To the Graduate Council:

I am submitting herewith a dissertation written by Richard Scot Adlin entitled "Attachment Style Differences in Negative Affect and Cardiovascular Arousal." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

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ATTACHMENT STYLE DIFFERENCES IN NEGATIVE AFFECT AND CARDIOVASCULAR AROUSAL

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Richard Scot Adlin
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ABSTRACT

This study explored the association between the quality of attachment in close relationships during adulthood and patterns of negative affect. Based on attachment theory and research, it was hypothesized that attachment styles characterized by a negative "working model" of self (preoccupied and fearful avoidant) would be associated greater levels of self-reported negative affect compared with attachment styles defined by positive working models of self (secure and dismissing avoidant). Also, dismissing avoidance was expected to be related to greater cardiovascular activation, in spite of its association with lower levels of self-reported negative affect. A link between security and lower levels of both self-reported negative affect and cardiovascular response was also predicted.

Subjects completed self-report measures of attachment quality and negative affect (both state and trait) and had their cardiovascular responses (blood pressure and heart rate) monitored during tasks designed to evoke negative affect. For the tasks, subjects engaged in a Mental Arithmetic Task (MAT) and an Anger Recall Interview (ARI) that required subjects to describe a time when they were angry at someone with whom they were close. The predictive validity of two alternate conceptualizations of attachment quality (traditional attachment styles versus quality of

working models of self and other) was also compared.

Results supported the primary hypothesis in that subjects with a dismissing avoidant attachment style had greater systolic blood pressure elevations than subjects with other attachment styles, particularly on the ARI. Dismissing subjects' reports of trait hostility and anxiety were lower than those of other insecure subjects and equal to secure subjects. Results also indicated that classifying subjects according to the traditional attachment style typology had greater predictive validity with respect to cardiovascular responding than classifying subjects according to working model dimensions. The results supported a link between quality of attachment, defensive coping, the tendency to experience negative affect, and its expression in cardiovascular arousal.

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LIST OF ABBREVIATIONS

ARI	Anger Recall Interview
asslt	assault
BDHI	Buss Durkee Hostility Inventory
BP	Blood pressure
bpm	Beats per minute
DBP	Diastolic blood pressure
FC	Feelings Checklist
mm Hg	millimeters of mercury
HR	Heart rate
ind	indirect
irr	irritability
MAT	Mental Arithmetic Task
neg	negativism
RQ	Relationship Questionnaire
res	resentment
SBP	Systolic blood pressure
susp	suspicion
TMAS	Taylor Manifest Anxiety Scale
verb	verbal

CHAPTER I

INTRODUCTION

Fundamental to our experience of ourselves and others are the varying hues and intensities of negative affects such as anger, anxiety, fear, and sadness.[1] We sense and speak about others' tendencies toward these affects and discriminate among the varying intensities with which they are felt and displayed. These affects are not only the palette from which our everyday experience is painted, but a conventional criterion for the "quality of life" and an essential feature in psychopathology.

In addition to coloring experience, the degree to which one is prone to negative affects has been found by personality researchers to reflect a valid and reliable personality disposition. For example, Neuroticism, a component of the Five-Factor Model of personality (McCrae & Costa, 1990), is comprised of questionnaire items that reflect nervousness, worrying, despondence, guilt-proneness, irritability, and lack of confidence. That the Neuroticism factor is derived from several personality measures with diverse theoretical traditions is evidence that negative affects are basic to our experience of ourselves and others. Similarly, Watson and Clark (1984) proposed the Negative

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[1]The term "affect" is used to refer to more enduring moods as well as more transient emotions. Also, "affectivity" and "emotionality" are used interchangeably.

Affect construct as an emotional trait characterizing individuals who have a tendency to experience negative emotions and mood states. Like Neuroticism, Negative Affect shows considerable stability over time and across different situations; in addition, it appears to be highly related to Neuroticism (Watson & Clark, 1994). Clinical theory and research commonly refer to a proneness to negative affects both in symptomatic descriptions (e.g., mood disorders) and in conceptual formulations of the nature of various forms of psychopathology by invoking concepts such as security (Bowlby, 1969, 1973, 1980), and ego-resiliency (Block, 1971). In classical psychoanalytic theory (Fenichel, 1945), "emotional spells," have an etiology similar to general neurotic symptom expression, as both are explained by ego weakness and the vicissitudes of intrapsychic conflict.

