Attachment Self-report Questionnaires: Refining the Method

Sheri Rae Curtis

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Attachment Self-Report Questionnaires: Refining the Method

by

Sheri Rae Curtis

A Dissertation submitted in partial satisfaction of
the requirements for the degree of
Doctor of Philosophy in Psychology

September 2004
Each person whose signature appears below certifies that this dissertation in his/her opinion is adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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Attachment theory defines attachment as a context-specific behavioral system (Bowlby, 1969). Specifically, attachment behaviors and cognitions become activated when an individual is in an environment that is anxiety provoking or stressful and they cease when that individual obtains relief from such situations. Self-report measures of adult attachment have largely ignored the context-specific requirement of activating the attachment behavioral system focusing instead on the belief that over time attachment representations are stable and enduring styles of relating interpersonally. However research findings in the adult attachment literature have found contextual effects on behavior that cannot be explained by attachment style alone (Green & Campbell, 2000, Mikulincer & Arad, 1999) and greater predictive power with measures that tap contextually relevant information over self-report measures that do not activate the attachment system (Bouthillier et al., 2002). The purpose of this study is to investigate the empirical advantages of using a self-report attachment questionnaire that is first primed with a vignette designed to activate the attachment system. Four hundred and fourteen adult college students were randomly assigned to one of three conditions and were asked to respond to a questionnaire. The three groups only differed on if they were exposed to an attachment-activating vignette and/or the placement of the vignette in the questionnaire materials. The questionnaire materials included measures of attachment,
trust, perceived social support, loneliness, self-esteem, and demographic information. Data were gathered from self-report questionnaires that were completed and returned by the participants. Hypotheses suggesting empirical advantages of using a prime with a self-report attachment questionnaire were not supported. It is likely that the prime in this study did not activate the right hemisphere of the brain that has been implicated in processing attachment related information, and, thus, it did not activate the attachment system. This methodological issue has important implications for future attachment research as well as psychotherapy.
Introduction

Recognizing the importance of attachment and its influence over the life span, researchers have developed a variety of methods to assess attachment at various ages. Initially attachment measures focused on observed behaviors of infants and toddlers. These measures were then elaborated upon in an effort to capture the representational models (internal working models) of attachment of older children (i.e., projective techniques, Q-sorts, and story stems). The measurement of adult attachment was attempted approximately 15 years after infant studies had begun. The first adult measure of attachment was aimed at capturing an adult’s “state of mind” with regard to attachment through an in-depth interview. Shortly thereafter, attachment was conceived as an “organizational construct” through which researchers could gain understanding about romantic love. Within the adult/love framework, the self-report method of attachment (usually in a questionnaire format) came about and gained in popularity. These measures are often made up of items tapping cognitive, affective, and behavioral elements that are theoretically and empirically consistent with different types of attachment patterns. In addition, the self-report measures of attachment are relatively inexpensive and easy to administer.

Although there is convergence on many of the measures (both observed behaviors and self-report)—even across age groups—as to the content being assessed (i.e., degree of felt security, degree of avoidant behavior/feelings, degree of anxious behavior/feelings), there is a lack of consistency in activating the attachment behavioral system prior to measuring attachment. In part, this inconsistency has to do with different conceptualizations of attachment. Some researchers conceptualize attachment behavior as being state-dependent—activated only when an individual is stressed or threatened. Other
researchers conceptualize attachment as a trait-like characteristic that is relatively stable and predictable across time and situations. Activation of attachment is a more common component among measures requiring the most extensive training. Because of the great amount of time and money for training as well as administration of these measures, they will be referred to as “in-depth” measures. In-depth measures of attachment include behavioral observations, interviews, and projective techniques. Attachment activation is enacted in a variety of ways but frequently through separations, questioning of losses, or presenting pictures of attachment related scenes. In contrast to these in-depth measures are self-report measures that require little training and are relatively inexpensive to administer and score. These measures require research participants to answer face valid questions about their current or past relationships. The questions are designed to tap theoretically important content areas of attachment. However, a review of self-report measures reveals that the activation of the attachment behavioral system has been neglected. This omission is problematic from a theoretical standpoint but may have empirical disadvantages as well.

This paper will briefly review attachment theory, highlight the importance of attachment as a behavioral system, discuss the state vs. trait conceptualizations of attachment highlighting attachment measures associated with each, and propose that measuring attachment within the relevant psychological state should have empirical advantages. The objective of this study is to investigate the empirical advantages of a self-report attachment measure incorporating a vignette designed to activate the attachment system.

*Attachment Theory*

Attachment, like many words used often in a particular field, has fallen prey to
being associated with a variety of meanings. In the developmental literature alone attachment is used to describe the bonding process between infants and their caregivers, the behaviors associated with forming that bonding process, and the end result of that process. The following will exemplify how attachment is indeed all three—a process, a group of behaviors, and the end result of an infant's interactions with a primary caregiver. An infant's survival is dependent on its ability to form a relationship with an adult—a primary caregiver—through which its needs for survival will be met. When an infant perceives a need—be it hunger, fatigue, fear, or illness—it will display a variety of biologically determined behaviors in an effort to make its needs known to the caregiver. These behaviors are referred to as attachment behaviors and include, among others, protesting, crying, clinging, and sucking (Karen, 1990). The degree to which a caregiver is sensitive to the infant's behaviors and is able to soothe its needs on a consistent basis determines the quality of the attachment bond. This bond can vary in terms of an infant's experience of felt security and, over time, this bond is believed to become internalized into a mental representation of interpersonal relationships as the infant matures. This mental representation of attachment or internal working model, as it will be referred to in this paper, acts as a template for the child and informs him/her in two areas: 1) how worthy he/she is of getting his/her needs met; and 2) how much others can be depended upon to meet those needs. Thus, from this description, attachment is a process, a set of behaviors, and an outcome to the bonding process.

In addition to the behavioral and cognitive components described above, attachment also includes an affective component as well. Bowlby (1979), the original theorist of attachment, highlights this emotional aspect:

Many of the most intense emotions arise during the formation, the
maintenance, the disruption, and the renewal of attachment relationships. The formation of a bond is described as falling in love, maintaining a bond as loving someone, and losing a partner as grieving over someone. Similarly, threat of loss arouses anxiety, and actual loss gives rise to sorrow; whilst each of these situations is likely to arouse anger. The unchallenged maintenance of a bond is experienced as a source of security, and the renewal of a bond as a source of joy. (p. 69)

Berk (1993) summarizes Bowlby's position by concluding that attachment is the "strong, affectional tie we feel for special people in our lives that leads us to feel pleasure and joy when we interact with them and to be comforted by their nearness during times of stress" (p. 256).

*Attachment in Childhood.* The security of the attachment relationship is related to the quality of the attachment relationship and it is thought to depend on the degree to which the caregiver is sensitive, warm, and responsive to the child during the first three years of life (Bowlby, 1988). The primary function of attachment in infancy and childhood is that of protection—to ensure a helpless organism's survival. It is a one-way relationship; the child's needs are met by an attachment figure. The extent to which the caregiver is able to or unable to consistently meet the above criteria then leads to individual differences in the child's perceptions of felt security. Hence, if a caregiver is sensitive, warm, and responsive to a child's bids for comfort on a consistent basis, then the child will most likely develop a secure attachment representation. However, if the caregiver is not sensitive, warm, and responsive or responds in an inconsistent manner to the child's bids for comfort, the child will most likely develop an insecure attachment representation.
Ainsworth was the first to operationalize attachment theory. She coded babies’ behaviors at home and compared them to their behaviors in a strange setting. Based on infants’ responses to separation experiences from their mother (an experimental design named the Strange Situation) and their ability to use their mother as a secure base, infants were classified into one of three patterns of attachment: secure, insecure-ambivalent, or insecure-avoidant. Connections were also made between the mothers’ responsiveness and the babies’ attachment styles:

Mothers of securely attached children were found to be more responsive to the feeding signals and the crying of their infants, and to readily return the infants’ smiles. Mothers of anxiously attached children [i.e., insecure-ambivalent and insecure-avoidant] were inconsistent, unresponsive, or rejecting. The three patterns seen in laboratory observation proved directly related to the way the babies were being raised. (Karen, 1990; p.36)

Upon reunion with mothers in the Strange Situation paradigm, infants classified as insecure ambivalent, also referred to as resistant (Fox & Card, 1999), demonstrated contact seeking behaviors while at the same time protesting comforting attempts from their mothers. Infants classified as insecure avoidant actively avoided contact with their mothers upon reunion. Another pattern of insecure attachment, disorganized attachment was later identified and infants classified in this category are likely “to display contradictory emotions, to appear confused and apprehensive, to make incomplete or undirected movements, and to show depressed affect and possibly behavioral stilling (e.g., freezing) (Fox & Card, 1999; p. 231). In contrast to insecurely attached infants, infants classified as secure demonstrated contact seeking behaviors and then return to play after a time of comfort. Ainsworth later characterized attachment relationships as
having four characteristics that distinguish them from other types of relationships: 1) proximity seeking; 2) secure base behavior; 3) safe-haven behavior (i.e., freer exploration in the presence of the attachment figure); and 4) separation protest when separations are involuntary (Allen & Land, 1999).

*Internalized Models.* It is theorized that the interactions between an infant and caregiver are internalized into a cognitive representation or working model regarding attachment expectations (Bowlby, 1988; Rothbard & Shaver, 1994). Based on early attachment experiences, working models provide expectations of the world as a reliable and safe place, as an unpredictable place, or as a rejecting and dangerous place. In a sense, an internal working model provides a scaffolding of expectations through which an individual perceives and interacts in his or her world. As children mature, their internal working models are extended to others and serve as “mental representations of the self in relation to others” (Batgos & Leadbeater, 1994; p. 161). Berman and Spelling (1994) defined an internal working model as

a representation in the mind that includes aspects of the self, the attachment figure, situational invariants for attachment interactions, and the affects that connect the two figures. Internal working models are based on a prior history of attachment relationships plus current interactions between the self and the attachment figure when the attachment behavioral system is activated. In addition, internal working models define the rules by which two individuals interact, including behaviors, feelings, and thoughts. (p. 8)

*Adult Attachment.* Bowlby (1988) contended that these cognitive structures of attachment affect individuals throughout their lifetime:
Since it is seen in virtually all human beings (though in varying patterns), it is regarded as an integral part of human nature and one we share (to a varying extent) with members of other species. The biological function attributed to it is that of protection. To remain within easy access of a familiar individual known to be ready and willing to come to our aid in an emergency is clearly a good insurance policy—whatever our age. (p. 27)

As individuals mature, they become less physically vulnerable and in need of protection as they once were at younger ages, hence attachment relationships are relied upon in a different manner than they once were. Bowlby argued that in older adolescents and adults the need for physical proximity to an attachment figure becomes replaced with the perception of availability of the attachment figure:

This, he said, 'turns on cognitive processes: (a) belief that lines of communication with the attachment figure are open, (b) that physical accessibility is possible, and (c) that the attachment figure will respond if called upon for help. (Bowlby, personal communication, 1987, cited in Ainsworth, 1990, in Marvin & Britner, 1999, p. 62)

These "cognitive processes" refer to the use of internal working models. Berman and Spelling (1994) defined adult attachment as "the stable tendency of an individual to make substantial efforts to seek and maintain proximity to and contact with one or a few specific individuals who provide the subjective potential for physical and/or psychological safety and security. This stable tendency is regulated by internal working models of attachment, which are cognitive-affective-motivational schemata built from the individual's experience in his or her interpersonal world" (p. 8).

In addition, adult attachment behaviors are expected to be more reciprocal, with
adult partners tending to each other's needs (Crowell, Fraley, & Shaver, 1999). From an evolutionary perspective, adult attachments still serve the needs of protection but also work to propagate one's genes (Berman, Marcus, & Berman, 1994). Therefore, primary adult attachments usually involve not only attachment behaviors but also other social behavioral systems as well such as reproductive behaviors and caretaking behaviors (Crowell, Fraley, & Shaver, 1999; Marvin & Britner, 1999).

Clarifying theoretical assumptions, Bartholomew (1990) and Bartholomew and Horowitz (1991) proposed a new model of adult attachment. Bartholomew and Horowitz (1991) argue that Bowlby's original theory described working models in terms of perceptions of self and others. If the dimension of self and the dimension of other are both evaluated in terms of negative and positive valence, then 4 combinations are delineated—1) positive view of self/positive view of other; 2) positive view of self/negative view of others; 3) negative view of self/positive view of other; and 4) negative view of self/negative view of other. Bartholomew and Horowitz maintain that these combinations are conceptually consistent with the following attachment categories: secure, dismissive-avoidant, preoccupied (ambivalent), and fearful-avoidant, respectively. Using an interview and a continuous rating scale, these researchers found evidence for the four hypothesized prototypes of attachment, demonstrated group differences on 15 different dimensions, and found evidence linking childhood attachment experiences to adult attachment relationships.

Empirical Significance of Attachment

Research investigating attachment theory has supported Bowlby's assertion of the importance of attachment throughout one's life. Indeed, the quality of the attachment bond in infancy seems to be a significant predictor of later social, cognitive, and
emotional development (Berk, 1993). Kobak and Sceery (1988), for example, assessed attachment, representations of self, affect, and interpersonal relationships in first-year college students. They found that securely attached late adolescents showed better ego-resiliency and coping skills, less anxiety and hostility, more social support systems, and were better able to turn negative feelings into problem solving skills. Lapsley, Rice, and FitzGerald (1990) found that attachment to parents significantly predicted social and personal identity in their sample of college students. Armsden and Greenberg (1987) also found that secure attachment to parents was related to higher levels of self-identity, self-esteem, and a greater sense of well being in college students. The securely attached group’s outcome measures paint a picture of psychological health and well-adjusted behavior.

