoidance. Hypothesis 2a stated that there would be a positive relationship between the level of attachment anxiety and the number of negative emotion words in the expressive writing only condition. This hypothesis was not supported by the results of the study. Overall, the data indicated that the proportion of negative emotion words within the writing sample was not related to the participants' level of attachment-anxiety. This result was found when analyzing data from (a) the expressive writing only condition and (b) both the expressive writing only condition and the writing + prime condition, which represent the samples used in the primary and post-hoc analyses, respectively.

Although it is probable that the “situational” aspects of the writing task are a more powerful predictor of linguistic style than any trait-like individual differences, evidence would suggest that some important differences in the writing content might emerge. For example, a recent study found that depressive scores and coping styles were reflected in the writing samples for participants who engaged in the traditional expressive writing task (Lee & Cohn, 2009). Another study found that aspects of participants’ personality – as measured by the five-factor model (John, Donahue, & Kentle, 1991), a recent version of the Thematic Appreciation Test (McClelland, 1985; Morgan & Murray, 1935), and the Positive Affectivity and Negative Affectivity Scale (Watson, Clark, & Tellegen, 1988) – were associated with several linguistic factors identified within the writing sample (Pennebaker & King, 1999). However, these studies had very large sample sizes with adequate power and found only modest effect sizes for the relationship between personality and linguistic style. Therefore, it may be that the underpowered nature of the current analyses made it difficult to find expected differences in the writing samples.

Another possible reason for this somewhat surprising finding lies in the specific nature of the instructions. It is likely that the instructions did not provide enough “neutrality” to allow for differences in emotionality and word count to emerge. The instructions of the traditional writing paradigm ask participants to delve into their deepest thoughts and feelings for a specified time. These instructions are intended to clearly and directly lead participants to disclose emotional responses. It may be that if the instructions were more “neutrally” worded to give participants a greater level of choice regarding the quality and quantity of their expression, a

significant relationship between attachment-related anxiety and emotionality would emerge.

Hypothesis 2b predicted that there would be a negative relationship between the level of attachment avoidance and the number of negative emotion words in the expressive writing condition. Results from the primary and supplementary analyses did not support this prediction as the association between attachment-related avoidance and the number of negative words was not significant. However, results from the post-hoc analyses with a larger sample of participants from both the expressive writing only task and the writing + prime task revealed a significant negative relationship between attachment-related avoidance and proportion of positive emotion words. These findings indicate that as attachment-related avoidance increases, the proportion of positive emotion words within the writing sample decreases. This finding is consistent with attachment theory which hypothesizes that the deactivating emotion regulation system works to minimize the expression of both negative and positive emotions (Cassidy, 1994; Mikulincer & Shaver, 2007). Previous empirical evidence is also consistent with this hypothesis. For example, in two diary studies, participants were asked to catalogue every social interaction lasting 10 minutes or longer over the span of a week. After each interaction, participants' completed a questionnaire which measured their emotional experience of the interaction (Pietromonaco & Barrett, 1997; Tidwell, Reis, & Shaver, 1996). Both of the studies found that individuals with an insecure attachment-style reported fewer positive emotions than secure participants. Although the current findings build on previous research, relatively few studies have addressed the connection between

attachment-avoidance and the expression of positive emotions (Diamond, Hicks, & Otter-Henderson, 2006). Therefore, it is suggested that future research aim to elucidate how individuals who score higher on attachment-avoidance experience positive emotions and the effects of that experience on psychological well-being and functioning.

Lastly, Hypothesis 2c stated that there would be a negative relationship between the level of attachment avoidance and the length of the writing sample in the expressive writing condition. Based on attachment theory, it was hypothesized that individuals with higher levels of attachment avoidance would have more difficulty with or resistance to the emotional and disclosing nature of the writing task. It was predicted that this difficulty would be reflected by the number of words participants were able and willing to write within the 30 minute time frame. The results from the primary analyses were nonsignificant; however, when analyzing data from both active writing groups, a trend towards significance emerged. Specifically, post-hoc analyses revealed a trend towards a decrease in word count as the level of attachment-related avoidance increased.

These results are somewhat surprising given the previous empirical evidence which suggests that a variety of important trait-like phenomena are reflected in writing. One potential reason that these findings did not emerge in the main analysis was the writing environment itself. In support of this explanation, findings from previous empirical research suggests that increasing the “confessional nature” of the setting may impact clients’ subjective experience of the helpfulness of the writing task as well as language use (i.e., the content of the writing samples; Corter & Petrie,

2008). In addition, Frattaroli's (2006) meta-analysis found that studies which allowed participants to complete the task at home garnered significantly greater treatment effects (as indicated by effect sizes) than those studies which required participants to complete the writing task in a laboratory setting. Taken together, these findings suggest that researchers might benefit from paying further attention to the physical setting of the writing intervention.

A rather surprising aspect of this pattern of findings is that there were no significant results when only analyzing data from the expressive writing sample; however, two results emerged when inspecting data from both active writing groups taken together. Originally, only the expressive writing group was examined as (a) the neutral writing condition was not expected to evoke an emotional response and (b) the writing + prime condition was anticipated to have reduced the degree to which differences in attachment style would be reflected within the writing sample. It was theorized that the prime would lessen the defensiveness/difficulties associated with each attachment style, which would in turn be reflected within the writing sample. It is curious that when both active writing groups were included in the analyses that expected results emerged with respect to attachment-avoidance. This might suggest that the prime actually worked to further activate the participant's attachment-related avoidance. In other words, it may be that the prime was "contraindicated" and worked to increase instead of decrease the defensiveness/difficulties associated with attachment-related avoidance. This possibility will be further discussed after examining and interpreting the results from hypothesis 3-6.

In sum, the findings mostly failed to support hypothesis 2. However, conclusions from these analyses must be regarded with caution because both the primary and supplementary analyses were underpowered. Future research would likely benefit if these predicted relationships were tested with statistical analyses and sample sizes which produced adequate power.

Hypothesis 3. This group of hypotheses tested the prediction that participants in the expressive writing only group would have greater psychological and physical health at follow-up than those participants in the neutral writing condition. Hypothesis 3a stated that the expressive writing only group would have higher levels of subjective well-being at follow-up than the neutral writing condition. This hypothesis was not supported by the results of the study. Overall, the data indicated that those participants randomly assigned to the expressive writing only condition did not differ in terms of level of subjective well-being to those participants randomly assigned to the neutral writing condition. This finding is somewhat surprising given the preponderance of evidence which suggests that participants make gains in positive functioning after engaging in the expressive writing task (Frattaroli, 2006).

There are several possible explanations for this finding. First, it is noteworthy that the methodology of the current study differed from the traditional expressive writing paradigm. In the traditional expressive writing task, subjects write about their deepest thoughts and feelings regarding a stressful life experience/trauma for 15 minutes at a time over three consecutive days (Pennebaker, 1986). In the current study, participants only engaged in one thirty-minute writing task. It may be that the “dosage” of the writing intervention was not enough to impact subjective well-being.

It may also be that writing across several days facilitates a process by which individuals are able to “make sense of” and incorporate knowledge into pre-existing schemas regarding relationships, self, and others. Whether or not the benefit depends on the repetition, the dosage, the spacing between the writing interventions, or any combination of these factors remains an empirical question worthy of further examination in future research. This sentiment has been echoed by Pennebaker and his colleagues (Smyth & Pennebaker, 2008), who have called for exploration of the conditions under which the expressive writing task is helpful. For example, there is some evidence to suggest that a single writing session can impact such outcomes as depression, mood disturbance, and distress for up to three months following the intervention (Cohen, Sander, Slavin, & Lurnley 2008; Greenberg, Wortman, & Stone, 1996; Henry & Schlegel, 2010). Although promising, the research on single session interventions is relatively new and further research needs to be conducted to help clarify the nature and veracity of this conclusion.

Hypothesis 3b stated that those participants in the expressive writing only condition would have lower levels of depressive symptoms at follow-up than those participants in the neutral writing condition. Results from this study did not support this hypothesis. The data indicated that there were no significant differences in depressive symptoms between the expressive writing only condition and the neutral writing condition. This result was found in both the main analyses and post-hoc analysis. This finding is somewhat surprising given the conclusions drawn from a meta-analysis which found that, across 146 studies, expressive writing had a significant impact on depression (Frattaroli, 2006). As discussed previously, it may

be that the single session writing intervention is less powerful and impactful than the traditional writing paradigm. In support of this conclusion, the meta-analysis revealed that subjects experienced the greatest gain if they participated in at least three writing sessions as compared to one or two writing sessions. However, at the time of the meta-analyses there were relatively few studies that had used the single session methodology. In addition, this meta-analysis compared those studies which had three writing sessions to those studies which had one or two writing session. This broader level of analysis is less helpful in answering an important empirical question: does the number of writing sessions impact the extent to which participants benefit from the expressive writing task? Future research might seek to test this question directly and analyze data with a finer level of granularity than has been used in previous research.