Objectives of the Study

Given its significance in our lives, understanding the development, dynamics, and expression of negative affects, with regard to individual differences, is a vital task for psychologists who work in the laboratory and those that work in the clinic. The objective of this study was to test the heuristic value of an attachment theoretical model in accounting for individual differences in the expression of negative affect, evoked either by relationship conflict or by difficulties tasks that are not essentially relational in nature (e.g., job performance). This investigation is

pointed toward two particular dimensions of affect expression--intensity and form; the former dimension refers to both the degree to which individuals report and somatically express negative affect, while the latter refers to the congruence between self-report and autonmic expression. Regarding this latter dimension, research presented in the following literature review has found that some individuals manifest a marked incongruity between their self-report of affect and their autonomic responding to conditions designed to elicit negative affect. Because of the multidimensionality of affect as a construct, it was measure by self-report questionnaires and autonomic response.

Rationale

Although the objective of this study was to examine individual differences in the expression of negative affect, and not their development and dynamics, the hypotheses of this study were based in attachment theory, a model that is both developmental and dynamic with respect to behavior, emotion, and cognition. According to attachment theory, the individual's expectations and forecasts of the availability of comfort, owing to experience with attachment figures, corresponds to a sense of personal competence or lack thereof, a tendency to feel threatened, and a proneness to negative affects. Specific predictions regarding the nature of these differences and those concerning the form of

expression of negative affect will be presented later.

Although attachment theory provides the rationale for this study, findings from other research paradigms (i.e., coping and social support) will also be presented to illuminate the utility of the attachment model for conceptualizing individual differences in negative affectivity. While this is impossible without a broader consideration of emotionality, one that includes individual differences in pleasant emotions and affects, the focus of this study and the following review will be on unpleasant or distressing affects such as fear, anxiety, anger, and sadness.[2] Also, while the results of this study may generalize only to non-clinical variations in negative affectivity, the coping and social support research literatures regarding depression will be reviewed since prolonged sadness is a central feature of the disorder. Before presenting research findings, both Bowlby's (1969, 1973, 1980) conceptual model of attachment and its bearing on affectivity is outlined. This will provide a background for a more detailed consideration of the empirical relationship between quality of attachment and negative affects.

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[2]The negative affects measured in this study were anxiety and anger.

CHAPTER II

LITERATURE REVIEW

Attachment Theory and Affectivity

Bowlby (1969) constructed a theoretical framework based on the findings of ethology and the principles of control systems theory to explain the bond between the infant and the caregiver. He posited an "attachment behavioral system" comprised of infant behaviors that signalled the caregiver to move within greater proximity. The caregiver's proximity to the infant is the set-goal of the attachment system, serving the evolutionarily adaptive function of protecting the young from dangers such as predators. Crying, clinging, smiling, babbling, and locomotion are therefore naturally selected behaviors that are activated when the caregiver's distance exceeds the infant's set-goal of proximity.

An essential characteristic of the attachment system is its goal-corrected nature; an infant makes repeated appraisals of the proximity of the caregiver and coordinates the form and intensity of its behavior with them. For example, crying may increase in volume and intensity when the caregiver is further away or does not respond promptly. Another essential characteristic of the attachment system is that it can be altered by variations in the caregiver's reliability, responsivity, and sensitivity to its

communications. For example, in the condition called "detachment" (Bowlby, 1980) proximity-seeking behaviors are apparently absent or dramatically decreased because of the caregiver's prolonged inaccessibility.

In the spirit of Bowlby's ideas about the nature of attachment, Sroufe and Waters (1977) emphasized that the bond between the caregiver and child is affective, as well as behavioral. In his second and third volumes of the Attachment series, Bowlby (1973, 1980) elaborated the emotional vicissitudes that correspond to attachment dynamics: anxiety during brief separations, anger evolving into despair from continued absence, and joy felt upon reunion and continued contact with caregivers. From the comfort and protection the infant finds in the proximity of its caregiver, and the sense that they are accessible when needed, comes a "felt security" (Sroufe & Waters, 1977).