Compared to the securely attached group, the ambivalent and avoidant groups (insecure attachment styles) showed greater difficulty in later adjustment. In Kobak and Sceery’s (1988) research, the Dismissing group (related to the avoidant attachment pattern; Karen, 1990) showed low ego-resiliency, low levels of social support, more distance in relationships, and higher levels of anxiety and hostility than the Secure group. The Preoccupied group (related to the ambivalent attachment pattern; Karen, 1990) showed low levels of ego-resiliency, high levels of personal distress, anxiety, and hostility (Kobak & Sceery, 1988). Nada Raja, McGee and Stanton (1992) found that insecurely attached adolescents showed greater conduct and inattention problems than did securely attached adolescents. In addition these adolescents were more vulnerable to peer pressure, antisocial activity, and depression. Gold and Yanoff (1985) found that insecurely attached adolescents were more likely to be influenced by their peers in the choices they make.
Attachment as a Behavioral System

Grounded in evolutionary theory, attachment helps to ensure the survival and reproductive fitness of the organism. Rather than conceptualizing attachment in terms of drive reduction (which would have been consistent with the dominant theory of the day--psychoanalysis), Bowlby conceived attachment "in systems theory terms of set goals, goal correction, and function . . . Attachment refers to species general . . . behavior systems, selected for their effect on the reproductive success of individuals in the environment in which they evolved" (in Stroufe & Waters, 1977; p. 1185). The attachment behavioral system is one of several behavioral systems which are expressed at different times depending on the perceived needs of the organism (which takes into account internal and external conditions). Bowlby (1969) noted that, "To say of a child that he is attached to, or has an attachment to, someone means that he is strongly disposed to seek proximity to and contact with a specific figure and to do so in certain situations, notably when he is frightened, tired or ill" (italics added). Other behavioral systems that work to ensure the survival and reproductive fitness of the organism include the fear/wariness system, the affiliative system, the caregiving system, and the reproductive system. Specific behaviors within each behavioral system are believed to be functionally equivalent—working to meet the set goal of the organism (e.g., an infant's crying, cooing, and grasping all work to serve attachment purposes [i.e., to be near an attachment figure and be comforted in times of stress]), but behaviors also take on different functions depending on the behavioral system that is activated (Stroufe & Waters, 1977). For example, seeking to be near someone in times of stress (attachment behavioral system) has a different meaning than seeking to be near someone because one is attracted to that particular someone (reproductive behavioral system). Therefore, in order to fully
comprehend the function of a particular behavior(s), the set goal of the organism must be clear (i.e., one must first understand which behavioral system is activated).

In children and adults, the attachment behavioral system is activated by stimuli that either indicate a danger or threat or indicate the availability and responsiveness of the attachment figure (Berman, Marcus, & Berman, 1994). Such stimuli include separation, loss (including death), fatigue, hunger, and illness. Obviously there is a continuum of activation depending on the perceived threat; with maturation, it would be expected that stimuli such as fatigue and hunger would not activate the attachment system unless they were experienced to a threatening degree. In addition to external stimuli, activation of the attachment system is also contingent on the sensitivity of individuals' internal working models. Berman and Spelling (1994) note, “Activation is related to security, since insecure/ambivalent and insecure/avoidant attachments are activated more easily than secure attachments” (p. 18). Thus, given different histories of attachment experiences, there is a wide array of individual differences in activating the attachment system (Berman & Spelling, 1994).

State Attachment Vs. Trait Attachment

The different definitions of attachment (as noted above, i.e., a process, specific behaviors, secure/insecure internal working model) have led to different conceptualizations of the concept. Berman and Spelling (1994) delineated three different conceptualizations of adult attachment—"attachment as a state-based syndrome or set of distressing symptoms that emerge when the attachment figure is unavailable; attachment as a trait-based tendency to form particular types of attachment relationships and to respond to these relationships similarly; and attachment as an interactive process between
two people in an ongoing relationship” (p. 10). However, the state-based and trait-based conceptualizations have been more extensively investigated and that focus is reflected in how attachment is operationally defined and measured.

**Attachment as a State.** Attachment conceptualized as a state is founded on Bowlby’s theoretical premise that the attachment system is activated when an individual is under distress. “For example, a child’s attachment behaviour [sic] is activated especially by pain, fatigue, and anything frightening, and also by the mother being or appearing to be inaccessible” (Bowlby, 1988; p. 3). (Note: Bowlby recognized that others besides the mother could be the primary caregiver, but during the time in which he did most of his writing, mothers were most frequently the primary caregiver and his writings reflect that norm). Attachment behavior is terminated when the distress is alleviated or when the child is in proximity to his/her caregiver. However, this type of attachment behavior is not limited to young children; it is evident at all ages. Bowlby (1988) adds, “Although usually less readily aroused, we see it also in adolescents and adults of both sexes whenever they are anxious or under stress” (p. 10). From Bowlby’s remarks, it can be concluded that attachment is in fact not the state of distress but becomes activated in a state of distress.

Measures of attachment based on this conceptualization have incorporated the contextual component of attachment activation. As mentioned above, in infancy and early childhood, attachment is inferred by particular behaviors (e.g., crying, grasping, etc.) when the child is stressed (e.g., hungry, tired, ill, or frightened). Therefore attachment measures for infancy and early childhood focus on observed behaviors of infants under moderate stress levels. Examples of measures that include an attachment activation
component include Ainsworth et al.'s (1978; cited in Solomon and George, 1999) Strange Situation. The Strange Situation is an experimental design that introduces a young child and his/her parent to a strange room and a strange person (an experimenter). To activate the attachment behavioral system, a series of separations (each increasing in intensity) and reunions with the parent are then enacted allowing for observation and classification of identified attachment behaviors. This type of classification system and the separation-reunion design of the Strange Situation have represented something of a gold standard in attachment measures; many measures assessing attachment in early childhood employ similar methods (i.e., the Cassidy-Marvin system, the Preschool Assessment of Attachment, and the Main-Cassidy Attachment Classification system; see Solomon & George, 1999). Attachment measures for older children rely on their ability to verbalize specific outcomes to attachment scenarios, but activation of the attachment behavioral system is still a primary manipulation included in these measures. Among the methods designed to measure internal working models in 3 to 7 year olds is presenting pictures depicting attachment scenarios followed by questions to the child about how the child in the picture feels and what they would do in a similar situation. Another method designed for this age group has an interviewer read an attachment related story to a child and then ask the child to act out (with a doll) what happens next (see Solomon & George, 1999 for review).

Although most adult attachment measures conceptualize attachment as a trait-like characteristic there are a couple of exceptions. Among them is the first measure of adult attachment, and still the most widely used for this age group, the Adult Attachment Interview (AAI) developed by Main and her colleagues (see Hesse, 1999; and Crowell, Fraley, & Shaver, 1999). The AAI is a semi-structured interview consisting of 18
questions and follow-up probes that focus on participants’ relationships with their parents (Hesse, 1999). Included in these questions—a query of experiences of closeness, rejection, and loss—are themes that could elicit the attachment behavioral system or, at least, focus the respondent’s memory on an attachment activating event (e.g., “When you were upset as a child, what did you do, and what would happen? Could you give some specific incidents when you were upset emotionally? Physically hurt? Ill?”; Hesse, 1999, p. 397). The AM is not used to categorize participants based on their attachment behaviors but to classify them based on their “state of mind with respect to attachment” (Hesse, 1999). Once the discourses are coded, participants are categorized as secure/autonomous, dismissing (corresponding with avoidant attachment), preoccupied (corresponding with ambivalent attachment), or unresolved/disorganized.

A second measure of attachment for adults that incorporates an attachment activating context is a more recent measure—the Adult Attachment Projective (AAP; George, West, & Pettem, 1999). The AAP was designed to measure attachment in adults “in an format that is analogous to the representational projective measures used to assess attachment in children” (George, West, & Pettem, 1999; p. 323). The AAP consists of a series of eight attachment related pictures presented in an order to gradually increase the activation of the attachment system (i.e., from separation to illness to death to threat). Test administration resembles that of a semi-structured interview where the administrator asks the test taker to make up a story for each picture about what is happening, what led up to the scene, what the characters are feeling and thinking, and what happens next (George, West, & Pettem, 1999). The responses are then classified using coding variables derived from attachment theory and other attachment measure’s classification systems (e.g., the AAI).
Attachment as a Trait. Much of the literature on adult attachment operationally define attachment as a trait—that is people have enduring, stable patterns of relating interpersonally that are resistant to change (Bowlby, 1982). The transition from a state-dependent behavioral system to a trait-like characteristic or attachment “style” follows from theoretical ideas of how attachment changes for individuals over time—i.e., they are relied upon in a less physical manner and in a more cognitive manner, they become internalized so much so that some sense of security can be obtained even through mental representations of attachment figures, and they are extended to others such that young adults form new attachment relationships with romantic partners. Berman and Sperling define these attachment styles:

“Attachment styles” refer to particular internal working models of attachment that determine people’s behavioral responses to real or imagined separation and reunion from their attachment figures. These internal working models are thought to be consistent across time and across relationships, and for most theorists they are direct outgrowths of initial attachment experience(s). (Berman & Sperling, 1994; p. 11).

This internalization of attachment leads to individual styles of interpersonally relating such that people with different attachment histories will selectively pay attention to different cues in an attachment relevant context. For example, people who are more anxious are often overly concerned and hypervigilent to signs of rejections or disapproval whereas people higher on avoidance are overly concerned with intrusions on their sense of autonomy and hypervigilent to feeling controlled by others (Collins & Read, 1994).

Many measures of attachment for older children, adolescents, and adults have
focused almost exclusively on the consistent and stable patterns that are thought to be inherent in internal working models of attachment and they have eliminated activation of attachment in their methodology. These measures are exclusively self-report measures that ask respondents face-valid questions. For example, Armsden and Greenberg’s (1987) Inventory of Parent and Peer Attachment (IPPA) has been used with children as young as 10 years old as well as with late adolescents/young adults in college. The IPPA is a self-report instrument that defines attachment security by measuring three constructs: (1) “degree of mutual trust” (i.e., “My parents respect my feelings”), (2) “quality of communication” (i.e., “I tell my parents about my problems and troubles”), and (3) “degree of anger and alienation” (i.e., “I feel that no one understands me”) (Armsden & Greenberg, 1987; Crowell, Fraley, & Shaver, 1999). Kerns, Klepac, and Cole’s (1996) Security Scale, designed specifically for middle childhood, measures security “operationalized as the degree to which the child perceives the mother as responsive, available, and open to communication” (Kerns, Klepac, & Cole, 1996). The scale is a self-report measure in which respondents choose one of two descriptions of children in a “Some kids... But other kids...” format (Kerns, Klepac, & Cole, 1996). Although the scale is relatively new, it has adequate reliability coefficients (internal consistency generally exceeding .80) and has been validated with theoretically relevant measures including perceived competence, self-esteem, peer relationships, and coping styles (Kerns, personal communication, 2000).

Hazen and Shaver (1987) were the first to propose love relationships as extensions of the attachment process. Guided by attachment theory and Ainsworth’s attachment categories, Hazen and Shaver developed an attachment measure in which participants classified themselves into one of three descriptive scenarios (corresponding
to Ainsworth's attachment categories; Adult Attachment Styles or AAS) that they felt best captured their feelings about being in close relationships. Collins and Read (1990) expanded this area of research by developing an 18-item scale derived from Hazen and Shaver's (1987) categorical descriptions. This scale, the Adult Attachment Scale (AAS), identified three underlying dimensions of attachment—Close (e.g., I find it relatively easy to get close to others), Anxiety (e.g., I often worry that my partner does not really love me), and Depend (e.g., I know that others will be there when I need them). Using the AAS, researchers can investigate how individuals differ on these dimensions as well as how people in different attachment groups differ from one another. A final example of this type of self-report inventory is Brennan, Clark, and Shaver's (1998) Experiences in Close Relationships measure. In an attempt to provide some unity among the various self-report methods, Brennan, Clark, and Shaver (1998) pooled every multi-item attachment scale in the literature and from conference papers. After eliminating duplicate or similar items, the pooled scale was made up of 323 items assessing 60 attachment-related constructs. The data was factor analyzed and reduced to two factors: Anxiety and Avoidance. The authors then created two scales of 18 items assessing those factors and together these scales form the Experiences in Close Relationships (ECR) measure. Examples from the avoidance scale include "I prefer not to show a partner how I feel deep down" and "Just when my partner starts to get close to me I find myself pulling away." Examples from the Anxiety scale include "I worry about being abandoned" and "I worry that romantic partners won't care about me as much as I care about them." The authors noted that the two scales represent the two continuums in Bartholomew's four category typology representing positive and negative valence of both model of self and model of other (Brennan, Clark, & Shaver, 1998).
This review elucidates a subtle yet important shift in methodology. As researchers move to tap the more complex mental representations (or internal working models) of attachment, the methodology has typically shifted from in-depth measures which tap contextually activated (i.e., state-based conceptualization) attachment styles (e.g., the Strange Situation) to other measures which assess chronically available working models of attachment (i.e., trait-based conceptualization with self-report measures; as noted above two exceptions include the AAI and the AAP). Even though there is considerable evidence indicating the strength of the reliability and validity of the more in-depth attachment measures, there are drawbacks to using these measures. They require extensive training in administration, scoring, and interpretation. This training is costly both in terms of financial resources and time. In addition, using these measures in research also requires a serious commitment of resources—including labor and time (Colin, 1996). These two barriers alone force many researchers to rely on other attachment measures.