The prediction stated in hypothesis 3c was that those participants in the expressive writing only condition would have lower levels of distress over the break-up at follow-up than those participants in the neutral writing condition. Results from the main analysis do not support this prediction. There were no significant differences found between the expressive writing only group and the neutral writing only group in terms of levels of distress when analyzing data from the entire sample. However, when conducting an exploratory analysis on the subsample of participants whose ex-partners had initiated the relationship break-up, a potential difference was found among the subsample of participants whose ex-partners had initiated the relationship break-up, but the predicted direction of the relationship was not supported. Those participants in the expressive writing only group showed a trend

towards higher levels of distress than those participants in the neutral writing condition.

Previous research has shown that when an individual experiences a romantic dissolution, avoidance of pain is, to an extent, a normative and primary means of coping (Wada, 2000). When asked to take stock of one's deepest thoughts and feelings regarding the break-up, it may be difficult for participants to avoid feeling distress over being "rejected." In other words, the writing task may resensitize the participant to the pain of that event/rejection. This speculation is consistent with findings from a recent study which tested the effects of a single session expressive writing task (Cohen, Sander, Slavin, & Lurnley 2008). In this study, researchers analyzed data from a sample of college students who had recently experienced a stressful life event. Findings revealed that baseline level of distress impacted the benefits of the single session disclosure. Participants who had higher baseline levels of distress experienced significantly higher levels of negative affectivity six weeks following the expressive writing intervention than those participants with lower levels of distress. Although it appears as if the expressive writing task may lead to more distress for some individuals, it would be helpful for future research to study further if the nature of the break-up moderates the degree to which participant's benefit from the expressive writing task.

Hypothesis 3d stated that participants in the expressive writing only condition would have lower levels of self-reported health symptoms at follow-up than those participants in the neutral writing condition. Results from the primary and post-hoc analyses did not support this hypothesis. This finding is somewhat inconsistent with

the research findings from studies which have tested the impact of the traditional writing paradigm on health outcomes. Past research has shown that the expressive writing task leads to significant improvements on a variety of health outcomes (Frisina, Borod, & Lepore, 2004; Smyth, 1998). However, Frattaroli's (2006) meta-analysis demonstrated that the effect of expressive writing varies depending on the type of health outcome studied. The category of health labeled general physical symptoms, which is similar to the measure used in the current study, was only marginally significant using a comparatively liberal statistical approach. Furthermore, only one previous study to date has tested the impact of a single session writing intervention on self-reported outcomes. Although results of this study revealed a connection between participating in the expressive writing task and improved reported health outcomes, the self-reported health outcomes consisted of a composite index. Future research might examine more carefully the specific health outcomes that are sensitive to the expressive writing paradigm.

Hypothesis 3e predicted that immediately following the writing intervention, those participants in the expressive writing only condition will have higher levels of self-reported health symptoms than those participants in the neutral writing condition. Consistent with the literature, the results of the current study supported this hypothesis. Participants in the expressive writing condition had significantly greater levels of self-reported symptoms immediately following the writing intervention as compared to their counterparts in the neutral writing condition. These results are consistent with previous findings that expressive writing often produces a short-term increase in negative mood, distress, and physical symptoms (Baikie & Wilhelm,

2005). These short-term costs typically give way to long-term benefits, though the latter were not observed in the present study. In the future, researchers should assess changes at multiple time points to determine if and when therapeutic benefits emerge. It may also be useful to examine the question of whether initial increases in distress are a necessary precursor to therapeutic change.

These results provide stronger evidence that a single writing session is not powerful enough to impact an individual's global sense of being satisfied/happy with their life, levels of depression, and self-reported health symptoms. In addition, the single writing session may have an immediate negative effect in terms of self-reported health symptoms and longer-term costs associated with increases in distress for those participants who initiated the break-up. This is a somewhat surprising finding given the preponderance of evidence which has shown that the traditional three session expressive writing paradigm is apparently powerful enough to impact all of the tested outcomes (Frattarol, 2006). From an applied and practical standpoint, it will be important for future researchers to investigate and discuss how many sessions are required to make a "large enough" impact to warrant the applied therapeutic use of the expressive writing paradigm. It will also be important for researchers to monitor the "costs" associated with the single writing session and to theorize on what "change agents" can negatively impact participants. In empirically testing the differential impact of one, two, or three writing sessions, researchers may also gain further "clues" regarding what therapeutic elements impact different variables. In testing the differences between number of sessions on psychological and physical health variables, researchers might gain further evidence regarding what mechanisms

help make the therapeutic writing paradigm impactful. Alternatively, it may be that moderating factors impact cost/benefits of the single session writing intervention.

The next set of hypotheses will test one such possible individual difference variable.

Hypothesis 4. This group of hypotheses tested the prediction that the level of attachment anxiety/avoidance will moderate the level of psychological health for those participants who are randomly assigned to the expressive writing condition versus the control condition. Specifically, it was predicted that participants higher in attachment anxiety/avoidance would have significantly lower levels of psychological and physical health in the expressive writing only task as compared to the neutral writing task at follow-up while as participants lower in attachment anxiety/avoidance would have significantly higher levels of psychological and physical health in the expressive writing only task as compared to the neutral writing task at follow-up.

Hypothesis 4a stated that participants higher in attachment anxiety/avoidance would have significantly lower levels of subjective well-being in the expressive writing only condition as compared to the neutral writing condition at follow-up while as participants lower in attachment anxiety/avoidance would have significantly higher levels of subjective well-being in the expressive writing only task as compared to the neutral writing task at follow-up. This interaction hypothesis was not supported when analyzing data from the entire sample. Although this measure is frequently used within the expressive writing research literature, it is possible that this scale was not sufficiently sensitive to detect changes over the period of the current study's brief follow-up period (cf. Pavot & Diener, 1993). In support of this explanation, researchers conducting a review of the psychometric properties of the

Satisfaction with Life Scale, found that the scale had relatively low sensitivity until approximately two-months after baseline measurements (Pavot & Diener, 1993). It is suggested that future researchers factor this information into the design of their studies and use appropriately sensitive scales to detect predicted changes in subjective well-being.

Hypothesis 4b stated that participants higher in attachment anxiety/avoidance would have significantly higher levels of depressive symptoms in the expressive writing only condition as compared to the neutral writing condition at follow-up while as participants lower in attachment anxiety/avoidance would have significantly lower levels of depression in the expressive writing only task as compared to the neutral writing task at follow-up. This result was not supported by the main analyses; however, a trend towards significance emerged in the exploratory supplementary analysis among participants whose ex-partner had initiated the break-up. Contrary to predictions, those with higher levels of attachment anxiety appear to have comparable levels of depression at follow-up in the expressive writing task and the neutral writing task; however, it appears as if the expressive writing condition was slightly more effective in reducing depressive symptoms for those lower in attachment anxiety. This provides tentative evidence that those lower in attachment anxiety might be able to benefit more from the expressive writing task in terms of reductions in depressive symptoms than those higher in attachment anxiety.

The rationale for this hypothesis had been that those individuals with higher levels of attachment anxiety tend to use a hyperactivating emotion regulation style. Based on previous literature, it was surmised that this emotion regulation style would

likely interfere with the individuals' ability to appropriately and effectively process emotionally charged events/content which would lead to higher levels of depression. Although the results did not indicate that participants high in attachment anxiety did worse in the expressive writing condition, it seemed that they could not benefit as much from the task as those participants lower in attachment-anxiety, which is in line with attachment theory.

Hypothesis 4c stated that participants higher in attachment anxiety/avoidance would have significantly higher levels of distress over the break-up in the expressive writing only condition as compared to the neutral writing condition at follow-up while as participants lower in attachment anxiety/avoidance would have significantly lower levels of distress in the expressive writing only task as compared to the neutral writing task at follow-up. Results from the main analysis did not support this prediction. However, results from the post-hoc exploratory analyses emerged as significant. Among the subsample of participants whose ex-partner initiated the break-up, results revealed a significant interaction between attachment-related anxiety and condition on level of distress. Specifically, participants higher in attachment anxiety had greater levels of distress at follow-up when randomly assigned to the expressive writing group as compared to the neutral writing group; however, the opposite was true of participants lower in attachment anxiety. Participants who scored lower in attachment-related anxiety had lower levels of distress at follow-up when randomly assigned to the expressive writing group as compared to the neutral writing group.