The individual's emotional life is not only intertwined with attachment dynamics, it is shaped by them. The lack of apprehension with which the child ventures out and engages the novel world of people and things depends on the child's felt security and the caregiver's adequacy as a secure base; both of these are represented by the distressed child's forecasts and expectations of the caregiver's availability. This is a key feature of what Bowlby (1973) referred to as "working models." Secure working models are formed from sensitive and responsive caregiving that gives "almost

unconscious assurance" (p. 208) that support, comfort, and protection are forthcoming. This allows the world to be approached with confidence and perceived as less threatening. Working models of those without the good fortune of such caregiving lack assurance of comfort; this leaves the individual alone to face an unpredictable and frustrating world with great risk, and as Bowlby (1973) stated, to either shrink from, or do battle, with it. In essence, working models symbolize the profound influence that the earliest attachments have on the individual's expectations and behavior in later relationships, how the individual participates in the world, and the quality of the feelings that color these experiences throughout life. It is therefore a fundamental tenet of attachment theory that the infant-caregiver bond provides a critical context within which affective experience is organized and regulated (Kobak & Sceery, 1988).

Findings from the Strange Situation

Ainsworth's (Ainsworth, Blehar, Waters, & Wall, 1978) laboratory observations both confirmed and elaborated Bowlby's theory. Her work is the prototype, both conceptually and methodologically, for later experimental research on attachment in children, as well as adults. Ainsworth and her colleagues observed the behavior of 12-month-old infants and their mothers in the "strange situation" (Ainsworth & Wittig, 1969). The procedure takes

place in a playroom and involves a series of separation and reunion episodes between the infant and mother. In addition to the infant's reactions during these episodes, the infant's exploration with toys and interactions with a stranger are also assessed. Based primarily on behavioral criteria during reunion with their mothers, infants were categorized as either secure, insecure-anxious-ambivalent, or insecure-avoidant. Although the criteria for attachment classification consist primarily of reunion behavior and not inferences about the infant's emotional states, crying is considered a means of proximity-seeking and is scored as such. Therefore, infant differences in distress, manifested in crying, are observed during separation episodes of the strange situation. The strange situation is designed to elicit such distress for the purposes of identifying different degrees of activation of the attachment behavioral system. When coding specifically for the infant's affective expressions during the strange situation, however, research showed that separation distress or reactivity (Thompson & Lamb, 1984; Frodi and Thompson, 1985; Braungart & Stifter, 1991) and general affectivity (Gaensbauer, Connell, & Schultz, 1983) are underlying dimensions of the different attachment classifications.

Research using the strange situation provided a window to the infant's affective experience and expression, not only as it pertains to the dynamics of the attachment

relationship, but to the infant's encounter with the novel--both animate and inanimate. Each attachment classification, or style, is characterized by a unique picture involving behavioral and affective differences during interaction with the stranger and playful exploration, as well as separation from and reunion with the caregiver. Maternal characteristics, corresponding to each attachment classification, are also features of this picture, supporting Bowlby's assertion that the quality of caregiving affects the infant's attachment system (Ainsworth et al., 1978).

Secure. Secure infants were typically distressed only during the longer separation episodes. They sought their mothers upon reunion and were quickly soothed by bodily contact with them. Although they were initially wary, they soon interacted with the stranger and were able to soothed to some extent by the stranger when their mothers departed. They returned to play relatively soon after reunion, as they needed less time to be soothed than insecure infants. Securely attached infants actively explored while using their mothers as secure bases by occasionally monitoring their whereabouts. Compared to insecurely attached infants, securely attached infants devoted more attention to, and appeared to derive more pleasure from, the objects and toys in the room. In general, they explored their surroundings confidently and enthusiastically.

Anxious-Ambivalent. Anxious-ambivalent children cried much more forcefully and inexhaustibly during separation than secure children. Yet during reunion, they alternated between clinging to and protesting against their mothers, physically pushing away while they were held. They were distinguished by angry protest, particularly when not picked up when they wanted or when put down while still wanting to be held. They were impressively hypersensitive, finicky, and difficult to soothe. Anxious-ambivalent infants were very fearful of the stranger and were often too distressed, both before and after separation, to explore and play, even when their mothers were present.