However, measures that do not incorporate a method to activate the attachment system are not consistent with the theoretical definitions of attachment (described above). In addition, self-report measures have been criticized for not corresponding with more in-depth measures such as the AAI; such critiques usually raise the concern that self-report measures have questionable validity. Bartholomew and Shaver (1998) asserted that this criticism is unwarranted and maintain that the lack of convergence in some studies is due to measuring different domains (e.g., parent-child relationships versus adult close relationships). They also contend that method variance attenuates the association between different types of measures (interviews tapping conscious and unconscious processes versus self-report measures tapping “conscious, potentially inaccurate summaries” of a
person's experience; p. 29). However, Bouthillier, Julien, Dube, Belanger, and Hamelin (2002), after finding no predictive ability with self-report measures and no association between the AAI and Hazen and Shaver's measure or another scaled self-report measure, noted that perhaps the most important difference between "current self-reports of adult attachment and the AAI may be the way attachment representations are assessed. The AAI assesses IWM [internal working models] on the basis of mental patterns of integration between semantic and episodic representations of childhood attachment relationships, whereas self-reports assess attachment on the basis of semantic evaluation of attachment relationships. Thus, the fact that self-report measures of adult attachment do not yield any information about mental organization of attachment experience may explain why they do not converge" (p. 301).

Bouthillier et al's observation of using different types of memory may offer critical insight to the lack of convergence and predictive differences between the two types of attachment measures. Episodic memories include information about events and relationships between events related to personal experiences. Semantic memories include more general knowledge of the world and how that knowledge is organized (Matlin, 1989). An important difference between these two types of memory is that emotional content is more important in episodic memories than in semantic memories (Matlin, 1989). Including a manipulation that would tap episodic as well as semantic memories in self-report measures of attachment would be an improvement over current measures for a couple of reasons. First, it should improve predictive ability because it would be tapping attachment thoughts and behaviors in a psychologically relevant state. Second, it would make self-report measures more congruent with attachment theory that stipulates affect as a key component and is thought to activate the attachment behavioral system. In
concluding their chapter on measuring attachment security in infancy and early childhood, Solomon and George (1999) noted that researchers often overlook the importance of context (e.g., activation of attachment system) when evaluating children. They argued, "attachment behavior is elicited by, and is best observed in, situations that are stressful, threatening, or fear-inducing for the child or that evoke those states in the child's memory. Assessments of the child-mother relationship in other contexts (e.g., play, problem solving) may yield measures that are correlated with attachment security measured under stressful circumstances, but are not equivalent to it" (p. 310).

Researchers studying adult attachment should also heed this word of caution. Without activating the attachment behavioral system prior to measuring attachment, researchers may find factors associated with adult attachment but not equivalent to it. Given Bowlby's assertion that attachment is important over one's entire life, it is a logical conclusion that activation of the attachment system is an important contextual control no matter what age is under investigation—from infancy to adulthood.

*Measuring Attachment: Contextual Activation vs. Chronic Accessibility*

In addition to the more in-depth measures of attachment, recent research findings have also implicated the importance of affective contexts on outcome measures. Recently attachment research has employed methodologies measuring chronic attachment style (i.e., attachment styles or internal working models) and manipulations of contextual cues of attachment (e.g., secure base priming vs. anxious priming). This line of inquiry in attachment research is due to the influence of the social-cognition literature's construct of relational schemas (Baldwin, 1992; Baldwin, 1995). Baldwin (1992) defined relational schemas as "cognitive structures representing regularities in patterns of interpersonal relatedness" (p. 462), and he noted the similarity between many theorists' ideas of
cognitive maps, representational worlds, and working models and his social cognitive model of relational schemas. Following Baldwin's (1992) suggestion to explore interpersonal confirmation effects in interactions using primes with relational schemas, researchers have explored interpersonal characteristics using primes with an attachment quality.

For example Baldwin, Keelan, Fehr, Enns, and Koh-Rangarajoo (1996) explored availability and accessibility of attachment working models. Availability was assessed by having participants identify different relationships based on different descriptions of attachment relationships. Accessibility was assessed by the frequency of particular types of attachment. They found that participants were able to generate memories exemplifying all three types of attachment relationships (secure, anxious-ambivalent, and avoidant) and concluded from this that people hold multiple models of attachment providing them with a repertoire of relational skills. Attachment style (trait-like characteristic with no attachment activation) was also measured. The authors found that participants generated different types of attachment relationships but the most frequently generated type matched their own type of attachment style. When the relationship type matched their own attachment style it was more quickly retrieved from memory. In a follow-up study the authors primed participants by asking them to visualize a particular relationship that they had identified earlier (secure, avoidant, or anxious); the particular type of relationship was randomly assigned to participants. They were then later asked to rate descriptions of potential dating partners in which attachment descriptions were embedded. The initial priming impacted the later rating on participants’ attraction to potential dating partners. Baldwin et al. (1996) argued that chronic attachment styles “arise from chronically accessible relational knowledge structures” (p. 105) but found
these chronic styles were changeable with environmental manipulations (i.e., using different primes). These findings imply that attachment does have a trait–like quality but the power of the situation, or state, decreased trait-like attributes of stability and predictability. The authors’ note, “It would be difficult to reconcile these findings with the implicit view in the adult attachment literature that attachment styles are essentially stable personality dispositions that presumably define people’s orientations in all their relationships, or at least in their most significant close relationships” (p. 107).

Similar findings were reported by Pierce and Lydon (1998) who investigated contextually activated (e.g., a prime) and chronically accessible interpersonal expectations (i.e., attachment style) to responses to a stressful event (i.e., an unwanted pregnancy). Prior to listening to a taped scenario asking the participant to imagine herself in a dating relationship and then experiencing an unplanned pregnancy and considering her options, participants were exposed to word primes via computer in one of three conditions. The conditions (i.e., contextual activation of interpersonal expectations) were being exposed to positive interpersonal words (e.g., caring, loving, etc.), negative interpersonal words (e.g., critical, rejecting, nagging, etc.), or a control condition (random consonants). After listening to the taped scenario participants answered questions regarding support-seeking, coping strategies, affective state, and demographic and background information. Attachment (i.e., chronically accessible interpersonal expectations) and self-esteem were assessed within 11 days following the above procedure in a telephone interview. Chronic attachment styles characterized by greater anxiety were associated with reporting more negative affect, and chronic attachment styles characterized by greater avoidance were associated not only with more negative affect but also seeking less emotional support and advice from others and participating in
more self-denigrating coping strategies. However, participants exposed to positive interpersonal word primes had increased reports of seeking emotional support and decreased use of self-denigrating coping, whereas participants exposed to negative interpersonal word primes had decreased reports of positive affect and less growth oriented coping. These findings could not be explained by chronic attachment styles or self-esteem; thus, the authors contend that contextual information regarding relationships as well as chronically accessible attachment information (internal working models) are both needed to understand how people respond to stressful life situations.

These conclusions become more robust with more recent investigations. Studies exploring the differential contributions of temporarily accessible relationship schemata (i.e., contextual activation of attachment) and chronic attachment styles (i.e., internal working models) have consistently found that contextual activation of relationship schemata produces results that cannot be explained by chronic attachment style alone (Green & Campbell, 2000; Mikulincer & Arad, 1999; Mikulincer, Birnbaum, Woddis, & Nachmias, 2000; Mikulincer, Hirschberger, Nachmias, & Gillath, 2001; Mikulincer, Gillath, Halevy, Avihou, Avidan, & Eshkoli, 2001). In these studies, chronic attachment style has been assessed with self-report measures prior to or after (up to 11 days following the procedure) but not immediately following attachment activation. A number of methodologies have been employed to activate contextual relational schemata including thinking of relationships that fit one of Hazen and Shaver’s (1987) attachment descriptions (Baldwin et al., 1996; Mikulincer & Arad, 1999), visualizing secure attachment scenarios (Mikulincer & Shaver, 2001), exposure to attachment related sentences (Green & Campbell, 2000), exposure to supraliminal and subliminal words depicting stress, attachment distress, or psychological threat (Mikulincer, Birnbaum,
Woddis, & Nachmias, 2000; Mikulincer, Gillath, & Shaver, 2002; Pierce & Lydon, 1998), exposure to pictures depicting a secure-base relationship (e.g., mother gazing at child; Mikulincer, Hirschberger, Nachmias, & Gillath, 2001), and reading vignettes depicting secure attachment (Mikulincer et al., 2001). Thus the methodological influence from the relationship schema literature has involved the addition of an attachment related prime prior to measuring dependent variables but not as a prerequisite to measuring chronic attachment.

**Synthesis of Theory and Empirical Findings**

Attachment theory defines attachment as a context-specific behavioral system. Specifically, attachment behaviors and cognitions become activated when an individual is in an environment that is threatening or stressful and they cease when that individual obtains relief from such situations and acquires a level of felt security. Bowlby reasoned that attachment is evident at all ages although in adults it is less easily activated than it is with young children (e.g. adults generally do not feel threatened with mild separations as do young children such as used in the Strange Situation). In the literature investigating adult attachment, researchers have largely ignored the context-specific requirement of activating the attachment behavioral system (exceptions noted above) focusing instead on the belief that over time attachment representations are stable and enduring patterns of relating interpersonally. However research findings have indicated that there is individual variation in attachment “styles” across relationships (Baldwin, et al., 1996), contextual effects that cannot be explained by attachment style alone (e.g., Green & Campbell, 2000; Mikulincer & Arad, 1999), and greater predictive power with in-depth measures that tap contextually relevant information over self-report measures that do not activate the attachment system (Bouthillier et al., 2002).
This study proposes that theoretical ideas and empirical findings suggesting the importance of attachment activation be incorporated into a self-report measure of attachment style. This, in a sense, would merge the state-trait conceptualizations of attachment by providing a psychologically relevant affective state prior to measuring attachment style. Currently no research has attempted to elicit the attachment behavioral system prior to assessing chronic attachment style with a self-report measure. This omission is problematic from two theoretical perspectives.

First, attachment theory recognizes that different behaviors have different meanings depending on which behavioral system is activated (Cassidy, 1999). Without deliberately activating the attachment system, it is unclear which behavioral system is activated—if indeed any particular one is activated—at the time of the survey. Other attachment assessment methods have this activation built into the process. For example, with the Strange Situation the attachment system is activated through a series of separations and reunions; with projective techniques it is activated through the use of pictures depicting attachment scenarios (i.e., illness, grave site, departures, etc.); and with interviews there is exploration of attachment issues through in-depth questioning (see Hesse, 1999; Solomon & George, 1999). It seems necessary to activate the attachment system when using self-report questionnaires as well so as to reduce the error variance associated with remembering events from the perspective of other activated behavioral systems.

Second, the omission of activating the attachment system is problematic from a cognitive psychology perspective as well. Cognitive psychologists investigating memory processes have found that activating different perspectives or schema activation influenced subjects’ recall in terms of amount and accuracy (Anderson & Pichert, 1978;
Townsend, 1980). Kardash, Royer, and Greene (1988) investigated whether activating schemata affected encoding information or retrieval of information. The findings suggested that schema activation at time of retrieval (prior to being tested) influenced amount and accuracy of the information recalled but there was no evidence to suggest schema activation at time of encoding influenced recall. Therefore, activation of the attachment system just prior to measuring attachment style should also enhance the accuracy of the data. Schema activation is quite possibly the mental analogue to activating behavioral systems for observation. When an attachment schema is activated prior to participants remembering attachment-related behaviors, then the attachment memories should be more accurate, and hence have more predictive power on related outcome variables, than if that schema is not activated.

**Purpose of Study**

The purpose of this study is to investigate the empirical advantages of using a self-report attachment questionnaire that is first primed with a vignette aimed at activating the attachment system. Adult college students will be solicited to participate in this study because of their availability and convenience. Mickelson, Kessler, and Shaver (1997) found that attachment distributions in college samples were similar to attachment distributions in a nationally representative sample. The students will be randomly assigned to one of three groups. All groups will be asked to fill out a demographic information and a self-report attachment style questionnaire followed by two measures tapping the model of self dimension (self-esteem and loneliness) and two measures tapping model of other dimension (trust and perceived social support). Both model of self and model of other are believed to develop as a result of and be informed by attachment experiences; the specific measures were chosen because they have been established as
correlates of attachment in past investigations. The first group will serve as a control group and fill out questionnaires much like they have in past studies investigating correlates of attachment. The second group will fill out an attachment style questionnaire, read a vignette designed to moderately activate the attachment system, and then fill out the rest of the questionnaire. This second group is similar to recent studies activating attachment contexts prior to measuring dependent variables but measuring attachment styles prior to or after this phase of the experiment. The third group will first read the vignette designed to activate the attachment system, then answer questions about attachment style, and then fill out the rest of the questionnaire. This type of group has not been studied before in the adult attachment literature but the design is most analogous to the more in-depth measures of attachment because it introduces a psychologically relevant context prior to measuring the behaviors/cognitions in question. Having participants read and visualize a psychologically relevant context should focus their memories on attachment related themes. Thus error associated with other behavioral systems or schemata being activated during the experiment should be reduced.