Hypothesis 4d stated that participants higher in attachment anxiety/avoidance will have significantly higher levels of self-reported health symptoms in the expressive writing only condition as compared to the neutral writing condition at follow-up while as participants lower in attachment anxiety/avoidance would have significantly lower levels of self-reported health symptoms in the expressive writing only task as compared to the neutral writing task at follow-up. Hypothesis 4e stated that, participants higher in attachment anxiety/avoidance would have significantly higher levels of self-reported health symptoms immediately following the writing intervention in the expressive writing only condition as compared to the neutral writing condition. It was hypothesized that participants lower in attachment anxiety/avoidance would also exhibit higher levels of self-reported symptoms immediately following the intervention; however, there would be less of a difference between conditions for these participants than for those participants higher in attachment anxiety/avoidance. The hypothesized interactions were not supported by the results of the main or supplementary analyses.

Once again, this result may have been due to the weak dose provided by a single session of expressive writing. In support of this explanation, some researchers have suggested that the writing intervention is effective because it gives individuals the opportunity to form a coherent story regarding their stressful life experiences (Pennebaker & Seagal, 1999; Ramirez-Esparza & Pennebaker, 2006; Smyth & Pennebaker, 1999). For example, Lepore and Greenberg (2002) tested the effects of expressive writing following a relationship break-up. They specifically altered the instructions for the expressive writing task with the intention of helping participants

to form coherent stories regarding their experience of the break-up. It may be, therefore, that interactions would emerge if the methodology better facilitated the creation of a narrative. This is in line with the cognitive processing theory of expressive writing which argues that the expressive writing technique is effective because it brings about new perspectives, cognitive assimilation, and organization thus lowering levels of distress and increasing psychological health (Pennebaker, 1988). Future research should seek to find the specific ingredients which make the expressive writing recipe successful. Future research should examine the specific conditions that maximize the effects of expressive writing.

Overall, there is some limited and tentative evidence that the effects of the single session expressive writing paradigm may be moderated by attachment anxiety and/or attachment avoidance, dependent on the particular outcome examined and the particulars of the targeted population. The findings show that the level of attachment anxiety/avoidance did not impact the degree to which participants in the expressive writing condition versus the control condition made gains in satisfaction with life and health related symptoms. In addition, there is tentative evidence that for the subsample of individuals whose partners' had initiated the break-up, attachment insecurity did impact the degree to which participants benefitted from the single expressive writing session versus the control condition. Those lower in attachment insecurity did better in the active writing treatment versus the control treatment in terms of distress and depressive symptoms. Conversely, those higher in attachment insecurity showed either no gains or did worse in the active writing condition versus the control condition.

It is interesting that significant interactions were only found within the subsample of participants whose partners' had initiated the break-up. It may be that individuals who had experienced the rejection of a break-up are more apt to make gains from this limited one time intervention than those who did not. It may be that the personal and rejecting nature of being broken up with can bring up questions of self-worth and other "core" identity issues which can be addressed in a therapeutic manner through the writing intervention. It is recommended that future research examine which populations might benefit from a single session writing intervention.

Hypothesis 5. Hypothesis 5 asked the question of whether or not participants who received a security prime prior to the expressive writing task had better psychological/physical health at follow-up than those in the expressive writing only condition. Specifically, this hypothesis stated the prediction that those participants randomly assigned to the writing + prime group would have significantly greater levels of self-reported psychological and physical health than those assigned to the expressive writing only group at follow-up. Only Hypothesis 5b was supported by results from the primary analysis. These results indicated that subjects participating in the prime + writing task had significantly lower levels of depressive symptoms at follow-up than those participating in the expressive writing only task. Hypothesis 5c received partial and tentative support in the exploratory supplementary analysis. Among the subsample of those participants whose ex-partner initiated the break-up, the writing + prime group showed a trend towards reduced levels of distress regarding the break-up at follow-up as compared to the expressive writing group only. Taken together, it appears as if the benefits of a security prime for those individuals who

have experienced a break-up may depend on the outcomes tested and the nature of the break-up. Therefore, future research should work to determine (a) which populations would be most likely to benefit from the security prime and (b) what outcomes the prime is most likely to influence.

There are several potential methodological and theoretical explanations for these results. Researchers acknowledge that it is relatively unclear as to whether repeated security primes are necessary in making lasting changes or whether particular types of priming prove more effective than others (i.e. supraliminal versus subliminal priming; Mikulincer & Shaver, 2007). For example, it may be that the “dose” of the priming intervention was not high enough to impact physiological functioning. It would be helpful to experimentally test whether or not it is more or less helpful to have repeated security primes and/or repeated expressive writing tasks.

In addition, more research is needed on how security priming can augment therapeutic interventions. Theoretically, security primes are thought to boost a person’s sense of felt security which may assist in their ability to maintain emotional balance and adaptability under stressful circumstances. However, it may be that attachment priming is more or less effective depending on the type of stressful circumstance. As this is the first study to date which tests how activating mental representations of supportive attachment figures impacts the effectiveness of the expressive writing condition, future research in this area is needed.

Hypothesis 6. According to the predictions stated in the sixth hypothesis, the level of attachment anxiety/avoidance was expected to moderate the level of psychological health for those participants who are randomly assigned to receive a

prime prior to the expressive writing task. Specifically, participants higher in attachment anxiety/avoidance were expected to have significantly higher levels of psychological and physical health at follow-up when randomly assigned to receive a prime prior to the expressive writing task. Those participants lower in attachment anxiety/avoidance were expected to also benefit from the prime; however, it was expected that they would benefit less from the prime than their counterparts (i.e., participants higher in attachment anxiety/avoidance).

Findings did not support Hypothesis 6a, which maintained that participants higher in attachment anxiety/avoidance would benefit more, in terms of gains in subjective well-being, from the addition of a security prime than those participants lower in attachment anxiety/avoidance. No such interaction was found. Put together, it appears as if the security prime did not positively impact subjective well-being for any participants. In addition, across all results, there were no findings in regards to the subjective well-being outcome. As discussed before, this may reflect a measurement issue as the satisfaction with life scale is relatively stable and may provide a more coarse-grained analysis of changes in subjective well-being.

Hypothesis 6b predicted that attachment anxiety/avoidance would moderate the degree of depressive symptoms at follow-up in the writing + prime condition as compared to the expressive writing only condition. Results from the primary analysis were not significant. However, a potential interaction emerged in the exploratory post-hoc analysis on the subsample of participants whose ex-partner had initiated the break-up such that a) those higher in attachment-related anxiety exhibited a trend towards higher levels of depressive symptomology at follow-up when in the

writing + prime condition as compared to the expressive writing only condition while b) those lower in attachment-related anxiety exhibited a trend towards lower levels of depressive symptomology at follow-up when in the writing + prime condition as compare to the expressive writing task. The findings suggest that the prime was detrimental in terms of reductions in depression for those who were higher in attachment-anxiety and beneficially for those who were lower in attachment-anxiety.

These results are somewhat inconsistent with the literature as increasing people's sense of security has been shown to lower the characteristic defenses of those who are insecurely attached (Arndt, Schimel, Greenberg & Pyszczynski, 2002; Gillath, Selcuk, & Shaver, 2008). One possible explanation lies in the timing of the follow-up measurements. Within the attachment priming literature, most studies have tested the short-term and/or immediate effects of priming on dependent variables of interest (Gillath, Selcuk, & Shaver, 2008). Although there have been some studies which suggest that security priming may remain impactful for up to 10 days after priming has ended, most of these studies used repeated security priming over several days (e.g., Carnelley & Rowe, 2007; Gillath, Selcuk, & Shaver, 2008). Therefore, the empirical question of how long the effects of security primes can last remains to be seen. Future research should seek to determine the conditions that maximize the effects of security priming.

Hypothesis 6c predicted that attachment anxiety/avoidance would moderate the level of psychological health for those participants who were randomly assigned to receive a prime prior to the expressive writing task versus those who received no such prime. Results from the main analyses were not significant but significant

results emerged from the post-hoc analyses. Among the subsample of participants whose ex-partner initiated the break-up, a significant interaction emerged between attachment-related anxiety and condition in predicting distress at follow-up. The results indicated that individuals with higher levels of attachment-anxiety had more benefits, in terms of reductions of distress, in the expressive writing group than in the writing + prime group at follow-up. Conversely, individuals with lower levels of attachment-anxiety did better, in terms of reductions in distress, in the writing + prime group than in the expressive writing only group. Therefore, the direction of the hypothesized relations was not supported.