Avoidant. Avoidant infants appeared unaffected by both their mothers' departures and returns and typically evaded their mothers' attempts for contact. Whereas other infants showed some wariness toward the stranger, avoidant infants showed none. Although they actively explored throughout separation and reunion episodes, the play of avoidant babies was devoid of the interested attentiveness and pleasurable involvement characteristic of secure babies. They rarely involved themselves with one particular object and did not seek interactive play with their caregivers as did secure infants. Their mothers were largely unresponsive to their signals and often rebuffed them if they did approach. Observers of the strange situation have reported a correspondence between these mothers' frustrating behaviors

and their infants' anger.

Exploration Beyond the Strange Situation

Following the precedent set by Bowlby and Ainsworth, subsequent developmental researchers helped substantiate the utility of attachment as an organizing construct of the child's relational and emotional life (Sroufe & Waters, 1978). The influence of attachment appeared to reach through the child-caregiver bond itself to the world outside, affecting realms both intrinsic and extrinsic to the attachment bond. Findings regarding the affective characteristics of each attachment style extend past the child-caregiver bond to the child's encounter with novelty--in both the social realm of peers and adults and the realm of play and problem-solving. The child's exploration beyond the orbit of the world of the caregiver, as attachment researchers have shown, can be inspired with confidence, pleasure, and patience or apprehension, awkwardness, and anger.

Studies of social competence and problem-solving provided indirect evidence of the affective differences among attachment styles during childhood. Secure children are more positively outgoing and socially competent (see Lamb, Thompson, Gardner, Charnov, & Estes, 1984 and Lamb, Thompson, Gardner, & Charnov, 1985 for reviews). They show more sociability with unfamiliar adults (Main & Weston, 1981; Pastor, 1981; Main, 1983; Lutenkhaus, Grossman, &

Grossman, 1985) and generally more positive affect and less negative affect in social interactions (Sroufe, Schork, Frosso, Lawroski, & Lafreniere, 1984) than insecure children. Whereas anxious-ambivalent children are more anxious regarding peer relations (Elicker, Englund, & Sroufe, 1991), avoidant children have peer relationships that are more hostile and aggressive (Pancake, 1989; Sroufe, Carlson, & Schulman, 1993).

Secure children are enthusiastic, curious, persistent and less easily frustrated in problem-solving tasks whereas anxious-ambivalent children are easily frustrated, extremely reliant on their mothers, and generally handicapped by their anxiety on these same tasks. Although avoidant children did not appear anxious or frustrated on problem-solving tasks, they seemed to lose interest quickly and tended not to cooperate with their mothers (Matas, Arend, & Sroufe, 1978; Arend, Gove, & Sroufe, 1979). Secure children also played more attentively and delightfully than insecure children (Main, 1983). In summary, there is considerable evidence that the attachment bond has some influence on the affective integrity of the child, embodied in competencies in both social and non-social spheres.

Adult Attachment Research

Adult attachment researchers provided evidence that the influence of attachment bonds is not restricted to childhood. Investigations of infant caregivers (Main,

Kaplan, & Cassidy, 1985) and adult romantic relationships (see Shaver & Clark, 1994 for a review) built on the edifice created by Bowlby and Ainsworth. They reasoned that the longevity of working models throughout our lives is manifested in the quality of our relationships--parental, romantic, and companionate--and in adult versions of exploration and problem-solving (e.g., work, hobbies).

Having developed an Adult Attachment Interview (AAI), Main, Kaplan, & Cassidy (1985) studied the parents of the strange situation infants. Paralleling Ainsworth's infant classifications, the parents were classified as either secure, enmeshed, or detached with respect to their own parents. Secure parents valued attachments, easily recalled early attachments, spoke reflectively and coherently about them, and did not idealize their parents. Enmeshed parents were still preoccupied with their own parents and still struggled actively to please them. Their reports of their experiences with attachment figures were frequently incoherent, confused, and flooded by unpleasant feelings. Detached parents diminished the importance of attachments, had difficulty remembering early experiences, and described them with little feeling or insight when they did. They gave the impression that they were obscuring disappointment and anger toward attachment figures as they initially described them in a global, idealized manner which was subsequently contradicted by specific memories of rejection.

Furthermore, Main et al. found that there was a strong tendency for secure mothers to have secure infants, enmeshed mothers to have anxious-ambivalent infants, and detached mothers to have avoidant infants.