It needs to be emphasized that significant associations between attachment style and the outcome measures are expected for all groups. The outcome measures were chosen because they are established correlates of attachment, so similar findings from past research are expected. The differences between groups are expected to be subtle yet in line with theoretical suggestions and past empirical findings. Specifically, the following hypotheses are proposed:

**Hypothesis 1:** It is expected that the attachment measures (the ECR’s Anxiety and Avoidance scales) that are primed first with the attachment activating vignette will
have greater internal consistency than the same attachment measures that are not primed first with the vignette.

Hypothesis 2: It is expected that the attachment measures (the ECR’s Anxiety and Avoidance scales) that are primed first with the attachment activating vignette will have greater variance than the attachment measures that are not primed first.

Hypothesis 3: It is expected that there will be no significant differences between the three groups on mean scores of attachment (as measured by the ECR’s Anxiety and Avoidance scales).

Hypothesis 4: It is expected that a prime of an attachment-activating vignette will strengthen the relationships between attachment measures (the ECR’s Anxiety and Avoidance scales) and outcome variables of self-esteem, loneliness, trust, and perceived social support. The direction of the associations will be the same as established previously in the literature. Specifically it is expected that participants low on attachment dimensions of anxiety and avoidance will have higher self-esteem, less loneliness, more trust in others, and perceive more support from others.
Method

Participants

Participants for this study were 414 college students, ranging in age from 17 to 56 years old (M = 27, SD = 8.51), from a Southern California University. They were solicited primarily from undergraduate psychology courses to participate in this study on a voluntary basis and, at the discretion of their professors, in exchange for a nominal amount of course credit (usually extra-credit points). An additional 8 questionnaires were turned in but not included in the analysis because more than 50% of the items were not completed. The sample consisted of 327 females, 84 males, and 4 who did not identify their gender. The preponderance of female participants is consistent with the population of psychology students at that university and, therefore, is not considered an artifact of this study. The sample had a diverse ethnic background consisting of 38.1% Hispanic/Latinos, 34.9% Caucasians, 12% African Americans, 6.5% Asians, 6.3% Other, and 2.2% Native Americans. The participants were randomly assigned to one of three groups. The three groups did not differ significantly from one another on any demographic variables. Table 1 summarizes the demographic characteristics of the participants by group.

Measures

Participants were given a demographic questionnaire that includes questions about age, ethnicity, marital status, sex, and level of education. This information was collected to aid in helping us understand the background variables of those participating in this study (see Appendix A). Adult attachment was measured using Brennan, Clark and Shaver’s (1998) Experiences in Close Relationships (ECR). Criterion variables were selected based on their theoretical relevance and empirical relationship to the attachment
construct. Measures were chosen to reflect one of two underlying dimensions of attachment: 1) model of other or 2) model of self. Model of other will be assessed using Rempel and Holmes’ (1986) Trust Scale to measure trust in close relationships and Zimet, Dahlem, Zimet, and Farley’s (1988) Multidimensional Scale of Perceived Social Support (MSPSS) to assess perceived social support. Model of self will be assessed using the Rosenberg Self-Esteem Scale (SES; 1965) and the UCLA Loneliness Scale, version 3 (Russell & Cutrona, 1988).
Table 1

Demographic Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group 1: No Prime (N = 141)</th>
<th>Group 2: Prime After Attachment (N = 138)</th>
<th>Group 3: Prime Before Attachment (136)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Mean  SD</td>
<td>Mean  SD</td>
<td>Mean  SD</td>
</tr>
<tr>
<td>Age</td>
<td>27.45  9.31</td>
<td>26.54  8.01</td>
<td>26.99  8.54</td>
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<tr>
<td>Years of Education:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>14.31  1.22</td>
<td>14.37  1.31</td>
<td>14.40  1.00</td>
</tr>
<tr>
<td>Mother</td>
<td>11.70  3.69</td>
<td>12.36  3.92</td>
<td>11.57  3.67</td>
</tr>
<tr>
<td>Father</td>
<td>12.56  3.45</td>
<td>12.76  3.75</td>
<td>11.83  3.97</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>31  22.0</td>
<td>28  20.3</td>
<td>25  18.4</td>
</tr>
<tr>
<td>Female</td>
<td>109  77.3</td>
<td>107  77.5</td>
<td>111  81.6</td>
</tr>
<tr>
<td>Missing</td>
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<td>3  2.2</td>
<td>0  0</td>
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<td>Ethnicity:</td>
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<td></td>
</tr>
<tr>
<td>African American</td>
<td>14  9.9</td>
<td>15  10.9</td>
<td>21  15.4</td>
</tr>
<tr>
<td>Asian</td>
<td>6  4.3</td>
<td>13  9.4</td>
<td>8  5.9</td>
</tr>
<tr>
<td>Caucasian</td>
<td>62  44.0</td>
<td>39  28.3</td>
<td>44  32.4</td>
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<td>Hispanic/Latino</td>
<td>50  35.5</td>
<td>54  39.1</td>
<td>54  39.7</td>
</tr>
<tr>
<td>Native American</td>
<td>1  .7</td>
<td>6  4.3</td>
<td>2  1.5</td>
</tr>
<tr>
<td>Other</td>
<td>8  5.7</td>
<td>11  8.0</td>
<td>7  5.1</td>
</tr>
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<td>Marital Status:</td>
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<tr>
<td>Single</td>
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<td>87  63.0</td>
<td>86  63.2</td>
</tr>
<tr>
<td>Married</td>
<td>33  23.4</td>
<td>32  23.2</td>
<td>34  25.0</td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>12  8.5</td>
<td>9  6.5</td>
<td>11  8.1</td>
</tr>
<tr>
<td>Widowed</td>
<td>1  .7</td>
<td>2  1.4</td>
<td>1  .7</td>
</tr>
<tr>
<td>Other</td>
<td>12  8.5</td>
<td>8  5.8</td>
<td>4  2.9</td>
</tr>
</tbody>
</table>
Experiences in Close Relationships (ECR) (Brennan, Clark, & Shaver, 1998). The ECR is a self-report questionnaire consisting of two 18-item scales. The scales measure attachment avoidance and attachment anxiety and are only slightly correlated with one another (r = .11; Brennan, Clark, & Shaver, 1998). Participants answer each item using a 7-point Likert-type scale ranging from (1) Disagree strongly to (7) Agree strongly (see above description for sample items). Higher scores on attachment avoidance indicate a greater tendency to avoid intimacy and a discomfort with closeness. Higher scores on attachment anxiety indicate a preoccupation with relationships, jealousy and fear of abandonment, and a fear of rejection. Lower scores on attachment avoidance and anxiety indicate a more secure attachment. Reliability and validity of the scales have been demonstrated (Brennan, Clark, & Shaver, 1998). Internal consistency for the Avoidance scale is .94 and for the Anxiety scale is .91. The ECR was written to measure romantic attachment, but for the purpose of this study, items have been altered to tap a less specific attachment schema (permission granted via personal communication; Shaver, 2002). This is done in an effort to not omit people who are not involved in a romantic relationship and to avoid sources of error generated from romantic relationships that do not serve attachment needs. (See Appendix B).

Attachment Vignette. Physical conditions of fatigue and illness are both known to activate the attachment system and they have been used as stimuli in other attachment measures such as projective measures (Bowlby, 1969; George, West, & Pettem, 1999). For the purpose of this study, a vignette depicting a scenario involving physical fatigue and an ambiguous threat of a more serious illness was composed to moderately activate the attachment system for the experimental groups. The vignette was piloted on a group
of psychology graduate students (n = 38). The participants were asked to rate how vivid the scenario was for them on a 4-point scale ranging from 1—Not vivid, could not imagine it—to 4—Seemed quite real, situation was very vivid. The mean response for vividness was 3.33 indicating that overall the participants viewed the vignette as a real situation that was fairly vivid but not very vivid. The participants were also instructed to imagine themselves in the scenario depicted in the vignette and were then asked to rate their experience on four dimensions: fearful, threatened, worried, and concerned. The participants rated these experiences on a 4-point scale ranging from 1—Not Intense to 4—Quite Intense. The participants rated the dimensions of feeling fearful and threatened as mildly intense (with means of 2.33 and 2.22, respectively). They rated the dimensions of feeling worried and concerned as intense (with means of 3.11 and 3.22, respectively). These results indicate that the vignette was successful in eliciting an emotional state that is consistent with the emotional state believed to be aroused when the attachment behavioral system is activated. (See Appendix C).

Model of Other: Trust Scale (Rempel & Holmes, 1986). The Trust Scale is an 18-item Likert-type scale ranging from a lowest possible score of 18 (low trust) to a highest score of 126 (high trust) with a reported midpoint of 72. The scale is composed of three sub-scales measuring predictability (6 items; e.g., “This person behaves in a consistent manner”), dependability (6 items; e.g., “I have found that this person is a thoroughly dependable person, especially when it comes to things that are important”), and faith (6 items; e.g., “Though times may change and the future is uncertain, I have faith that this person will always be ready and willing to offer me strength, come what may”). Items are responded to on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree) with higher scores reflecting higher levels of trust. Internal reliability is .81 for the entire
scale, .70 for predictability, .72 for dependability, and .80 for faith. The three sub-scales are moderately intercorrelated (range of .27 - .46; Wrightsman, 1991). (See Appendix D).

**Model of Other: Multidimensional Scale of Perceived Social Support (MSPSS)** (Zimet, Dahlem, Zimet, & Farley, 1988). The MSPSS is a 12-item Likert type scale ranging from 1 (*Very Strongly Disagree*) to 7 (*Very Strongly Agree*). Higher scores reflect higher levels of perceived social support. The MSPSS taps perceived support from three sources: 1) family (4 items; e.g., “My family really tries to help me”), 2) friends (7 items; e.g., “I can count on my friends when things go wrong”) and 3) a significant other (4 items; e.g., “There is a special person in my life whom I can share my joys and sorrows”). (Note: Some items on this sub-scale overlap with the friends’ sub-scale). Internal consistency for the total scale is .91 and the sub-scales range from .90 to .95. Factorial validity, concurrent validity, and construct validity have been demonstrated (see Zimet et al., 1988). (See Appendix E).

**Model of Self: Self-Esteem Scale (SES)** (Rosenberg, 1965). The SES is a 10-item scale designed to measure participants’ direct feelings about themselves (e.g., “I feel that I have a number of good qualities”). This scale is also a Likert-type scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*) with higher scores reflecting higher self-esteem (range is from 10 to 40). The SES has reported internal consistency of .77 to .88 and test-retest correlation of .85 following a 2-week interval (see Blascovich & Tomaka, 1991). Convergent and discriminant validity is well established (Blascovich & Tomaka, 1991). (See Appendix F).

**Model of Self: UCLA Loneliness Scale**. The UCLA scale measures emotional responses to differences between desired and achieved levels of social contact. It is made up of 20 items in which participants’ answer using a 4-point Likert-type scale ranging
from Never (1) to Always (4). Examples of items from this scale include: “How often do you feel you are “in tune” with the people around you?” and “How often do you feel alone?” Higher scores indicated a higher degree of loneliness. Internal consistency among a group of college students \((n = 487)\) was reported at .92 and in a group of elderly participants \((n = 284)\) a test-retest correlation of .73 was reported (Shaver & Brennan, 1991). Convergent and discriminant validity have been established. (See Appendix G).

**Procedure**

Participants were recruited from a Southern California University. Contact was made with individuals within these institutions to obtain approval for the recruitment process. Upon receiving approval, announcements were made in classes for volunteers interested in participating. Volunteers were given the questionnaire packet and asked to complete it and return it at the next class meeting. Volunteers received information regarding the nature of the study, information regarding informed voluntary consent, and a brief explanation of the testing process. Subjects were informed that all responses are anonymous and that only group data will be used in the study. After reviewing the informed consent (see Appendix H), those agreeing to participate were randomly assigned to one of three groups. The first group served as a control group and filled out questionnaires much like they have in past studies investigating correlates of attachment. The second group filled out the attachment style questionnaire, read a vignette designed to moderately activate the attachment system, and then filled out the rest of the questionnaire. The third group first read the vignette designed to activate the attachment system, then answered questions about attachment style, and then filled out the rest of the questionnaire. All participants were given a questionnaire packet which includes 1) the demographic questionnaire; 2) the Experiences in Close Relationships Questionnaire
(ECR; Brennan, Clark, & Shaver, 1998); 3) the Trust Scale (Rempel & Holmes, 1986); 4) the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988); 5) the Self-Esteem Scale (SES; Rosenberg, 1965); and 5) the UCLA Loneliness Scale, Version 3 (UCLA Scale; Russell & Cutrona, 1988; used with permission from author, personal communication, 5/20/03). Participants in groups 2 and 3 will also received a vignette designed to activate the attachment system. Upon completion of the questionnaires, subjects were provided with a debriefing script (see Appendix I) that provided a description of the purpose and process of the study as well as contact information should they have any questions or concerns regarding the study. If applicable, they also received an extra credit slip.