It may be that for those who are anxiously attached (and, hence, more “relationship focused”), the priming engendered a sense of regret or unfairness at not being able to have a good enough relationship with their ex-partner to sustain a healthy attachment. The existential anxiety prompted within these participants might lead to greater distress and sense of uncertainty regarding one’s connections with others. In support of this explanation the results from the main analysis were not significant but were for those participants whose partner had initiated the break-up. This strengthens the conclusion that these participants might ask such questions as “why was I unable to have the sort of relationship described in the prime with my ex-partner?” In line with this explanation, previous research has suggested that adults with an anxious attachment style tend to entertain negative self-views during hurtful events (Shaver, Mikulincer, Lavy, & Cassidy, 2009). It may be that the pairing of the security prime with the processing intervention facilitated greater self-doubt and exacerbated self-relevant worries regarding self-worth.

Hypothesis 6d predicted that attachment anxiety/avoidance would moderate the level of self-reported health outcomes at follow-up for those participants assigned to the writing + prime condition versus those assigned to the expressive writing only condition. Results were not significant when analyzing data from the main sample or the subsample.

Hypothesis 6e predicted that the level of attachment anxiety/avoidance would moderate the level of self-reported health symptoms measured immediately following the writing intervention for those participants randomly assigned to the writing + prime condition versus the expressive writing only condition. Results from the main analysis did not support the predictions. However, among participants whose ex-partner had initiated the break-up, there was a significant interaction between level of attachment-avoidance and condition on self-reported health symptoms measured directly after the writing intervention. Specifically, participants who were higher in attachment-avoidance had a higher level of self-reported health symptoms in the writing + prime condition as compared to the expressive writing only condition. Conversely, participants lower in attachment-avoidance had lower levels of self-reported health symptoms in the writing + prime condition than in the expressive writing only condition.

It is notable that there was a consistent pattern of results for hypotheses 6a-6e. In each result, participants higher in either attachment anxiety or attachment avoidance did “worse” in the security prime condition than in the expressive writing only condition. It may be, therefore, that the prime exacerbated attachment-insecurity.

Limitations

The current study has several limitations. The first group of limitations involves the sample itself. The sample was composed of students from a single college campus who were recruited from an undergraduate psychology pool. It is possible that many of the participants were, therefore, more psychologically-minded than is true of the general population. In addition, although the findings suggest that this sample had a comparable level of distress to that of an outpatient clinical sample, it remains difficult to generalize the findings to other clinical or community populations. In one meta-analysis (Smyth, 1998), larger psychological health effect sizes were found for writing interventions in studies with college students versus non-students. Therefore, the reader should be careful not to generalize these results to other populations.

In addition, it is notable that the control condition may have lacked credibility which might have impacted results. Students were asked to create a writing sample akin to an “argumentative essay” in which they provided non-emotional arguments for a particular stance on a controversial issue (i.e., the responsibility of universities to provide ‘safe sex’ materials for their students). It may have been apparent to participants that they were in the control group which would likely have impacted the results. Future research might benefit from requiring students to “rate” the credibility of the study after participation. This might elucidate important confounding factors within this program of study.

The second set of limitations center around measurement and statistical issues. In particular, some of the hypothesis tests were under-powered and should, thus, be

interpreted with caution. The findings garnered from the post-hoc analyses should especially be interpreted with caution. For this additional set of analyses, the decision was made to choose a more liberal alpha level, given their exploratory nature. Although the findings of these analyses suggest directions for further research, they must be replicated to determine how stable they are and whether or not they are limited to the unique properties of the current sample. In addition, the practical significance of some of the supplementary analysis findings, especially the finding that the expressive writing condition was slightly more effective in reducing depressive symptoms for those lower in attachment anxiety, may be questioned. A third potential limitation is the setting of the study. In an attempt to increase experimental control, the current study was conducted in a laboratory. Although this may have helped to increase internal validity, the results may not be as readily generalized to applied settings. Finally, the self-report nature of the study is a limitation.

Conclusions

Several aspects of the current findings deserve to be highlighted. First, the emotional regulation characteristic of attachment avoidance was reflected in some aspects of students' writing. Specifically, evidence from the current study suggests that individuals who have greater levels of attachment-related avoidance write less about positive emotions and write less in general. These results were in line with formulations derived from attachment theory research. Specifically, individuals with higher attachment-avoidance, who generally avoid the experience and expression of strong feelings, had greater difficulty writing about negative emotional events.

These individuals wrote less and used less positive emotion words when discussing their ex-relationship. These results provide limited and partial support for the conclusion that language style reflects the strategies that people use to regulate their emotions (i.e., attachment style). More research is needed to determine if, how, and under what conditions attachment style manifests itself in verbal and written content.

Second, the present results suggest that the single writing task was limited in its effectiveness. The expressive writing task did not positively impact participants' level of subjective well-being, depressive symptomology, or self-reported health symptoms as compared to the neutral writing task. In fact, the results revealed that the expressive writing condition did less well than the neutral writing condition in lowering levels of distress among those participants whose ex-partner initiated the break-up. In addition, participants exhibited higher levels of self-reported health symptoms immediately following the writing intervention in the expressive writing only condition as compared to the neutral writing condition. Therefore, there may be some ways in which the single session expressive writing task negatively impacts participants. It is suggested that research further examine the amount of intervention time necessary for participants to benefit from expressive writing. In addition, future research should seek to examine what other factors may lead to increased treatment effects for the writing intervention (e.g., dosage, writing environment, targeted populations).

Third, the security prime generally had limited added utility when added to the expressive writing condition, though it did show some ability to aid reduction of depressive symptoms in the main analyses and to reduce distress in the supplementary

analysis. The security prime did not work to aid participants in terms of reductions in self-reported symptoms or gains in subjective well-being. Moreover, contrary to hypotheses, the security prime did not differentially benefit those participants who exhibited higher levels of attachment anxiety/avoidance and instead seemed to benefit those with lower levels of attachment anxiety/avoidance. For those higher in attachment anxiety/avoidance, the addition of the prime may have worked to exacerbate attachment insecurities. Specifically, the addition of the prime was associated with greater levels of depressive symptomology, distress, and immediate self-reported health problems among some participants whose ex-partners had initiated the relationship break-up. However, the addition of a prime was helpful for those participants who exhibited lower levels of attachment anxiety/avoidance. The addition of the prime was associated with lower levels of depression, distress, and immediate self-reported health problems among those participants whose ex-partner had initiated the break-up. Future research is needed to examine the conditions under which security primes add value beyond expressive writing alone.

Overall, there is robust and clear evidence that the expressive writing paradigm, at least in its traditional form, is effective; however, it is clear that many questions remain. The current research highlights the need for further research to answer the question of “when” or “with whom” expressive writing is most effective and “how” can we make it more effective for specific populations. Future researchers should attempt to elucidate (a) the conditions under which the expressive writing task is most effective from a cost-benefit analysis perspective, and (b) the mechanisms which fuel differences between one, two, or three writing sessions. The current

research brings forth many of these questions and provides tentative directions for future research which might help to further the answers to these inquiries.

Table 1
 Correlations, Ranges, Means, Standard Deviations, and Reliability Coefficients of the Predictor and Criterion Variables

	1	2	3	4	5	6	7	8	9	10	11
1. ECR-Anx	-										
2. ECR-Avo	.21**	-									
3. T2IES	.30**	.02	-								
4. T2CES-D	.34**	.00	.47**	-							
5. T2SWLS	-.28**	-.15	-.15	-.54**	-						
6. T2PSS-Pre	.30**	.03	.38**	.59**	-.42**	-					
7. T2PSS-Post	.21**	.04	.43**	.47**	-.25**	.66**	-				
8. T3IES	.24**	-.05	.67**	.52**	-.21**	.35**	.41**	-			
9. T3CES-D	.34**	-.08	.40**	.71**	-.40**	.46**	.47**	.63**	-		
10. T3SWLS	-.15*	-.04	-.11	-.24**	.39**	-.16*	-.13	-.14	-.30**	-	
11. T3PSS	.23**	.04	.33**	.41**	-.28**	.49**	.57**	.52**	.69**	.21**	-
Possible Scale Range	1-7	1-7	0-75	0-80	5-35	16-80	16-80	0-75	0-80	5-35	16-80
Obtained Scale Range	1-6	1-6	0-70	20-79	5-35	16-75	17-69	0-75	20-77	5-35	16-62
Mean	3.55	3.12	38.70	40.59	22.45	36.71	38.11	31.57	38.12	18.06	31.0
Standard Deviations	.99	1.06	14.91	12.41	6.51	11.48	11.61	14.84	11.97	7.40	10.18
α	.88	.92	.86	.93	.86	.87	.88	.87	.92	.89	.86

Note. ECR-Anx= Experiences in close relationships-revised attachment-related anxiety, ECR-Avo=Experiences in close relationships-revised attachment-related avoidance, IES= Impact of event scale, SWLS= Satisfaction with life Scale, PSS-Pre= Physical Symptom Scale directly prior to intervention, PSS-Post= Physical Symptom Scale directly after intervention, Physical Symptom Scale at follow-up. * $p < .05$. ** $p < .01$.