The study of adult attachment was pioneered by interviews with the parents of strange situation infants (Main, Kaplan, & Cassidy (1985) and self-report measures of experiences in romantic relationships with adolescents and adults (Hazan & Shaver, 1987). Using these methodologies, , attachment research has shown that each adult attachment style is associated with a unique configuration of relational and emotional functioning (see Shaver & Clark, 1994 for a review). Secure adults are involved in more stable relationships that are characterized by warmth, trust, and communication. They have high esteem for themselves and others and generally feel that others like them. Anxious-ambivalent adults' (also referred to as "Preoccupied" in the adult attachment literature) relationships are less stable and are characterized by jealousy and fear of abandonment. Also, anxious-ambivalent adults are obsessed with, controlling of, and intrusive toward, their romantic partners. Similarly, avoidant adults have unstable relationships and grieve less than others following break-ups. Although they often admit that they feel lonely, they are pessimistic about close relationships. They also tend to be distant and bored during social

interactions.

Just as infant attachment researchers expanded Ainsworth's infant typology by adding a fourth attachment classification (Crittenden, 1985; Main & Solomon, 1986), Bartholomew (1990) added a fourth adult attachment category. She proposed two types of avoidant attachment styles, dismissing avoidance and fearful avoidance. Dismissing avoidance refers to individuals who diminish the significance of close relationships and instead value self-reliance and independence. Such individuals are described as interpersonally cold, competitive, and aloof. In contrast, fearful avoidance refers to individuals who would like to be involved in close relationships but report avoiding them because they are afraid of being hurt. They are typically shy, unassertive, and lacking in social self-confidence.

The character of the individual's working model is an inherent feature of Bartholomew's (1990) 4-category typology (Figure 1).[3] Each attachment style is defined by two dimensions, a working model of self and a working model of other. Secure attachment is defined by positive models of both self and other; preoccupied attachment is characterized by a negative model of self and a positive model of other; fearful avoidance reflects a negative model of both self and other; and dismissing avoidance represents a positive model

[3]All figures and tables are located in Appendices.

of self and a negative model of other. The validity of an attachment typology based on the quality of working models has been supported by both multitrait-multimethod and confirmatory factor analyses of self-concept and interpersonal orientation (Griffin & Bartholomew, 1994a).

Working Models and Negative Affect

The notion that working models provide a useful means of conceptualizing differences in negative affectivity is essentially a restatement of Bowlby's (1973) description of working models as either offering "almost unconscious assurance" or leaving one to "shrink from" or "do battle" with the world. Individuals with working models reflecting "felt security," the sense that support and comfort will be available when needed, may have less reason to resort to these measures and may be less prone to negative affects. Felt insecurity, indicated by negative self and/or other models, suggests a tendency toward more frequent and intense negative affects such as anger, anxiety, and sadness and a relative poverty of positive affects, both within and external to the relational sphere.

The self-model dimension, in particular, has been shown to be associated with varying degrees of negative affect, self-esteem, and self-acceptance (Bartholomew & Horowitz, 1991). Secure and dismissing subjects scored lower on measures of negative affect and higher on measures of self-esteem than preoccupied and fearful subjects. Griffin and

Bartholomew (1994b) found that Neuroticism was highly correlated with the negativity of subjects' self-models and moderately correlated with the negativity of subjects' other models. Paralleling these findings, Shaver and Brennan (1992) found an inverse relationship between security and distressing affect, measured by the Neuroticism factor of the NEO-PI (Costa & McCrae, 1985). Although anxious-ambivalent adults are typically anxious, worrisome, and easily distressed, they are also prone to becoming argumentative, intrusive, and controlling (Kunce & Shaver, 1994), strikingly similar to anxious-ambivalent infants who both clung to and angrily rebuffed their mothers.