**Operational Hypotheses and Planned Analyses**

**Hypothesis 1:** It is expected that the attachment measures (the ECR’s Anxiety and Avoidance scales) that are primed first with the attachment activating vignette (Group 3—Prime Before Attachment Measure) will have greater internal consistency than the same attachment measures that are not primed first with the vignette (Group 1—No Prime and Group 2—Prime After Attachment Measure). This hypothesis will be tested by comparing alpha coefficients for each group and testing for statistical significance using Fisher’s r to Z transformations.

**Hypothesis 2:** It is expected that the attachment measures (the ECR’s Anxiety and Avoidance scales) that are primed first with the attachment activating vignette (Group 3) will have greater variance than the attachment measures that are not primed first (Groups 1 and 2). This hypothesis will be tested using Levene’s test of homogeneity of variance. Levene’s is a test to determine if the variance of a variable is equal across groups. If it is significant then the variance across groups is not considered equal.
Hypothesis 3: It is expected that there will be no significant differences between the three groups on mean scores of attachment (as measured by the ECR’s Anxiety and Avoidance scales). To test for this main effect, an analysis of variance (ANOVA) will conducted for Anxiety and for Avoidance.

Hypothesis 4: It is expected that a prime of an attachment-activating vignette will strengthen the relationships between attachment measures (the ECR’s Anxiety and Avoidance scales) and outcome variables of self-esteem, loneliness, trust, and perceived social support. The direction of the associations will be the same as established previously in the literature. Specifically it is expected that participants low on attachment dimensions of anxiety and avoidance will have higher self-esteem, less loneliness, more trust in others, and perceive more support from others.

This moderation will be tested using structural equation modeling (SEM). SEM allows the investigation between the three latent independent variables, anxiety, avoidance, and attachment and the four latent dependent variables, self-esteem, loneliness, perceived social support, and trust. Anxiety, avoidance, attachment, self-esteem, loneliness, perceived social support, and trust are all factors that are not directly measured (i.e., latent variables) but are assessed through other measurable variables (e.g., the factor of anxiety will be assessed by measuring participants’ scores on parceled items tapping anxiety). See Figure 1 for the hypothesized relationships between these variables. Circles represent the latent variables and squares represent the measured variables. Lines with one arrow radiating towards a variable indicate a hypothesized relationship; absence of a line between variables indicates no hypothesized relationship. The residual or error in the model is noted with an E (for the measured variables) and a D (for the latent variables). The data for
each group will be tested using the proposed model and then all three models will be compared in a stacked SEM. The stacked SEM tests each parameter for invariance against the same parameter in the other models. It is expected that the parameters for Group 3—Prime Before Attachment Measure will be different from the same parameters in Group 1—No Prime and Group 2—Prime After the Attachment Measure.
Figure 1. Hypothesized Model of Attachment
Results

Data Screening

As reported above, 414 questionnaires were completed for this study of which 14 were missing 2 or more items (1.3% of the total questionnaire). This small percentage (less than 4% of the total sample) of questionnaires was deleted. An additional 14 questionnaires were missing one item (0.7% of the total questionnaire). For these questionnaires, the missing value was replaced by that participant’s modal response on the particular scale from which the item was missing. The data was then screened for univariate outliers using a cut score of +/- 3.5 standard deviations and 3 outliers were detected and deleted. Mahalanobis’ Distance scores were calculated and standardized (using SPSS) to screen the remaining data for multivariate outliers. Using a conservative cut score of +/- 4.0, p < .0001 (as recommended by Ullman, personal communication 6/97), there were no multivariate outliers detected. The final analysis was conducted on 397 cases.

On variables to be analyzed, normality of distribution was examined through histograms and indicators of skewness and kurtosis. For most variables, skewness and kurtosis were within an acceptable range (within +/- 1.00; Tabachnick & Fidell, 1996). However, participants in group 1 that did not receive the priming vignette had a more positive kurtosis on the UCLA Loneliness Scale than the other two groups (Kurtosis = 1.11). In addition, participants in group 3 that received the priming vignette before the attachment measure had a more positively skewed (1.31) and kurtotic (2.78) distribution on the Avoidance measure and they had a more negatively skewed (-1.34) and kurtotic (1.92) distribution on the Support measure. Although these scales were more skewed and
kurtotic than optimally desired, they were still deemed to be acceptable for the current analysis because they were in the direction of the other groups and were consistent with what would be expected in the population.

The assumption of linearity was established through the inspection of bivariate scatter plots produced by SPSS for each group. Residual scatter plots were used to determine if the residuals were normally and symmetrically distributed and each group met this assumption of homoscedasticity. Multicolinearity was not established for any of the groups (see Tables 2 – 4 for scale correlations). Finally, singularity was assessed by examining the determinant of the covariance matrix for each group; each determinant was larger than 0, so singularity is not a problem for any of the groups.
### Table 2

**Intercorrelations Among Variables—Group 1: No prime (N = 138)**

<table>
<thead>
<tr>
<th>Attachment</th>
<th>Model of Self</th>
<th>Model of Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidance</td>
<td>Anxiety</td>
<td>Esteem</td>
</tr>
<tr>
<td>Avoidance</td>
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</tr>
<tr>
<td>Anxiety</td>
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<td>1.00</td>
</tr>
<tr>
<td>Esteem</td>
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<td>Lonely</td>
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<td>.591**</td>
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<tr>
<td>Trust</td>
<td>-.549**</td>
<td>-.503**</td>
</tr>
<tr>
<td>Support</td>
<td>-.380**</td>
<td>-.397**</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level, two-tailed.

### Table 3

**Intercorrelations Among Variables—Group 2: Prime After Attachment Measure (N = 131)**

<table>
<thead>
<tr>
<th>Attachment</th>
<th>Model of Self</th>
<th>Model of Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidance</td>
<td>Anxiety</td>
<td>Esteem</td>
</tr>
<tr>
<td>Avoidance</td>
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<td>Lonely</td>
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<td>.530**</td>
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<tr>
<td>Trust</td>
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<tr>
<td>Support</td>
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<td>-.380**</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level, two-tailed.
Table 4

*Intercorrelations Among Variables—Group3:Prime Before Attachment Measure (N = 128)*

<table>
<thead>
<tr>
<th></th>
<th>Attachment</th>
<th>Model of Self</th>
<th>Model of Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avoidance</td>
<td>Anxiety</td>
<td>Esteem</td>
</tr>
<tr>
<td>Avoidance</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>.394**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Esteem</td>
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<td>1.00</td>
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<tr>
<td>Lonely</td>
<td>.508**</td>
<td>.429**</td>
<td>-.574**</td>
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<tr>
<td>Trust</td>
<td>-.656**</td>
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<tr>
<td>Support</td>
<td>-.424**</td>
<td>-.218**</td>
<td>.341**</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level, two-tailed.
Reliability Analyses

Cronbach alpha reliability coefficients for all scales were computed for each group and found to be adequate and comparable to the normative samples for each instrument. Reliability coefficients for Group 1—No prime ranged from .84 to .94 and, specifically, were .94 for the Avoidance scale, .92 for the Anxiety scale, .84 for the Self-Esteem scale, .93 for the UCLA Loneliness Scale, .91 for the Trust scale, and .86 for the Multidimensional Scale of Perceived Social Support. Reliability coefficients for Group 2—Prime after Attachment ranged from .88 to .93 and, specifically, were .93 for the Avoidance scale, .92 for the Anxiety scale, .88 for the Self-Esteem scale, .92 for the UCLA Loneliness Scale, .92 for the Trust scale, and .92 for the Multidimensional Scale of Perceived Social Support. Reliability coefficients for Group 3—Prime before Attachment ranged from .85 to .94 and, specifically, were .91 for the Avoidance scale, .91 for the Anxiety scale, .85 for the Self-Esteem scale, .94 for the UCLA Loneliness Scale, .92 for the Trust scale, and .91 for the Multidimensional Scale of Perceived Social Support.

Analyses of Hypothesized Relationships

Hypothesis 1. To determine if the attachment measure—consisting of the Avoidance and Anxiety scales—that is primed first with the attachment activating vignette (Group 3) has greater internal consistency than the attachment measures that are not primed (Groups 1 and 2), alpha coefficients were examined for each group and then were to be compared using Fisher’s r to Z transformations. However, the r to Z transformations were not deemed necessary as the alpha coefficients were equivalent across groups. As mentioned above, alphas for the Avoidance scale for Groups 1 through 3 were .94, .93, and .91, respectively. Alpha coefficients for the Anxiety scale for Groups 3 were .94, .93, and .91, respectively.
1 through 3 were .92, .92, and .91, respectively. Thus, the priming of the attachment scenario did not increase the internal reliability for either Avoidance or Anxiety.

**Hypothesis 2.** To examine if the attachment measures primed with the attachment scenario had greater variance than the attachment measures that were not primed, a Levene's test of homogeneity of variance was conducted using SPSS. Levene's is a test to determine if the variance of the dependent variable is equal across groups. If it is significant, then the variance across groups is not considered equal. For the Avoidance scale, the Levene's test was significant, $F(2, 394) = 4.79, p = .009$ indicating that the variance was not equal across groups. Standard deviations on the Avoidance scale for Groups 1 through 3 were 1.11, 1.06, and .98, respectively. Group 3—the group with the Avoidance scale that was primed first had less—and not more—variance than the groups with the Avoidance scale that was not primed. Thus, this analysis revealed differences in variances among the groups; however, the variances differed in the opposite direction than expected. Of note is that the standard deviations are similar in magnitude and do not approach the 4 to 1 ratio standard for determining homogeneity of variance. A likely explanation for the significant finding given the low ratio between the numbers is the power of the present study driven by the sample size. For the Anxiety Scale, the Levene's test was not significant, $F(2, 394) = 1.04, p = .355$, indicating that the variances across groups are similar. Thus the prediction that the attachment measures that were primed with the attachment activating vignette would have more variance was not supported and, in fact, the primed Avoidance scale had less variance than the Avoidance scales that were not primed.

**Hypothesis 3.** Using SPSS, the prediction that no main effect is expected on the attachment measure (Anxiety and Avoidance scales) across groups was tested with
analysis of variance (ANOVA). See Table 5 for each group's means and standard deviations for the Anxiety and Avoidance scales. Contrary to the predictions, a main effect was found for the Avoidance scale, \( F[2,394] = 8.48, \text{MSE} = 1.02, p = .001, \eta^2 = .041 \), and for the Anxiety scale, \( F[2,394] = 5.54, \text{MSE} = 1.39, p = .004, \eta^2 = .027 \).

Post-hoc tests were conducted using Tukey HSD to test for mean differences among the three groups. Group 3—Prime before Attachment measures—reported significantly less avoidance than either Group 1—No Prime (\( p = .001 \)) or Group 2—Prime After Attachment measure (\( p = .001 \)). The practical significance of this statistically significant finding is negligible as the primed attachment scenario only accounts for an estimated 4% of the true variance in Avoidance. Group 3 also reported significantly less anxiety than Group 1 (\( p = .003 \)). The differences between Group 3 and Group 2 on Anxiety were not statistically significant but there was a trend in the same direction (\( p = .053 \)). Again, however, the practical significance of this finding is negligible as the proportion of variance accounted for in Anxiety by the priming attachment scenario is less than 3%.

**Multivariate Assumptions**

EQS (Bentler, 1995) was used to estimate the hypothesized model. The assumption of multivariate normality was evaluated using Mardia's coefficient and the normalized estimate. Mardia's coefficients for Groups 1 through 3 are 44.46, 53.55, and 32.00, respectively, and the corresponding normalized estimates are 8.40, 9.86, and 5.82, which indicate that multivariate normality was violated. Due to the non normality, the model was estimated using maximum likelihood estimation. Ordinarily with model estimation using only one group, the Satorra-Bentler scaled chi-square is used as it adjusts the standard errors to the extent of the non normality (Ullman, 1996). However,
Table 5

Means and Standard Deviations for Anxiety and Avoidance Scales

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group 1: No Prime (N = 139)</th>
<th>Group 2: Prime After Attachment (N = 131)</th>
<th>Group 3: Prime Before Attachment (132)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean  SD</td>
<td>Mean  SD</td>
<td>Mean  SD</td>
</tr>
<tr>
<td>Anxiety</td>
<td>3.49  1.23</td>
<td>3.36  1.17</td>
<td>3.05  1.14</td>
</tr>
<tr>
<td>Avoidance</td>
<td>2.54  1.11</td>
<td>2.53  1.06</td>
<td>2.14  .98</td>
</tr>
</tbody>
</table>
this robust test is not yet available for multigroup analysis (Byrne, 1994); the chi-square test may represent an underestimate of the model.