Table 2
Skewness and Kurtosis of the Normalized Predictor Variables and Raw Criterion Variables

Variable	Skewness	S.E. of Skewness	Kurtosis	S.E. of Kurtosis
ZECR-Anx	-.05	.18	-.35	.37
ZECR-Avo	.48	.18	-.23	.37
ZT2IES	-.15	.18	-.45	.37
ZT2CES-D	.51	.18	-.18	.37
ZT2SWLS	-.47	.18	-.29	.37
ZT2PSS-Pre	.47	.18	-.22	.37
ZT2PSS-Post	.24	.18	-.72	.37
T3IES	.12	.19	-.24	.37
T3CES-D	.78	.19	.19	.37
T3SWLS	.34	.19	-.88	.37
T3PSS	.81	.19	.03	.37

Note. ECR-Anx= Experiences in close relationships-revised attachment-related anxiety, ECR-Avo=Experiences in close relationships-revised attachment-related avoidance, IES= Impact of event scale, SWLS= Satisfaction with life Scale, SCL-Pre= Symptom check list directly prior to intervention, SCL-Post= Symptom check list directly after intervention, T3SCL= Symptom check list at follow-up.

Table 3

Summary of t-tests of the Mean Differences in Percentage of Word Use between Conditions on the Three Word Categories

Category of Words	Neutral Writing Condition		Expressive Writing Condition		<i>t-value</i>	<i>Cohen's d</i>
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>		
Negative Emotion	2.09	1.05	2.64	.92	-3.40**	.56
Sad Emotion	.15	.18	.78	.45	-9.87**	1.83
Anxious Emotion	.45	.45	.58	.35	-2.06**	.32

Note. The mean denotes the percentage of a particular category of words among the entire writing sample (e.g., 2.09% of the words were negative emotion words within the neutral writing condition writing samples). * $p < .05$ ** $p < .01$

Table 4

Summary of Hierarchical Moderated Multiple Regression Analysis Predicting Subjective Well-being (Satisfaction with Life Scale; SWLS scores) at Follow-Up

	Predictors	R	ΔR^2	Df	ΔF	B	β	p
Step 1	ZT1SWLS/Overall Step	.41	.17	144	29.19**	3.17**	-.41**	.00**
Step 2	Overall Step	.41	.00	140	.09			.99
	Contrast 1					-.03	-.01	.97
	Contrast 2					-.09	-.01	.91
	ZECR-Anx					.19	.03	.76
	ZECR-Avo					.25	.03	.68
Step 3	Overall Step	.45	.03	136	1.41			.24
	Contrast 1 x ZECR-Avo					.98	.10	.29
	Contrast 2 x ZECR-Avo					.53	.06	.52
	Contrast 1 x ZECR-Anx					1.13	-.03	.18
	Contrast 2 x ZECR-Anx					-.28	.13	.75

Note. Contrast 1 represents the comparison between the neutral writing condition and the expressive writing condition. Contrast 2 represents the comparison between the expressive writing condition and the prime + writing condition. * $p < .05$ ** $p < .01$

Table 5

Summary of Hierarchical Moderated Multiple Regression Analysis Predicting Depression (Center for Epidemiological Center for Depression; CES-D scores) at Follow-Up

	Predictors	R	ΔR^2	Df	ΔF	B	β	p
Step 1	ZT1CESD/Overall Step	.68	.47	144	126.71***	8.93***	.68***	.00***
Step 2	Overall Step	.71	.03	140	2.05*			.09*
	Contrast 1					-.91	-.07	.35
	Contrast 2					-1.64*	-.12*	.09*
	ZECR-Anx					.62	.06	.40
	ZECR-Avo					-1.48	-.13	.04
Step 3		.71	.00	136	.15			.96
	Contrast 1 x ZECR-Avo					.17	.01	.88
	Contrast 2 x ZECR-Avo					.68	.05	.50
	Contrast 1 x ZECR-Anx					.01	.00	.99
	Contrast 2 x ZECR-Anx					-.35	-.03	.74

Note. Contrast 1 represents the comparison between the neutral writing condition and the expressive writing condition. Contrast 2 represents the comparison between the expressive writing condition and the prime + writing condition. * $p < .10$ ** $p < .05$ *** $p < .01$

Table 6

Summary of Hierarchical Moderated Multiple Regression Analysis Predicting Distress (Impact of Events Scale; IES scores) at Follow-Up

	Predictors	R	ΔR^2	Df	ΔF	B	β	p
Step 1	ZT1IES/Overall Step	.61	.34	145	86.93**	9.00**	.61**	.00**
Step 2	Overall Step	.63	.02	141	1.12			.35
	Contrast 1					-1.99	-.12	.12
	Contrast 2					-1.55	-.10	.22
	ZECR-Anx					.74	.05	.45
	ZECR-Avo					-.75	-.05	.42
Step 3	Overall Step	.65	.02	137	1.40			.24
	Contrast 1 x ZECR-Avo					-.16	-.01	.91
	Contrast 2 x ZECR-Avo					2.46	.16	.06
	Contrast 1 x ZECR-Anx					.54	.03	.69
	Contrast 2 x ZECR-Anx					-.01	.00	.99

Note. Contrast 1 represents the comparison between the neutral writing condition and the expressive writing condition. Contrast 2 represents the comparison between the expressive writing condition and the prime + writing condition. * $p < .05$ ** $p < .01$

Table 7

Summary of Hierarchical Moderated Multiple Regression Analysis Predicting Self-reported Health Symptoms (Physical Symptom Scale-Physical; PSS scores) at Follow-Up

	Predictors	<i>R</i>	ΔR^2	<i>Df</i>	ΔF	<i>B</i>	β	<i>p</i>
Step 1	ZTPSS/Overall Step	.51	.26	144	49.75**	5.71**	.81**	.00**
Step 2	Overall Step	.52	.01	140	.40			.81
	Contrast 1					-.57	-.05	.59
	Contrast 2					-.70	-.06	.50
	ZECR-Anx					.73	.07	.36
	ZECR-Avo					-.25	-.02	.75
Step 3	Overall Step	.55	.04	136	1.74			.15
	Contrast 1 x ZECR-Avo					2.23	.18	.05
	Contrast 2 x ZECR-Avo					2.29	.20	.03
	Contrast 1 x ZECR-Anx					.50	.04	.64
	Contrast 2 x ZECR-Anx					.92	.04	.64

Note. Contrast 1 represents the comparison between the neutral writing condition and the expressive writing condition. Contrast 2 represents the comparison between the expressive writing condition and the prime + writing condition. * $p < .05$ ** $p < .01$

Table 8

Summary of Hierarchical Moderated Multiple Regression Analysis Predicting Self-reported Health Symptoms (Physical Symptom Scale-Physical; PSS scores) Immediately following the Writing Intervention

	Predictors	R	ΔR^2	Df	ΔF	B	β	p
Step 1	ZTPSS/Overall Step	.67	.45	159	131.62**	7.84**	.67**	.00**
Step 2	Overall Step	.71	.05	155	3.92**			.01**
	Contrast 1					3.60**	.25**	.00**
	Contrast 2					.87	.06	.35
	ZECR-Anx					.23	.02	.75
	ZECR-Avo					-.38	-.03	.58
Step 3	Overall Step	.72	.01	151	.71			.59
	Contrast 1 x ZECR-Avo					.25	.02	.81
	Contrast 2 x ZECR-Avo					1.37	.10	.15
	Contrast 1 x ZECR-Anx					.02	.00	.82
	Contrast 2 x ZECR-Anx					.23	.02	.98

Note. Contrast 1 represents the comparison between the neutral writing condition and the expressive writing condition. Contrast 2 represents the comparison between the expressive writing condition and the prime + writing condition. * $p < .05$ ** $p < .01$