Kobak and Sceery (1988) examined the affective correlates of attachment in adolescence in subjects classified with the AAI (Main & Goldwyn, 1985). A Q-sort technique, drawing on peer report, was used to measure ego-resiliency, ego-undercontrol, hostility, and anxiety. Insecure attachment groups showed significantly less ego-resiliency than the secure group, indicating that they were more anxious, more self-defeating, and less able to tolerate stress. Dismissing subjects were more hostile and more lonely, and perceived their families as less supportive than others. Preoccupied subjects felt more anxious and less socially competent, and reported more psychological symptoms. Although subjects were grouped according to a 3-category typology, the inverse relationship between security

and distress-related affect was supported. Also, mirroring infant research findings, these adolescent avoidant subjects were more hostile and the preoccupied subjects more anxious.

Kobak, Cole, Ferenz-Gillies, Fleming, and Gamble (1993) studied attachment style differences in negative affect by observing adolescents and their mothers while the dyad discussed an issue about which they had substantial disagreement (e.g., dating, alcohol, household rules). These "discussions" were videotaped and four ratings were given to each dyad: degree of dysfunctional anger, avoidance of problem solving, gestural and verbal indices of support/validation, and communicative assertiveness. Recognizing that individuals differ in the degree of felt security as well as in the restrictiveness/accessibility of attachment-related memories and affect, Kobak et al. analyzed the data using these two dimensions derived from a Q-sort of the AAI, instead of using global attachment classifications. The secure/anxious dimension reflected the felt security whereas the deactivating/hyperactivating dimension referred to the degree to which the subject attended to attachment-relevant thoughts and feelings; less attention to them suggested a deactivating strategy. Results showed that the degree of security was related to the absence of dysfunctional anger and less problem avoidance, suggesting constructive problem-solving. Subjects with more deactivating strategies were

characterized by more dysfunctional anger and maternal dominance; females with more deactivating strategies were more passive, allowing their mothers to dominate, whereas their male counterparts were angrily engaged. It is possible that these gender differences reflect the two different kinds of avoidance inherent to Bartholomew's (1990) model. Studies using Bartholomew's typology typically find a disproportionate number of male dismissing avoidants and female fearful avoidants (Shaver & Clark, 1995); the dismissing males may have been more defiant whereas the fearful avoidant females may have been more passively withdrawn in the face of maternal dominance. Although Kobak et al. did not make clear conclusions regarding the hyperactivated strategy of those with a preoccupied style, avoidance, once again, was related to greater anger.

The findings from studies of child and adult attachment coalesce into a picture in which each attachment style appears to be characterized by relatively distinct patterns of affectivity. Secure individuals show and report less negative affect and more positive affect than insecure individuals. Furthermore, it seems that each insecure style is disposed to a particular negative affect, or absence thereof. Preoccupied or anxious-ambivalent individuals are markedly more anxious than others, but they can be fussy and very argumentative. Avoidant individuals are distinguished

by reporting comparatively little distress or concern, but expressing anger toward others more than individuals with other attachment styles.

Defense and Avoidance

Avoidant infants presented a paradox to early attachment researchers. In spite of their seeming lack of distress in the laboratory, home avoidant infants resembled anxious-ambivalent infants by crying during separations that occurred at home. Ainsworth and her colleagues (Ainsworth et al., 1978) reasoned that the unfamiliarity of the laboratory was more distressing; the avoidant infants' lack of distress in the laboratory served a defensive function, a means of coping with overwhelming affect. Avoidant infants' attentional ("gaze aversion") and physical avoidance of their mothers was a means of reducing the unpleasant arousal.

Studies that operationalize infant distress by measuring physiological arousal support the conclusions made by Ainsworth et al. (1978). Sroufe and Waters (1977b) found that in spite of the absence of visible distress, avoidant infants show accelerated heart rates during separation and throughout the reunion episode. This finding was supported by studies that showed heart rate acceleration for all insecure infants after they were separated from their mothers (Donovan & Leavitt, 1984). Izard, Porges, Simons, Haynes, Hyde, Parisi, & Cohen (1991) observed elevated

levels of autonomic activity (i.e., greater heart rate variability) in avoidant infants, but less expression of distress, during the strange situation. These findings suggest that although avoidant infants do not manifest tension is betrayed physiologically.