Model Estimation

The hypothesized structural equation model (SEM), as mentioned above, is presented in Figure 1. The measured variables were broken down into smaller parcels in order to assess and correct for measurement error. In addition, Kishton and Widaman (1994) have argued that parceling is further recommended for improving the psychometric properties of the measures. There are two accepted methods of parceling—either a unidimensionality method based on internal reliabilities of .60 or greater and dimensionality for only that domain (e.g., one factor) or a domain representative method in which items are believed to be equally representative of the construct under consideration (Kishton & Widaman, 1994). Both methods were employed in the present study. For the measures that consisted of more than one factor, the parcels were determined by those factors to retain unidimensionality. These measures included the Trust Scale which was broken down into three parcels based on the concepts of predictability, dependability, and faith, and the Multidimensional Scale of Perceived Social Support (MSPSS) which was broken down into three parcels consisting of family support, friend support, and significant other support. An important caveat in parceling items is that no item can be on more than one parcel (Kishton & Widaman, 1994). Two factors from the MSPSS, friends support and significant other support, shared three items. Because the friends' factor is made up of 7 items and the significant other factor is made up of 4 items, the three overlapping items were deleted from the friends' factor and retained on the significant other factor. Thus the resulting parcels each consisted of 4 items. The ECR Anxiety and Avoidance scales, The Self-Esteem Scale, and the UCLA
Loneliness Scale are believed to contain domain representative items, so the items were randomly selected for each parcel. The Anxiety and Avoidance scales were each broken down into four parcels; two were made up of 5 items and two were made up of 4 items. The Self-Esteem scale was broken down into three parcels; two were made up of 3 items and one was made up of 4 items. The Loneliness scale was broken down into four parcels; each parcel was made up of 5 items. All parcels had acceptable internal reliabilities with alphas ranging from .63 to .80 (see Kishton & Widaman, 1994).

Byrne (1994) recommends that prior to testing for invariance across groups, baseline models should be established separately for each group. The independence model chi-square tests the hypotheses that the variables are not related. For Group 1—No prime—this hypothesis was rejected ($\chi^2_{\text{indep}} [210, N = 138] = 2428.41, p = .001$). Next, the hypothesized model was tested and supported with the chi-square test statistic ($\chi^2 [182, N = 138] = 306.570, p = .001$) and the Comparative Fit Index (CFI), CFI = .94. The $\chi^2$ test statistic ideally should have been non-significant; however it is less than two times the model degrees of freedom which indicates support for the theoretical model (Ullman, 1996). This fact combined with the CFI suggests that the hypothesized model is a good-fitting model. See Figure 2 for the estimated hypothesized model with standardized and unstandardized coefficients. Significant unstandardized coefficients are indicated by an asterisk (e.g., *).

For Group 2—Prime after Attachment measure, the independence chi-square was again significant ($\chi^2_{\text{indep}} [210, N = 131] = 2266.90, p = .001$) indicating that the variables in the model are correlated. The test for the hypothesized model was also significant ($\chi^2 [182, N = 131] = 318.40, p = .001$), again supported by the Comparative Fit Index, CFI = .93, suggesting that the hypothesized model fits the data well. See Figure 3 for the
estimated hypothesized model with standardized and unstandardized coefficients. Significant unstandardized coefficients are indicated by an asterisk.

The independence chi-square was also significant for Group 3—Prime before Attachment measure ($\chi^2_{\text{indep}} [210, N = 128] = 2232.07, p = .001$). The hypothesized model was tested and again supported by the chi-square test statistic and the Comparative Fit Index ($\chi^2 [179, N = 128] = 290.76, p = .001, \text{CFI} = .95$), suggesting that the hypothesized model also was a good fitting model for the data from Group 3. See Figure 4 for the estimated hypothesized model with standardized and unstandardized coefficients. Significant unstandardized coefficients are indicated by an asterisk.

In order to relax the models for a better fit, different adjustments were made for each group’s model. For Group 1, the latent variables Self-esteem and Loneliness were significantly negatively correlated. For Group 2, the latent variable Avoidant Attachment cross loaded onto the measured variable of Significant Other Support along with the predicted relationship of the latent variable Social Support. For Group 3, the latent variables of Self-esteem and Loneliness were again significantly negatively correlated. In addition the parceled measured variables of Anx 2 and Lonely 2, Esteem 1 and Esteem 3, and Lonely 3 and Friends Support were all significantly correlated. Because these relationships were considered sample specific, each was removed from consideration in model estimation. See Figures 2 through 4 in which these parameters are represented with a thicker arrow.

Direct Effects

The relationships between attachment and the dependent variables were all in the expected directions in all three models, consistent with the attachment literature. Specifically, higher scores on anxious and avoidant attachment were negatively
correlated with scores on self-esteem, perceived social support, and trust and positively correlated with scores of loneliness. Furthermore, attachment was a significant predictor of all of the latent variables across all groups. See Table 6 for proportion of variance accounted for by attachment for each variable. In comparing differences between the groups, Cohen’s (1992) estimate of .20 to .25 was used to evaluate big differences between path coefficients. Group 2—Prime After Attachment Group—and Group 3—Prime Before Attachment Group—reported significantly more family support than Group 1—the No Prime Group. Group 2 also reported significantly more friend support than did Group 1 or Group 3. Group 1 and Group 3, however, reported more support from significant others than did Group 2. In addition, attachment was a significantly stronger predictor of self-esteem for Group 2 than for Group 1. Attachment was also a stronger predictor of trust for Group 3 than for Group 2.

Comparison of Models—Testing for Invariance

To test the moderating effects of the attachment activating vignette on the dependent variables, a comparison of the models for each group was conducted. Using EQS, every parameter in each model was tested for invariance against the same parameter in the other models. The independence model chi square was significant ($\chi^2_{\text{indep}} [630, N = 391] = 6927.39$) indicating that the variables are related. The chi square for the stacked model was significant but less than two times the degrees of freedom indicating that the stacked model fit well ($\chi^2 [565, N = 391] = 953.19, p = .001$). This finding is bolstered by the comparative fit index, $\text{CFI} = .94$.

Despite the overall invariance of the models, significant multivariate differences were found on three parameters. Specifically, the latent variable Loneliness was more predictive of parcel Lonely 3 in Group 2—Prime After Attachment Group—than for
Group 1—No Prime Group (p = 0.02). For Group 1, the latent variable Anxious Attachment was more predictive of parcel Anx 2 than it was for Group 3—Prime Before Attachment Group (p = 0.01). For Group 3, the latent variable Self-esteem was more predictive of parcel Esteem 2 than it was for Group 1 (p = 0.01). These significant parameters only include one parcel that was randomly or domain created but the other related parcels are not significant. This indicates that these significant parameters are sample specific and not driven by any logical relationship. Therefore, using practical significance as a guide, there are no meaningful differences between the estimated models indicating that priming attachment with a vignette did not make any differences on either the independent or dependent variables.
Figure 2. Group 1: Hypothesized SEM Model With Standardized and (Unstandardized) Coefficients. * = p < .05
Figure 3. Group 2: Hypothesized SEM Model With Standardized and (Unstandardized) Coefficients. * = p < .05
Avoidant Attachment

Lonely 1

Trust:
Predictable

Trust:
Dependable

Trust:
Faith

Anxious Attachment

Self Esteem

Esteem 1

Esteem 2

Esteem 3

Anx 1

Anx 2

Anx 3

Anx 4

Attachment

Loneliness

Lonely 1

Lonely 2

Lonely 3

Lonely 4

Social Support

Family Support

Friends Support

Sig. Other Support

Avoidant Attachment

Avoid 1

Avoid 2

Avoid 3

Avoid 4

Self Esteem

Esteem 1

Esteem 2

Esteem 3

Figure 4. Group 3: Hypothesized SEM Model With Standardized and (Unstandardized) Coefficients. * = p < .05
Table 6

*Proportion of Variance Accounted for by Attachment*

<table>
<thead>
<tr>
<th></th>
<th>Group 1: No Prime</th>
<th>Group 2: Prime After Attachment</th>
<th>Group 3: Prime Before Attachment</th>
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<tbody>
<tr>
<td>Esteem</td>
<td>.29</td>
<td>.61</td>
<td>.41</td>
</tr>
<tr>
<td>Lonely</td>
<td>.59</td>
<td>.81</td>
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<td>Trust</td>
<td>.66</td>
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<td>.86</td>
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<tr>
<td>Support</td>
<td>.90</td>
<td>.64</td>
<td>.59</td>
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</table>
Discussion

Based on the underpinnings of attachment theory and empirical findings from cognitive psychology, it was hypothesized that using a self-report attachment questionnaire that is first primed with a vignette designed to activate the attachment system would have empirical advantages consisting of greater internal reliability, greater variance, and more predictive power on established outcome measures. Furthermore, it was hypothesized that the vignette would not be associated with mean differences on the attachment measure among three groups: Group 1—No prime, Group 2—Prime After Attachment Measures, and Group 3—Prime Before Attachment Measures. Statistical significance was not found for most of the hypothesized relationships. Thus, overall, the hypotheses were not supported indicating that priming attachment with a vignette had no effect on the independent variables of attachment including Anxiety and Avoidance as well as no effect on the dependent variables tapping self-esteem, loneliness, perceived social support, and trust.

One explanation of the findings of this study is derived from the theoretical literature conceptualizing adult attachment as a trait—an enduring, stable pattern of relating interpersonally. Bowlby’s (1982) theory explicitly details how attachment figures are relied on in a less physical sense and in a more cognitive manner as individuals mature into adulthood. The patterns of interpersonal interactions of childhood are thought to become internalized into a cognitive working model of interpersonal and personal expectations that are thought to be consistent across time and relationships (Berman & Spelling, 1994). Because the prime—which was aimed at activating the attachment system by providing a psychologically relevant affective state—had no effect on the
attachment measures or on the outcome measures, the findings add support to the trait conceptualization of attachment.

However, the findings from the present study are not consistent with research findings implicating the effects of primes on outcome variables. As noted above, studies exploring the differences between temporarily accessible relationship schemata (e.g., priming) and chronic attachment styles (i.e., trait-like internal working models) have found consistent evidence that contextual activation of relationship schemata produces results that cannot be explained by chronic attachment style alone (Green & Campbell, 2000; Mikulincer & Arad, 1999; Mikulincer, Birnbaum, Woddis, & Nachmias, 2000; Mikulincer, Hirschberger, Nachmias, & Gillath, 2001; Mikulincer, Gillath, Halevy, Avihou, Avidan, Eshkoli, 2001). For example, although Baldwin et al. (1996) found evidence that attachment has trait-like qualities, they also found that situations (e.g., a prime) could decrease the stability and predictability associated with trait-like attachment styles. Pierce and Lydon (1998) also found evidence that contextual information as well as chronically accessible attachment information are taken into account when people respond to stressful life situations.

In an attempt to understand the differences between the results of this study and the studies above which found evidence for a priming effect, the differences in priming techniques was explored. Past studies have used a number of methodologies to activate contextual relational schemata including thinking of relationships that fit one of Hazen and Shaver’s (1987) attachment descriptions (Baldwin et al., 1996; Mikulincer & Arad, 1999), visualizing secure attachment scenarios (Mikulincer & Shaver, 2001), exposure to attachment related sentences (Green & Campbell, 2000), exposure to supraliminal and subliminal words depicting stress, attachment distress, or psychological threat.
(Mikulincer, Birnbaum, Woddis, & Nachmias, 2000; Mikulincer, Gillath, & Shaver, 2002; Pierce & Lydon, 1998), exposure to pictures depicting a secure-base relationship (e.g., mother gazing at child; Mikulincer, Hirschberger, Nachmias, & Gillath, 2001), and reading vignettes depicting secure attachment (Mikulincer et al., 2001). The present study used a priming vignette that asked participants to imagine themselves feeling increasingly ill and fatigued. A primary difference between the activation technique in this study and the techniques used in past studies is the absence of words connoting attachment (e.g., close, separation, love, support, rejecting). In past studies in which participants were asked to visualize their own relationships, they were first randomized into groups and given one of three descriptions of different attachment relationships. These descriptions all contained several attachment relevant words. A notable exception is the prime used in Mikulincer et al.’s (2001) study in which secure attachment was primed with a picture of a mother gazing at her child. Although attachment related words were also absent from this prime, the affective connotation associated with secure attachment was paramount.

There are three possible explanations to consider given the differences in priming techniques and the discrepant findings. The first explanation is that perhaps past research implicating evidence of a contextual effect on attachment was really demonstrating an effect due to emotional infusion from the affectively laden primes. In fact, Mikulincer, Hirschberger, Nachmias, and Gillath (2001) discussed how visualizing a secure base relationship “infused positive affect regardless of variation in attachment style” but also noted that this was only true for neutral contexts and in the stressful context for participants scoring low on anxiety and avoidance. For participants scoring higher on anxiety and avoidance, the infusion of positive affect did not carry over to a stressful context. So while there may be some evidence of an affective infusion, it seems to be
moderated by attachment style. Indeed this explanation is less tenable because several other studies found relationships between participants’ chronic attachment styles and their responses to contextual manipulations. For example, Mikulincer, Gillath, and Shaver (2002) found that participants high on attachment anxiety had heightened accessibility of representations of attachment figures but participants high on attachment avoidance inhibited accessibility following negative affect laden primes of an interpersonal nature (e.g., the word *separation*). Therefore, while there are differences in outcome measures when they are primed with affectively laden words, these differences are not just due to an emotional infusion regarding the affective valence of the word. Thus, priming in past studies did affect outcome measures and the differences seem to be explained by attachment styles which stand in contrast to the findings from the present study.