Table 9

Summary of Hierarchical Moderated Multiple Regression Analysis Predicting Distress Regarding Break-Up at Follow-Up using Subsample of Participants Who's Ex-Partner Initiated the Break-Up

	Predictors	R	ΔR^2	Df	ΔF	B	B	P
Step 1	ZT1IES/Overall Step	.62	.38	43	26.60***	8.67***	.62***	.00***
Step 2	Overall Step	.71	.12	39	2.35*			.07*
	Contrast 1					-4.22*	-.26*	.08*
	Contrast 2					-4.56*	-2.4*	.08*
	ZECR-Anx					.67	-.12	.34
	ZECR-Avo					-3.02	-.22*	.07*
Step 3	Overall Step	.82	.16	35	4.03***			.01***
	Contrast 1 x ZECR-Avo					-3.15	-.20	.15
	Contrast 2 x ZECR-Avo					1.80	.10	.49
	Contrast 1 x ZECR-Anx					6.15***	.38***	.01***
	Contrast 2 x ZECR-Anx					4.99*	.25*	.09*

Note. Contrast 1 represents the comparison between the neutral writing condition and the expressive writing condition. Contrast 2 represents the comparison between the expressive writing condition and the prime + writing condition. * $p < .10$ ** $p < .05$ *** $p < .01$

Table 10

Summary of Hierarchical Moderated Multiple Regression Analysis Predicting Immediate Health Self-Reported Health Symptoms Regarding Break-Up at Follow-Up using Subsample of Participants Who's Ex-Partner Initiated the Break-Up

	Predictors	R	ΔR^2	Df	ΔF	B	β	P
Step 1	ZT1PSS/Overall Step	.75	.56	45	57.39***	8.96	.75***	.00***
Step 2	Overall Step	.79	.07	41	1.92			.13
	Contrast 1					3.83	.28	.02
	Contrast 2					4.06	.25	.04
	ZECR-Anx					-.10	-.01	.94
	ZECR-Avo					.19	.02	.87
Step 3	Overall Step	.85	.09	37	2.89**			.04**
	Contrast 1 x ZECR-Avo					1.75	.13	.28
	Contrast 2 x ZECR-Avo					5.70***	.38***	.01***
	Contrast 1 x ZECR-Anx					.11	.01	.94
	Contrast 2 x ZECR-Anx					.20	.01	.93

Note. Contrast 1 represents the comparison between the neutral writing condition and the expressive writing condition. Contrast 2 represents the comparison between the expressive writing condition and the prime + writing condition. * $p < .10$ ** $p < .05$ *** $p < .01$

Table 11

Summary of Hierarchical Moderated Multiple Regression Analysis Predicting Depressive Symptomology Regarding Break-Up at Follow-Up using Subsample of Participants Who's Ex-Partner Initiated the Break-Up

	Predictors	R	ΔR^2	Df	ΔF	B	β	P
Step 1	ZT1CES-D	.74	.55	43	52.13***	9.14***	.74***	.00***
Step 2	Overall Step	.78	.06	39	1.37			.26
	Contrast 1					-2.27	-.16	.19
	Contrast 2					-2.01	-.12	.32
	ZECR-Anx					.90	.07	.52
	ZECR-Avo					-2.22	-.18	.09
Step 3	Overall Step	.83	.09	35	2.45*			.07*
	Contrast 1 x ZECR-Avo					-1.28	-.09	.48
	Contrast 2 x ZECR-Avo					-2.17	-.14	.33
	Contrast 1 x ZECR-Anx					4.35**	.31**	.02**
	Contrast 2 x ZECR-Anx					7.67***	.43***	.01***

Note. Contrast 1 represents the comparison between the neutral writing condition and the expressive writing condition. Contrast 2 represents the comparison between the expressive writing condition and the prime + writing condition. * $p < .10$ ** $p < .05$ *** $p < .01$

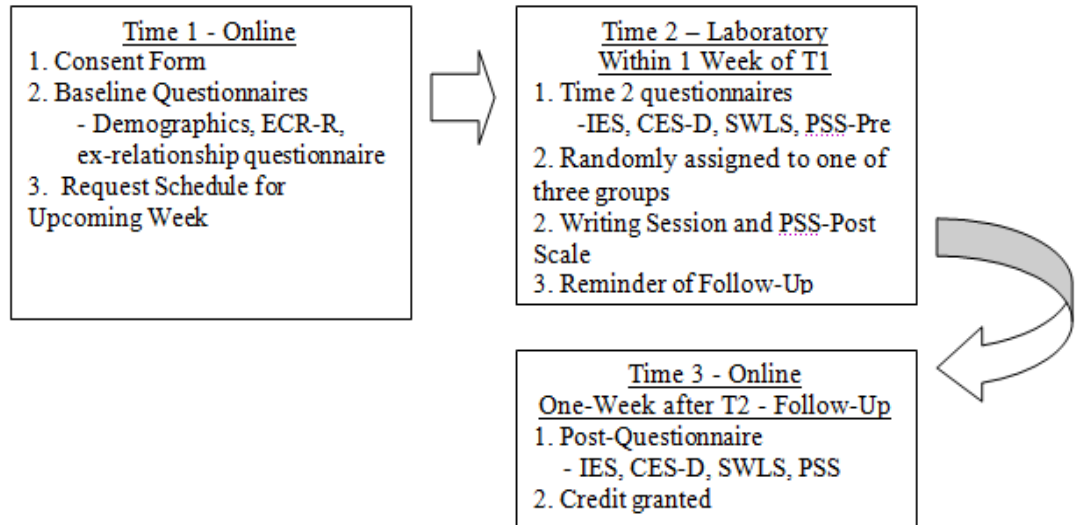


Figure 1. Experimental Design of the Study.

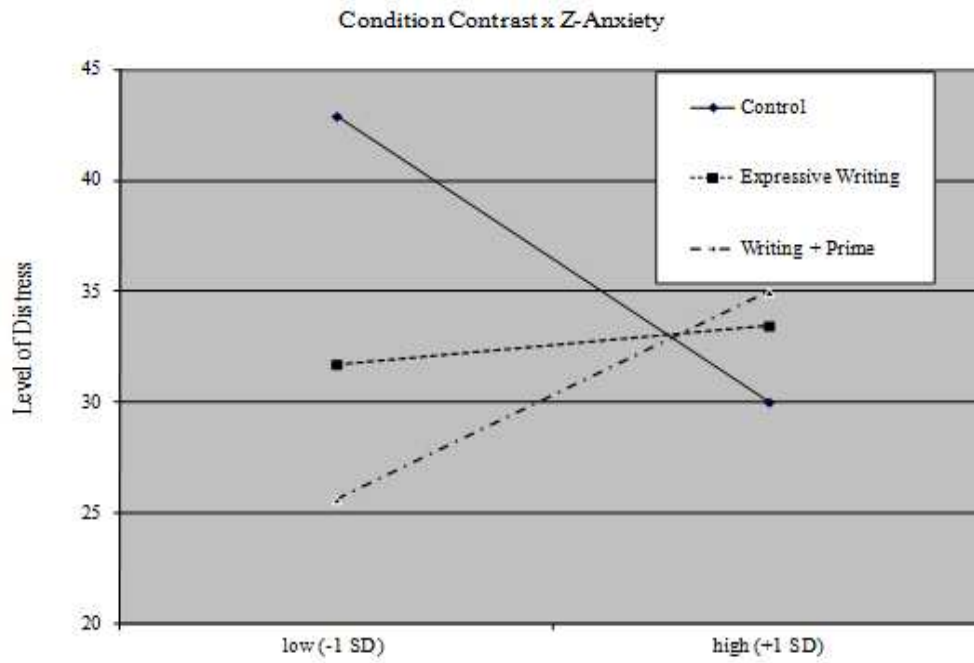


Figure 2. Interactions between attachment anxiety and condition (i.e., control versus expressive writing versus writing + prime) predicting distress regarding the break-up for subsample of participants whose ex-partner initiated the break-up.