Avoidant adults, like their infant counterparts, exhibited less distress on self-report questionnaires. In the only published adult attachment study measuring autonomic responding, Dozier and Kobak (1992) measured skin conductance levels during the AAI (Main, Kaplan, & Cassidy, 1985). Subjects were assessed along the security/anxiety and deactivating/hyperactivating dimensions established by Kobak et al. (1993). The results showed significant positive correlations between deactivation and skin conductance levels for AAI questions regarding separation and rejection from parents as well as other AAI questions (i.e., threatened rejection from parents, how subjects were affected by how they were raised, and changes in the subject's relationship with parents). These findings parallel those found with avoidant infants in that adults who "avoided" attachment-related thoughts and feelings showed greater autonomic activity.

If greater autonomic activity is an indication of distress, then the discrepancy between behavioral or self-reported and physiological indices of distress suggests that avoidant individuals are not indifferent to separation.

While it cannot be inferred from any of these findings whether subjects were aware of their distress and concealing it, the findings are consistent with Bowlby's (1980) notion of "defensive exclusion." This concept refers to the phenomenon in which attachment-related feelings and information are excluded from awareness to protect the individual from overwhelming, painful affect. In other words, the attachment behavioral system has been suppressed to alleviate the emotional suffering that resulted from a too intense or prolonged activation of it. The phenomenon of defensive exclusion betrays Bowlby's psychoanalytic roots since defense mechanisms (A. Freud, 1936/1966) such as repression and denial essentially refer to the same phenomenon. Defensive exclusion and traditional defense mechanisms differ, however, since the latter concepts originated in the early instinctual drive model of psychoanalysis. Also, Bowlby's discussion of defensive exclusion drew on cognitive research and his attachment observations in an effort to provide a more experimental grounding.

Research on a defensive personality style called repressive coping (Weinberger, 1979; Schwartz, 1990) reveals some overlap with avoidant attachment style. Repressive copers exhibited the same discrepancy between self-reported anxiety and physiological arousal during laboratory tasks designed to induce stress. In spite of denying anxiety,

they had levels of autonomic arousal and behavioral indicators of anxiety that were equal to, and sometimes greater, than those who reported the highest levels of anxiety. Interestingly, like avoidant adults during the AAI, repressive copers reported fewer negative childhood memories than subjects who were less defensive (Davis & Schwartz, 1987). Emmons (1992) also noted that both repressive copers and avoidant adults have similar interpersonal characteristics, both of them referring to individuals who are interpersonally distant, solitary, and ambivalent about relatedness. Although the statistical relationship between the two constructs has not been thoroughly examined, there appears to be an impressive correspondence between findings of repressive coping and the defensive style of those who have avoidant attachment styles.

An essential implication of the discrepancy between self-reported affect and autonomic responding found in defense research is that affectivity is a multi-faceted construct. Single measures of affectivity would inadequately capture the emotional lives of those who are characterized by defensive coping styles. Consequently, multiple operationalizations of affect (e.g., self-report, physiological, behavioral) essential to a comprehensive understanding of the individual's emotional experience.

Coping and Social Support

Individual differences in proneness to negative affects can be understood by discerning the different ways that people cope with adversity, whether situational stress or prolonged hardships. Both coping and social support have been considered to be mediators of emotion (Folkman & Lazarus, 1988a, 1988b; Lazarus, 1993; Thoits, 1984). Coping strategies are various cognitive and behavioral responses to stressful stimuli intended to change the emotional quality or intensity of the stimuli. Although many studies narrowed their focus to these volitional, situation-specific cognitive and behavioral responses (e.g., Folkman, 1992; Lazarus & Folkman, 1984), individuals' appraisals have been recognized as having a more direct relationship to emotions (Folkman & Lazarus, 1988a, 1988b). Appraisals involve the individuals' assessments of situations (e.g., degree of threat) that arouse emotions (e.g., fear), as well as the choice of coping strategy that will be used. Whereas coping strategies are mediators of emotion, individuals' appraisals are moderators, that is, the antecedents that give rise to particular emotions.

Before reviewing the studies that synthesize attachment concepts with coping and social support, some of the evidence relating individual differences in negative affectivity to coping strategies, appraisals, and social support is presented. Three broad avenues of research are

discerned from the coping literature to simplify this task. The first of these involves studies that have utilized the Ways of Coping Scale (Folkman & Lazarus, 1980, 1985) which has been factor analyzed to yield two classifications of specific coping strategies: problem-focused coping (attempts to alter the situation) and emotion-focused (intrapersonal cognitive and behavioral attempts to regulate distress). The role of appraisals in coping and their relation to distress-related outcomes is an outgrowth of this research. The second of the three avenues of coping research concerns the use and implications of strategies that avoid, escape, or ignore threat compared to strategies that attend to it (see Roth & Cohen, 1986 for a review). Although social support research was traditionally divorced from coping theory and research, both fields examine how people adjust to major stressors. Because social support is considered to be coping assistance or a coping resource (Thoits, 1984), its relation to negative affectivity represents the third avenue of coping research.