A second explanation for why the priming vignette did not affect the attachment measure or the outcome variables in the present study is that perhaps the vignette did not provide enough of a direct threat to arouse the attachment system. The scenario in the vignette was chosen because illness and fatigue have both been described as attachment activating states (Bowlby, 1988). In addition, a stronger attachment scenario (e.g., death) was not chosen because of the potential of arousing other behavioral systems such as the fear/wariness system and because of the potential distress it may have had on participants. Given that the present study’s vignette was not very effective and that other measures have employed pictures of a grave to activate the attachment system (George, West, & Pettem, 1999), perhaps a vignette describing a more direct threat to an attachment relationship would have been more successful in activating the attachment system. The findings from the vignette pilot study indicate that this is a plausible
explanation as participants rated the vignette on the dimensions of "fearful" and "threatened" as only mildly intense but rated the vignette on dimensions of "worried" and "concerned" as intense. Perhaps if the dimensions of "fearful" and "threatened" were rated as more intense, the vignette would have had more of an effect in this study. Future research employing a vignette should look for stronger ratings on these dimensions to help ensure that the vignette is eliciting the appropriate emotional state.

A third explanation for the differences between the present study and past studies, and related to the explanation above, is that although the intention of the priming vignette in the present study was to create a psychologically relevant state for attachment to become activated, the prime was not successful in activating the attachment system because it lacked affectively relevant words. Instead, the vignette focused on conveying a situation that might, and theoretically should, evoke attachment related emotions. It was hoped that as participants imagined the situation and to whom they might turn, these relevant emotions would surface at least at a subconscious level. As this expectation was not met, it may be that the scenario in the vignette was not strong enough to make participants feel threatened and fearful. Perhaps the vignette would have been more successful if it contained descriptions that had more affective relevance for attachment as did the priming techniques in past studies.

This third explanation is bolstered by findings from neuroscience implicating right brain dominance both prenatally and postnatally. Schore (2002) indicates that the neurophysiological control system that is involved in regulating attachment behavior is in the right orbitofrontal area and its cortical and subcortical connections. He notes:

The early forming right hemisphere stores an internal working model of the attachment relationship that determines the individual’s characteristic
strategies of affect regulation for coping and survival. This working model is encoded in implicit memory, which is primarily regulatory, automatised, unconscious, and right lateralized. This right frontal system thus plays a unique role in the regulation of motivational states and the adjustment or correction of emotional responses. It acts as a recovery mechanism that monitors and regulates the duration, frequency, and intensity of not only positive but also negative affect states. (p. 15)

Given these findings, in retrospect, it seems necessary to activate the right hemisphere in order to access attachment related behaviors, feelings, and thoughts. The vignette for the present study lacked the affective material to activate the right hemisphere and was, therefore, likely processed primarily with the language dominant left brain hemisphere. This explanation is consistent with Bouthillier et al.'s observation that different types of memory are tapped with different types of measures (2002). They contend that the more in-depth measures such as the Adult Attachment Interview (AAI) tap information that has been integrated into semantic and episodic memory systems whereas self-report measures tap information from semantic memory alone. Thus, the right hemisphere of the brain would need to be activated in order to tap episodic memories. Therefore, the omission of relevant affective words from the present study's vignette was problematic in that it was not successful in tapping the brain structures most involved in attachment—namely the right brain hemisphere.

An interesting and unexpected finding was the smaller variance term for Group 3—Prime Before Attachment group on the Avoidance measure. It was expected that the prime would, in fact, have a polarizing effect on this group’s scores—causing them to report either more or less avoidance and anxiety and, therefore, cause a greater dispersion
in their scores. Contrary to this expectation, Group 3—Prime Before Attachment had less variance in their Avoidance scores. Instead of a polarizing effect, the prime seemed to focus the group and decrease the variance in their scores on that measure.

Another unexpected finding was that Group 3—Prime Before Attachment—reported significantly less avoidance than either Group 1—No prime—or Group 2—Prime After Attachment, and Group 3 also reported less anxiety than Group 1 and, although not statistically significant, there was a trend in the same direction for Group 2. It was expected that the prime would create greater dispersion of scores on Anxiety and Avoidance, but the means would not be different among the groups. Although mean differences were statistically significant, the practical significance is so low as to render them not very meaningful. Still it is interesting to speculate if the prime was having a small effect on the independent variables. Perhaps, this finding can also be explained in terms of the prime serving as a focusing tool which activated participants’ coping mechanism of thinking about a secure base resulting in a decrease in their felt levels of anxiety and avoidance. These findings may implicate a priming effect on the groups or they may represent a statistical artifact due, in part, to the large sample size of this study and/or the smaller variance term for Group 3 on the Avoidance measure. Mean differences using a prime should be further investigated in future research.

It would not be prudent to over-interpret the significant parameters of the SEM for Group 3 as they may just be sample specific or alpha errors. However, two of the significant parameters in the SEM for Group 3 also suggest the possibility of a priming effect. When looking at specific items for Lonely 3 and Friends Support, the significant parameter may indicate more evidence that the vignette activated a coping mechanism of thinking of a secure base—in this case the secure base is represented by support from
friends. Additionally, the specific items for Anx 2 and Lonely 2 suggest the possibility that a certain substrate of anxiety was activated for Group 3. This anxiety seems centered around abandonment concerns and feelings of being powerless to change their interpersonal situation. Again these significant differences should not be over interpreted, but they provide some indication of a small priming effect that indicates this area of research should be further investigated.

Beyond the obvious objectives of this study, the results did provide strong evidence for the relationships between attachment, anxiety, and avoidance as well as evidence that attachment strongly informs perceptions of both self and other. These relationships were significant across three groups and the groups did not differ from one another in a systematic way. These findings bolster the theoretical underpinnings of attachment as well as speak to the importance of developing secure attachments as secure attachments foster healthier conceptions of self and other which have long standing implications for future psychological well-being.

**Methodological Limitations**

As noted above, a major methodological limitation to this study was the likely failure to activate the attachment behavioral system. Research has indicated that attachment memories and schemata are stored in the right hemisphere of the brain that is implicated in processing emotional material. It is likely that the prime used in the current study was primarily processed with the language dominant left hemisphere. This problem in methodology has left the hypotheses of the current study unanswered.

A second methodological limitation is the disproportionate number of women in the sample. There were 317 women among all three groups and only 76 men. This greater preponderance of women would make the results of this study difficult to generalize to
populations that included greater numbers of men. Post-hoc exploratory analyses were conducted to test the effects of Gender on Anxiety and Avoidance. A 2 X 3 factorial analysis of variance (ANOVA) was conducted using SPSS. In the present sample, there was no significant differences of Gender on Anxiety (F [1, 393] = .171, \( \text{MSE} = .239, p = .68 \)) or on Avoidance (F [1, 393] = 3.56, \( \text{NSE} = 3.63, p = .06 \)). There was also no significant Group X Gender interaction for Anxiety (F [2, 393] = .367, \( \text{MSE} = .513, p = .693 \)) or for Avoidance (F [2, 393] = .263, \( \text{NSE} = .268, p = .769 \)).

Another methodological issue that may have inadvertently affected the results is the use of a sample consisting of college students. Although research has indicated that attachment distributions in college samples were similar to attachment distributions in a nationally representative sample (Mickelson, Kessler, & Shaver, 1997), it may be that a sample of college students would be more likely to intellectualize their experiences making them even more prone to processing the information with their brains’ left hemispheres and less likely to activate their brains’ right hemisphere. A sample consisting of participants with a broader range of educational levels may make intellectualization less likely and may help with generalizing the results.

Another consideration with the use of a college sample is the developmental appropriateness of the vignette depicting illness. Although illness and fatigue are theorized to elicit the attachment behavioral system, this scenario may have been more appropriate with older adults. With a college sample, a vignette depicting an interpersonal separation may be more developmentally appropriate and should be considered in future research.
Implications for Future Research

The methodological limitations noted above implicate several possibilities for future research. Because of the critical design problem in the present study, the questions concerning the advantages of priming a self-report instrument are left unanswered. The results of this study seem to underscore the importance of the affective component on attachment. Future research should investigate using a similar priming technique that contains a stronger, more direct threat to the attachment system and/or affectively relevant words in an attempt to activate the right hemisphere of the brain. The present study suggests the possibility that activation of attachment may activate a coping mechanism of thinking about a secure base. This finding is consistent with theoretical expectations of developmental changes in attachment. Future research could investigate this coping mechanism more directly perhaps through physiological measures such as skin conductance or heart rate. Additionally, future studies could ask participants about their felt level of threat as a manipulation check and include it as a moderator in statistical analyses.

Future research should also have a more balanced sample in terms of gender distribution and level of educational background. Although attachment theory does not indicate that differences should be expected based on these demographic variables, they would be important to control in the event that they were having an unintended but systematic effect on the variables being investigated. Another consideration for future research should be the developmental appropriateness of the vignette for the sample under investigation.
Implications for Treatment

Although this study was methodological in nature, the findings may have relevance for psychotherapeutic treatment as well. Specifically, the results of this study seem to indicate that therapy that relies primarily on verbalization of experiences and neglects the affective component of such experiences may fail to make significant changes in clients' internal working models. However, therapists working with the affective content and process with their clients are likely tapping these clients' internal working models of attachment. This would, in turn, provide corrective emotional experiences that alter clients' perceptions of self and other and, thus, lead to lasting change.

Conclusions

The purpose of this study was to investigate the empirical advantages of using a self-report attachment questionnaire that is first primed with a vignette designed to activate the attachment system. The empirical advantages of using a prime with a self-report questionnaire were not supported. This finding is consistent with attachment literature conceptualizing attachment as a trait, but it is inconsistent with recent empirical literature suggesting that attachment related primes (and similar situational factors) affect outcome variables. A likely explanation to this study's discrepant findings is that the prime did not convey a situation strong enough to activate the attachment system or because it did not contain attachment relevant words it did not activate the attachment system or both. Findings from neuroscience implicating right brain dominance in the storage of affective material support this explanation. It is likely that the prime used in the present study was primarily or only processed with the language dominant left
hemisphere of the brain. This methodological issue has important implications for future research and, possibly, for psychotherapy.
References


APPENDIX A
Demographic Questionnaire

To give us an understanding of some of the background variables of those participating in this study, please complete the following questions.

1. Your age: ________
2. Your sex (circle one): male  female
3. Your current marital status (check one);
   ___ Single
   ___ Married
   ___ Separated/divorced
   ___ Widowed
   ___ Other (___________)
4. What is your ethnic background? (Check one)
   ___ African American
   ___ Asian
   ___ Caucasian
   ___ Hispanic/Latino
   ___ Native American
   ___ Other (___________)
5. What was the highest grade in school (or level of education) your mother completed?
6. What was the highest grade in school (or level of education) your father completed?
7. What is the highest grade in school (or level of education) you have completed?
APPENDIX B
Experiences in Close Relationships

Instructions: The following statements concern how you feel in an important, close relationship. Respond to each statement by circling the number indicating how much you agree or disagree with it.

1. I prefer not to show this person how I feel deep down.

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

2. I worry about being abandoned.

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

3. I am very comfortable being close to this person.

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

4. I worry a lot about my relationship with this person.

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

5. Just when this person starts to get close to me I find myself pulling away.

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

6. I worry that this person won't care about me as much as I care about him/her.

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

7. I get uncomfortable when this person wants to be very close.

   Disagree Strongly Neutral/Mixed Agree Strongly
   1  2  3  4  5  6  7
8. I worry a fair amount about losing this person.

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

9. I don’t feel comfortable opening up to this person.

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

10. I often wish that this person’s feelings for me were as strong as my feelings for him/her.

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

11. I want to get close to this person, but I keep pulling back.

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

12. I often want to merge completely with this person, and this sometimes scares him/her away.

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

13. I am nervous when this person gets too close to me.

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


Disagree Strongly Neutral/Mixed Agree Strongly
1 2 3 4 5 6 7
15. I feel comfortable sharing my private thoughts and feelings with this person.

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

16. My desire to be very close sometimes scares this person away.

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

17. I try to avoid getting too close to this person.

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

18. I need a lot of reassurance that this person loves me.

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

19. I find it relatively easy to get close to this person.

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

20. Sometimes I feel that I force this person to show more feeling, more commitment.

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

21. I find it difficult to allow myself to depend on this person.

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

22. I do not often worry about being abandoned.

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

23. I prefer not to be too close to this person.

Disagree Strongly Neutral/Mixed Agree Strongly
1 2 3 4 5 6 7
24. If I can't get this person to show interest in me, I get upset or angry.

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<th>Disagree Strongly</th>
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25. I tell this person just about everything.

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26. I find that this person doesn't want to get as close as I would like.

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27. I usually discuss my problems and concerns with this person.

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28. When I'm not involved with this person, I feel somewhat anxious and insecure.

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29. I feel comfortable depending on this person.

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30. I get frustrated when this person is not around as much as I would like.

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31. I don't mind asking this person for comfort, advice, or help.

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32. I get frustrated if this person is not available when I need him/her.

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33. It helps to turn to this person in times of need.

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34. When this person disapproves of me, I feel really bad about myself.

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35. I turn to this person for many things, including comfort and reassurance.

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36. I resent it when this person spends time away from me.

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APPENDIX C
Vignette

Please read the following vignette and then answer the following set of questions.

Imagine yourself in the following scenario:

You have a busy lifestyle and you normally have enough energy to attend to the many demands that require your attention. However, the past few months you've noticed that you have been quite tired at the end of the day. The past few weeks the tiredness has gotten worse. To help yourself make it through the day, you often take naps at your lunch hour or in the afternoons, but the rest does not make you feel refreshed. It just enables you to finish your day and go home and rest. The tiredness does not make sense to you; there have been no major changes in your life and you have always enjoyed good health. You grow concerned as your feelings of tiredness do not improve but grow seemingly worse. You make an appointment with your doctor. Your doctor seems mildly concerned during the examination and runs some blood tests. A few days later while you are at home resting, your doctor calls you and would like to see you in the office to go over the results of the tests as soon as possible.