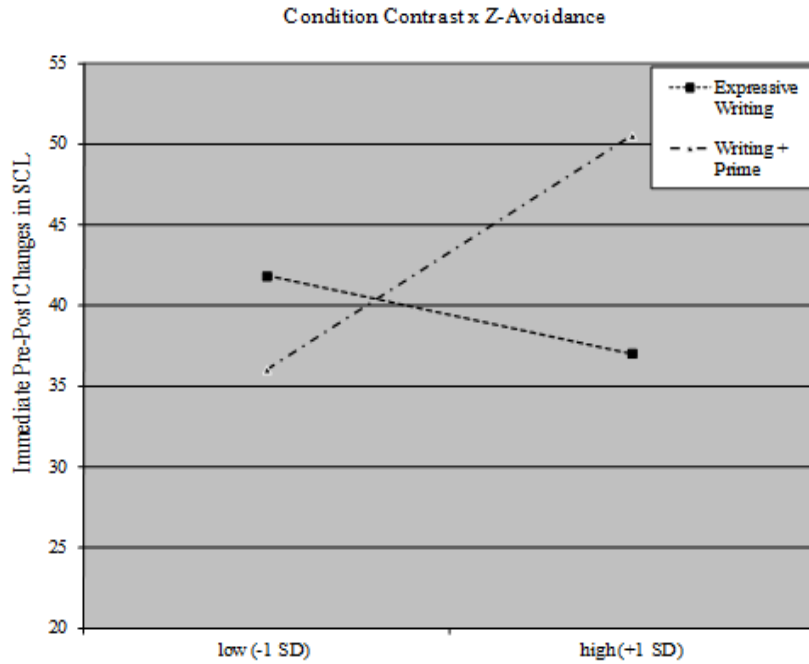


Figure 3. Interactions between attachment avoidance and condition (i.e., expressive writing only versus writing + prime) predicting immediate health symptoms regarding the break-up for subsample of participants whose ex-partner initiated the break-up.

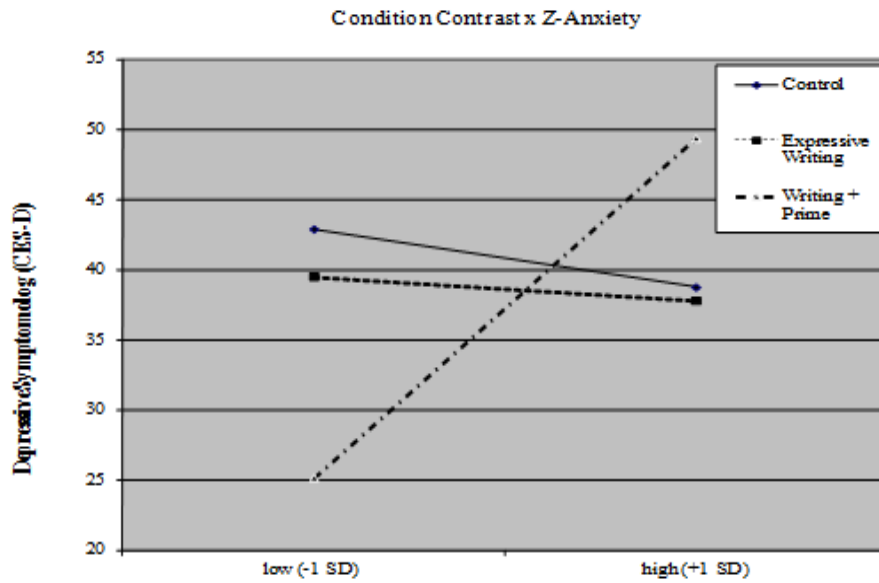


Figure 4. Interactions between attachment avoidance and condition (i.e., control versus expressive writing only versus writing + prime) predicting level of depressive symptomology for subsample of participants whose ex-partner initiated the break-up.

APPENDIX A

Demographic Questionnaire

1. Age ____

2. Sex: Male Female

3. Marital Status: Single, Married, Separated, Divorced

4. Race/Ethnicity (choose all that apply)

White or European American, Black or African American, Latino/a or Hispanic American, Asian/Pacific Islander American, Native American, Other

APPENDIX B

Relationship Questionnaire

1. Please indicate the amount of months you were your ex-partner: _____
2. Please indicate how many months have passed since your break-up (if less than one month, please indicate in weeks but be sure to specify weeks instead of months):

3. Please indicate who initiated the break-up: I did, My ex-partner did, It was mutual
4. Please indicate the level of commitment in your past relationship with your ex-partner: Not at All Committed, Somewhat Committed, Committed, Very Committed, Extremely Committed
5. Please indicate your current relationship status: Single, In a relationship

APPENDIX C

Experiences in Close Relationships Revised - Questionnaire

The statements below concern how you feel in emotionally intimate relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number in the line preceding that item.

- 1 = Strongly Agree
- 2 = Agree
- 3 = Slightly Agree
- 4 = Neither Agree or Disagree
- 5 = Slightly Disagree
- 6 = Disagree
- 7 = Strongly Disagree

- _____ 1. I'm afraid that I will lose my partner's love.
- _____ 2. I often worry that my partner will not want to stay with me.
- _____ 3. I often worry that my partner doesn't really love me.
- _____ 4. I worry that romantic partners won't care about me as much as I care about them.
- _____ 5. I often wish that my partner's feelings for me were as strong as my feelings for him or her.
- _____ 6. I worry a lot about my relationships.
- _____ 7. When my partner is out of sight, I worry that he or she might become interested in someone else.
- _____ 8. When I show my feelings for romantic partners, I'm afraid they will not feel the same about me.
- _____ 9. I rarely worry about my partner leaving me.
- _____ 10. My romantic partner makes me doubt myself.
- _____ 11. I do not often worry about being abandoned.
- _____ 12. I find that my partner(s) don't want to get as close as I would like.
- _____ 13. Sometimes romantic partners change their feelings about me for no apparent reason.
- _____ 14. My desire to be very close sometimes scares people away.
- _____ 15. I'm afraid that once a romantic partner gets to know me, he or she won't like who I really am.
- _____ 16. It makes me mad that I don't get the affection and support I need from my partner.
- _____ 17. I worry that I won't measure up to other people.
- _____ 18. My partner only seems to notice me when I'm angry.

- _____ 19. I prefer not to show a partner how I feel deep down.
- _____ 20. I feel comfortable sharing my private thoughts and feelings with my partner.
- _____ 21. I find it difficult to allow myself to depend on romantic partners.
- _____ 22. I am very comfortable being close to romantic partners.
- _____ 23. I don't feel comfortable opening up to romantic partners.
- _____ 24. I prefer not to be too close to romantic partners.
- _____ 25. I get uncomfortable when a romantic partner wants to be very close.
- _____ 26. I find it relatively easy to get close to my partner.
- _____ 27. It's not difficult for me to get close to my partner.
- _____ 28. I usually discuss my problems and concerns with my partner.
- _____ 29. It helps to turn to my romantic partner in times of need.
- _____ 30. I tell my partner just about everything.
- _____ 31. I talk things over with my partner.
- _____ 32. I am nervous when partners get too close to me.
- _____ 33. I feel comfortable depending on romantic partners.
- _____ 34. I find it easy to depend on romantic partners.
- _____ 35. It's easy for me to be affectionate with my partner.
- _____ 36. My partner really understands me and my needs.

APPENDIX D

Impact of Events Scale

Below is a list of comments made by people after stressful life events. Using the following scale, please indicate how frequently each of these comments was true for you DURING THE PAST SEVEN DAYS.

1. I thought about the break-up when I didn't mean to.

Not at all Rarely Sometimes Often

2. I avoided letting myself get upset when I thought about the break-up or was reminded of the break-up.

Not at all Rarely Sometimes Often

3. I tried to remove the break-up from memory.

Not at all Rarely Sometimes Often

4. I had trouble falling asleep or staying asleep, because of pictures or thoughts about the break-up that came into my mind.

Not at all Rarely Sometimes Often

5. I had waves of strong feelings about the break-up.

Not at all Rarely Sometimes Often

6. I had dreams about the break-up

Not at all Rarely Sometimes Often

7. I stayed away from reminders of the break-up

Not at all Rarely Sometimes Often

8. I felt as if the break-up hadn't happened or the break-up wasn't real.

Not at all Rarely Sometimes Often

9. I tried not to talk about the break-up.

Not at all Rarely Sometimes Often

10. Picture about the break-up popped into my mind.

Not at all Rarely Sometimes Often

11. Other things kept making me think about the break-up

Not at all Rarely Sometimes Often

12. I was aware that I still had a lot of feelings about the break-up, but I didn't deal with them.

Not at all Rarely Sometimes Often

13. I tried not to think about the break-up.

Not at all Rarely Sometimes Often

14. Any reminder brought back feelings about the break-up.

Not at all Rarely Sometimes Often

15. My feelings about the break-up were kind of numb.

Not at all Rarely Sometimes Often

APPENDIX E

The Center for Epidemiological Studies - Depression Scales (CES-D)

Please indicate how often you have felt this way during the past week by using the following numbers:

- 1 = rarely or none of the time (less than one day)
- 2 = some of the time (1-2 days)
- 3 = occasionally or a moderate amount (3-4 days)
- 4 = most or all of the time (5-7 days)

	1	2	3	4
I was bothered by things that usually don't bother me.	—	—	—	—
I did not feel like eating; my appetite was poor.	—	—	—	—
I felt that I could not shake off the blues even with help from my friends.	—	—	—	—
I felt that I was just as good as other people.	—	—	—	—
I had trouble keeping my mind on what I was doing.	—	—	—	—
I felt depressed.	—	—	—	—
I felt that everything I did was an effort.	—	—	—	—
I felt hopeful about the future.	—	—	—	—
I thought my life had been a failure.	—	—	—	—
I felt fearful.	—	—	—	—
My sleep was restless.	—	—	—	—
I was happy.	—	—	—	—
I talked less than usual.	—	—	—	—
I felt lonely.	—	—	—	—
People were unfriendly.	—	—	—	—
I enjoyed life.	—	—	—	—

I had crying spells.