In the process of dealing with fearful or anxiety provoking situations, such as the one above, some people, though not all, will think of or go to an important person in their life. If you were to think of or go to a particular person if faced with the situation above or in a similar situation, picture who that person might be and keep him or her in mind as you complete the following questions.

Please write that person's initials on this line ____

Please identify the type of relationship you have with this person:

___ Partner
___ Mother
___ Father
___ Sibling
___ Extended family member
___ Best Friend
___ Friend
___ Clergy
___ Other (___________)

If you are not likely to think of or go to someone when in a situation such as the one described above, please place an X on this line:

___ Not likely to think of someone
APPENDIX D
Trust Scale

Directions: Read each of the following statements and decide whether it is true of your relationship with an important person in your life. Indicate how strongly you agree or disagree by circling the appropriate number from the scale below.

| STRONGLY 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY AGREE |
| DISAGREE |

1. I know how this person is going to act. This person can always be counted on to act as I expect.

| STRONGLY 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY AGREE |
| DISAGREE |

2. I have found that this person is a thoroughly dependable person, especially when it comes to things that are important.

| STRONGLY 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY AGREE |
| DISAGREE |

3. This person's behavior tends to be quite variable. I can't always be sure what this person will surprise me with next.

| STRONGLY 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY AGREE |
| DISAGREE |

4. Though times may change and the future is uncertain, I have faith that this person will always be ready and willing to offer me strength, come what may.

| STRONGLY 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY AGREE |
| DISAGREE |
5. Based on past experience, I cannot with complete confidence rely on this person to keep promises made to me.

| STRONGLY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY AGREE |
| DISAGREE |   |   |   |   |   |   |   |               |

6. It is sometimes difficult for me to be absolutely certain that this person will always continue to care for me; the future holds too many uncertainties and too many things can change in our relationship as time goes on.

| STRONGLY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY AGREE |
| DISAGREE |   |   |   |   |   |   |   |               |

7. This person is a very honest person and, even if he/she were to make unbelievable statements, people should feel confident that what they are hearing is the truth.

| STRONGLY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY AGREE |
| DISAGREE |   |   |   |   |   |   |   |               |

8. This person is not very predictable. People can’t always be certain how this person is going to act from one day to another.

| STRONGLY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY AGREE |
| DISAGREE |   |   |   |   |   |   |   |               |

9. This person has proven to be faithful. No matter who this person was married to, she or he would never be unfaithful, even if there was absolutely no chance of being caught.

| STRONGLY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY AGREE |
| DISAGREE |   |   |   |   |   |   |   |               |

10. I am never concerned that unpredictable conflicts and serious tensions may damage our relationship because I know we can weather any storm.

| STRONGLY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY AGREE |
| DISAGREE |   |   |   |   |   |   |   |               |

11. I am very familiar with the patterns of behavior this person has established, and he or she will behave in certain ways.

| STRONGLY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY AGREE |
| DISAGREE |   |   |   |   |   |   |   |               |
12. If I have never faced a particular issue with this person before, I occasionally worry that he or she won’t take my feelings into account.

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<thead>
<tr>
<th>STRONGLY DISAGREE</th>
<th>AGREE</th>
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<tr>
<td>1 2 3 4 5 6 7</td>
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13. Even in familiar circumstances, I am not totally certain this person will act in the same way twice.

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<tr>
<th>STRONGLY DISAGREE</th>
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<td>1 2 3 4 5 6 7</td>
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14. I feel completely secure in facing unknown new situations because I know this person will never let me down.

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<th>STRONGLY DISAGREE</th>
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<td>1 2 3 4 5 6 7</td>
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15. This person is not necessarily someone others always consider reliable. I can think of some times when this person could not be counted on.

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<tr>
<th>STRONGLY DISAGREE</th>
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<td>1 2 3 4 5 6 7</td>
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</table>

16. I occasionally find myself feeling uncomfortable with the emotional investment I have made in our relationship because I find it hard to set aside completely my doubt about what lies ahead.

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<tr>
<th>STRONGLY DISAGREE</th>
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<td>1 2 3 4 5 6 7</td>
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17. This person has not always proven to be trustworthy in the past, and there are times when I am hesitant to let this person engage in activities that make me feel vulnerable.

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<tr>
<th>STRONGLY DISAGREE</th>
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<td>1 2 3 4 5 6 7</td>
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18. This person behaves in a consistent manner.

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<tr>
<th>STRONGLY DISAGREE</th>
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<td>1 2 3 4 5 6 7</td>
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APPENDIX E
Multidimensional Scale of Perceived Social Support
(MSPSS)

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement by circling the appropriate number using the following scale:

1 = Very strongly disagree
2 = Strongly disagree
3 = Mildly disagree
4 = Neutral
5 = Mildly agree
6 = Strongly agree
7 = Very strongly agree

1. There is a special person who is around when I am in need.
2. There is a special person with whom I can share joys and sorrows.
3. My family really tries to help me.
4. I get the emotional help and support I need from my family.
5. I have a special person who is a real source of comfort to me.
6. My friends really try to help me.
7. I can count on my friends when things go wrong.
8. I can talk about my problems with my family.
9. I have friends with whom I can share my joys and sorrows.
10. There is a special person in my life who cares about my feelings.
11. My family is willing to help me make decisions.
12. I can talk about my problems with my friends.

Very Strongly Disagree
1 2 3 4 5 6 7

Very Strongly Agree
8 6 7
We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement by circling the appropriate number using the following scale:

1 = Strongly Disagree
2 = Disagree
3 = Agree
4 = Strongly Agree

1. I feel that I am a person of worth, at least on an equal basis with others.  
2. I feel that I have a number of good qualities.  
3. All in all, I am inclined to feel that I am a failure.  
4. I am able to do things as well as most other people.  
5. I feel I do not have much to be proud of.  
6. I take a positive attitude toward myself.  
7. On the whole, I am satisfied with myself.  
8. I wish I could have more respect for myself.  
9. I certainly feel useless at times.  
10. At times I think I am no good at all.
APPENDIX G
UCLA Loneliness Scale (Version 3)

Instructions: The following statements describe how people sometimes feel. For each statement, please indicate how often you feel the way described by circling a number in the space provided. Here is an example:

How often do you feel happy?
If you never felt happy, you would circle 1 for "never"; if you always felt happy, you would circle 4 for "always".

1. How often do you feel you are "in tune" with the people around you?

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<th>3</th>
<th>4</th>
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<tr>
<td></td>
<td>NEVER</td>
<td>RARELY</td>
<td>SOMETIMES</td>
<td>ALWAYS</td>
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2. How often do you feel you lack companionship?

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<td>NEVER</td>
<td>RARELY</td>
<td>SOMETIMES</td>
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3. How often do you feel there is no one you can turn to?

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<th>3</th>
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<tbody>
<tr>
<td></td>
<td>NEVER</td>
<td>RARELY</td>
<td>SOMETIMES</td>
<td>ALWAYS</td>
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4. How often do you feel alone?

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<th>4</th>
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<tbody>
<tr>
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<td>NEVER</td>
<td>RARELY</td>
<td>SOMETIMES</td>
<td>ALWAYS</td>
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5. How often do you feel part of a group of friends?

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<td>NEVER</td>
<td>RARELY</td>
<td>SOMETIMES</td>
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6. How often do you feel you have a lot in common with the people around you?

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7. How often do you feel you are no longer close to anyone?

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<th>4</th>
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<td>NEVER</td>
<td>RARELY</td>
<td>SOMETIMES</td>
<td>ALWAYS</td>
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</table>
8. How often do you feel your interests and ideas are not shared by those around you?

1  2  3  4
NEVER RARELY SOMETIMES ALWAYS

9. How often do you feel outgoing and friendly?

1  2  3  4
NEVER RARELY SOMETIMES ALWAYS

10. How often do you feel close to people?

1  2  3  4
NEVER RARELY SOMETIMES ALWAYS

11. How often do you feel left out?

1  2  3  4
NEVER RARELY SOMETIMES ALWAYS

12. How often do you feel your relationships with others are not meaningful?

1  2  3  4
NEVER RARELY SOMETIMES ALWAYS

13. How often do you feel no one really knows you well?

1  2  3  4
NEVER RARELY SOMETIMES ALWAYS

14. How often do you feel isolated from others?

1  2  3  4
NEVER RARELY SOMETIMES ALWAYS

15. How often do you feel you can find companionship when you want it?

1  2  3  4
NEVER RARELY SOMETIMES ALWAYS

16. How often do you feel there are people who really understand you?

1  2  3  4
NEVER RARELY SOMETIMES ALWAYS
17. How often do you feel shy?

1. NEVER  
2. RARELY 
3. SOMETIMES 
4. ALWAYS 

18. How often do you feel people are around you but not with you?

1. NEVER  
2. RARELY 
3. SOMETIMES 
4. ALWAYS 

19. How often do you feel there are people you can talk to?

1. NEVER  
2. RARELY 
3. SOMETIMES 
4. ALWAYS 

20. How often do you feel there are people you can turn to?

1. NEVER  
2. RARELY 
3. SOMETIMES 
4. ALWAYS
APPENDIX H
Informed Consent

Examining thoughts, behaviors, and emotions on a personal and interpersonal level

Purpose

You are invited to participate in this study. The goal of this study is to gather information that will help increase understanding about the way individuals think, act, and feel about themselves and others with whom they are involved in a close relationship.

Procedure

If you are willing to participate, you will answer some questions that will take approximately 30 minutes. The questionnaire will ask about your gender, current age, and educational background as well as your thoughts, behaviors, and feelings about yourself and someone with whom you share a close relationship.

Risks

Participating in this study exposes you to some risk of experiencing anxiety based on the self-reflection you will do when completing the questionnaire. The chance of this risk occurring is only slightly greater than that experienced in everyday situations.

Benefits

You will probably not receive any direct benefit from participating in this study. However, your participation will help health care and educational professionals understand more about the relationship between how one feels and thinks about oneself and how that impacts one’s close relationships.

At your instructor’s discretion, you may receive specified units of extra credit for participating in this study.

Participants’ Rights

Your participation in this study is completely voluntary. You have the right to stop responding to the questions in this survey at any time. If you decide to stop, please give your questionnaire to the graduate investigator.

Anonymity

All of the information that is collected in this study will be kept strictly anonymous. So, please do not put your name anywhere on the questionnaire packet or on the informed consent form.
Additional Costs/Reimbursement

There is no cost to you for participating in this study nor is there any monetary reimbursement for your effort. You may receive extra credit points for a particular class but that is left to the discretion of the professor.

Impartial Third Party Contact

If you wish to contact an impartial third party not associated with this study regarding any complaint you may have about the study, you may contact the Office of Patient Relations, Loma Linda University Medical Center, Loma Linda, CA 92354, (909) 559 – 4647 for further information.

Human Subjects Review Board Approval

This research has been approved by:

- Loma Linda University Institutional Review Board
- Department of Psychology Human Subject Review Board of California State University, San Bernardino

Informed Consent Statement

Once you have read the contents of this informational letter, your completion of the survey will indicate your voluntary consent to participate in this study. This consent does not waive your rights, nor does it release the investigators, institution, or sponsors from their responsibilities. You may call the graduate student investigator, Sheri Curtis, M.A., or the faculty advisor, Janet Sonne, Ph.D., at Loma Linda University, Department of Psychology during routine office hours at (909) 558-8710 if you have additional questions or concerns. Please keep this letter for future reference.
Dear Participant:

Thank you again for your participation in this study. You have just filled out a questionnaire. I would like to let you know why this information is needed for this study.

The first page you filled out included general questions about yourself so that we can get a better idea of the background of all persons participating in this study. Then you answered a series of questions about your experiences in a close relationship as well as answering questions about your thoughts and feelings about yourself and others. Some participants also read a vignette and were asked to think about the situation in the vignette as if it were a personal experience; other participants did not receive a vignette to read.

The purpose of this study is to examine how a stressful or anxiety provoking situation, such as the one described in the vignette, impacts people’s conceptions of close relationships, themselves, and others. To be confident of our results, it is important that the nature of this study not be revealed to other potential participants. Please do not share this information with other students who have not participated in this study and may like to do so.

I would like to remind you that your identity is anonymous on this survey. No one, including those conducting this research, will ever know who you are based on your responses to this questionnaire because you were asked not to put your name anywhere, and no personal identification number is being used to identify your survey packet. Therefore, you can feel safe in knowing that your identity cannot be connected to the questions you answered.

Again, if you have any questions, concerns, or comments about this survey, please contact the graduate student investigator, Sheri Curtis, M.A., at (909) 303-1661 or the faculty advisor, Janet Sonne, Ph.D., at Loma Linda University’s Department of Psychology at (909) 558-8710. If either person is unavailable, please feel free to leave a message with your first name and telephone number. Please keep this page for your future reference.

If interested, you may obtain general results of this study by contacting Sheri Curtis, M.A. or the faculty advisor Janet Sonne, Ph.D. at the numbers provided above.

Thank you so much for your time and effort in this study.

Best wishes,

Sheri R. Curtis, M.A.                                      Janet L. Sonne, Ph.D.