— — — —

I felt sad.

— — — —

I felt that people disliked me.

— — — —

I could not get “going.”

— — — —

APPENDIX F

The Satisfaction with Life Scale (SWLS)

Directions: Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number in the line preceding that item. Please be open and honest in your responding.

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Slightly Disagree
- 4 = Neither Agree or Disagree
- 5 = Slightly Agree
- 6 = Agree
- 7 = Strongly Agree

- _____ 1. In most ways my life is close to my ideal.
- _____ 2. The conditions of my life are excellent.
- _____ 3. I am satisfied with life.
- _____ 4. So far I have gotten the important things I want in life.
- _____ 5. If I could live my life over, I would change almost nothing.

APPENDIX G

Symptom-Emotion Checklist

Right now, to what degree are you currently experiencing each of the following,

where:

1 = not at all 3 = somewhat 5 = a great deal

Racing heart ___

Nervous ___

Upset stomach ___

Sad ___

Headache ___

Guilty ___

Dizziness ___

Happy ___

Shortness of breath ___

Contented ___

Cold hands ___

Fatigued ___

Sweaty hands ___

Constrained ___

Tense Muscles ___

Anxious ___

APPENDIX H

Advertisement for Recruitment

Have you experienced a relationship break-up in the last three months and are you feeling some ongoing distress over this break-up? If so, you are eligible to participate in this 3-part research study.

APPENDIX I

Informed Consent Form

Project Title: Relationship Break-Ups Study

Statement of Age of Subject: (Please note: parental consent always needed for minors) you state that you are over 18 years of age and wish to participate in a program of research being conducted by Helena (Mimi) Martin in the Department of Counseling and Personnel Services at the University of Maryland, College Park.

Purpose of the Study: The purpose of this research is to investigate the effects of writing following relationship breakups.

Procedures: At the first online section of the study, lasting approximately 10 minutes, you will complete two self-report measures and will be asked to provide your availability to come into the laboratory for the second portion of the study. At the second section of the study lasting approximately 45 minutes, you will first complete a set of questionnaires focusing on your reactions to the relationship break-up. You will then participate in a set of activities involving writing about relationships that will last 20-30 minutes. In the last online portion of the study, you will be asked to complete some follow-up measures. This will take approximately 10 minutes. After have completed the two sections of the study or if you decide to end participation in the study, you will be provided with information regarding counseling services on campus as well as the full details of the experiment including hypotheses. If you are in a psychology course, you will receive course credit for participation. After data collection is complete, you will be debriefed as to the full details of the experiment including hypotheses.

Confidentiality: All information collected in this study is confidential to the extent permitted by law. You understand that the data you provide will be grouped with data others provide for reporting and presentation and that my name will not be used.

Risks: You may think about some things regarding your past relationship that you have not thought about before participating in this study. Some of the questions are personal in nature.

Benefits, Freedom to Withdraw, & Ability to Ask Questions: The experiment is not designed to help you personally, but to help the investigator learn more about close relationships and problem-solving. You are free to ask questions or withdraw from participation at any time and without penalty. Your participation is completely voluntary. You can decline to answer any questions that make you uncomfortable.

Contact Information of Investigator: Helena (Mimi) Martin, Department of Counseling and Personnel Services, University of Maryland, College Park, Maryland 20742. Email: hmmartinumd@gmail.com.

Contact Information of Institutional Review Board: If you have any questions about your rights as a research subject or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, Maryland 20742; (email) irb@deans.umd.edu; (telephone) 301-405-0678.

APPENDIX J

Debriefing Form

Project Title: Relationship Break-Ups Study

General Aim and Purpose: Thank you for participating in this study. The first purpose was to look at the impact of a brief writing intervention (called the expressive writing paradigm) intended to target symptom reduction. The second purpose of this study was to examine how a client variable (attachment style) may help to determine which clients profit most the expressive writing task. This client variable (in scientific language this is known as the moderator variable) was attachment style, which is defined as the systematic pattern of relational expectations, emotions, and behavior that results from early experiences with caregivers. Attachment style is further broken down into two dimensions, that of attachment anxiety and attachment avoidance. Attachment anxiety is characterized by heightened emotional reactions in times of distress and sensitivity to interpersonal rejection and abandonment. Attachment avoidance is characterized by an attenuated emotional reaction in times of distress (a downplay of negative emotions) and a preference for a higher degree of emotional distance from intimate others. Individuals who are low in attachment avoidance and attachment anxiety are considered securely attached, which is defined by a general comfort with interdependence, and a balanced emotional reaction in times of distress. The third purpose of the study was to examine if and how priming participants (making a particular concept more salient) with a sense of attachment security (i.e., a secure prime) prior to the writing intervention might help participants to gain more from the writing experience.

Independent Variables, Dependent Variables, and Procedures: The independent variables were the type of writing intervention assigned to the participant and whether or not the writing intervention was preceded with an attachment security prime. As this study utilized an experimental design, participants were randomly assigned to one of three conditions. The expressive writing only intervention required participants to explore their deepest thoughts and feelings regarding the break-up. The prime + expressive writing intervention was exactly the same with the addition of a security prime (a visualization exercise disguised as a relaxation technique) prior to the writing task. Lastly, there was a control group in which participants were asked to write about a non-personal topic in a non-emotional way.

The dependent variables of interest were well-being, self-reported physical health symptoms, depression, and the level of distress surrounding the relationship the break-up. Self-reported physical health symptoms were measured directly after the writing intervention and then at follow-up which occurred one week later. Researchers were interested in the change in self-reported health symptoms both directly after the intervention and then one week later. The other outcome variables of interest were only measured prior to the first writing interventions to obtain a baseline score and then one week following the writing interventions to see if the

writing interventions had a lasting impact on these variables (i.e., depression, well-being, and the impact of the break-up).

Main Hypotheses

It was thought that those randomly assigned to the active expressive writing group would benefit in terms of symptom reduction, physical health, and gains in life satisfaction than those assigned to the control group. This is in line with previous research which has found that individuals who have the opportunity to write about their deepest thoughts and feelings make significant gains in their level of physical and psychological health. Next, it was thought that those who were higher on attachment anxiety or attachment avoidance would benefit less from the writing intervention than those individuals who were lower on attachment anxiety and attachment avoidance. Research has shown that the emotional reactions of individuals who are higher in attachment anxiety or attachment avoidance may interfere with effective cognitive/emotional processing of information.

The last sets of hypotheses revolve around the attachment security prime. It was hypothesized that everyone would benefit from an attachment security prime as previous research supports the conclusion that making attachment security more salient is beneficial to the majority of individuals. Secondly, it was hypothesized that those individuals who scored higher on attachment anxiety and attachment avoidance would benefit the most from the attachment security prime, as the prime may be helping them to have an emotional reaction which facilitates cognitive/emotional processing.

Deception: Participants were given a security prime which was disguised as a visualization technique that had been shown to help people relax. This deception was used because research has shown that individuals who know they are being primed with security might not benefit as much from the priming procedure.

Contact Information and Counseling Services: Thank you again for your participation in this study. If you are ever concerned about personal issues, you can contact the counselors at the Campus Counseling Center at the University of Maryland or the University Health Center. More complete contact information for the counseling services offered on campus is listed below. If you have any questions about this research, please feel free to contact primary investigator Charles J. Gelso, Department of Psychology, University of Maryland, College Park, MD 20742. Email: gelso@psyc.umd.edu; Phone: 301-405-5909. You can also contact the student investigator, Helena (Mimi) Martin, Department of Counseling and Personnel Services, University of Maryland, College Park, Maryland 20742. Email: hmmartinumd@gmail.com

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