Although the association between coping and trait measures of negative affectivity is of particular relevance, most studies have focused on how coping strategies, such as positive reappraisal of stressful events and planful problem solving, predict decreases in distress shortly following a stressful situations (i.e., a state measure of negative affect) (see Lazarus, 1993 for a review of some of these

studies). Less evidence exists regarding the dispositional differences in coping strategies and their relation to negative affectivity. Some studies have found, however, that wishful thinking and self-blame are characteristic of people high in Neuroticism, a trait measure of negative affect (Bolger, 1990; McCrae & Costa, 1986). Studies that predict the long-term effects of coping strategies on negative affect (e.g., depression) offer additional insight. Depressed persons have been found to use more wishful thinking, support-seeking, avoidance, confrontation, self-control, and emotional discharge than non-depressed persons (Billings & Moos, 1984; Coyne, Aldwin, & Lazarus, 1981; Folkman & Lazarus, 1986; Folkman, Lazarus, Gruen, & Delongis, 1986). These studies and others (Endler & Parker, 1994; Endler, Parker, & Butcher, 1993) suggest that depressed persons tend to use more emotion-focused coping whereas non-depressed persons use more problem-focused coping. Nevertheless, the evidence regarding coping and depression is inconclusive as some exceptions were found by Coyne et al. (1981) and Folkman et al. (1986).

The findings of extant coping studies suggest that whereas certain coping strategies seem more effective in reducing unpleasant affect, their effectiveness depends a great deal on the situation. Referencing this lack of cross-situational consistency, it was contended that coping strategies are independent of personality, making it

difficult to explain stable individual differences in affectivity (Lazarus, 1993). The relation between appraisals and emotion, however, may be more dispositional. This is reasonable considering individuals' tendencies to construe the world in unique ways which are commonly operationalized as appraisals of personal resources and situational demands.

Although appraisal-emotion researchers have not specifically examined "appraisal styles," the components of appraisals that are typically operationalized (e.g., goals, concerns, values, and intentions) are often stable characteristics of persons. Whereas much support exists for the correspondence between appraisals of events and discrete emotions such as fear, anger, sadness, and happiness (Ellsworth & Smith, 1988; Lazarus & Smith, 1988; Roseman, Spindel, & Jose, 1990; Smith, Haynes, Lazarus, and Pope, 1993), few have studied the relationship between appraisals and individual differences in negative affectivity. Folkman, Lazarus, Dunkel-Schetter, Delongis, and Gruen (1985), however, found that subjects' appraisals of an impending exam were associated with the type of coping strategy they used. Subjects who believed that their self-esteem was threatened by the exam used escape-avoidance, confrontation, self-control, and responsibility acceptance whereas subjects who were not threatened used planful problem-solving. Planful problem-solving was associated

with a better outcome whereas confrontive coping and distancing were associated with unsatisfactory outcomes. Another study (Folkman, Lazarus, Gruen, and Delongis, 1986) found that subjects who made more threatening appraisals used coping strategies more frequently and had poorer physical and psychological health than subjects who made less threatening appraisals. Although their methodology did not allow for an adequate examination of the dispositional basis of appraisals, they did find that personality measures of mastery and interpersonal trust significantly correlated with fewer psychological symptoms, even when appraisal and coping were statistically controlled. Given that mastery and interpersonal trust are characteristics of secure attachment and an inherent aspect of felt security, it is likely that quality of attachment is also associated with these outcomes. This is especially true since appraisals involving concern for a loved one were negatively correlated with psychological symptoms. Individual differences in coping and appraisals may be usefully captured by an attachment model given the relatively high temporal stability of attachment styles (Shaver & Clark, 1994).

Although the appraisal-emotion link may be useful for understanding differences in emotional dispositions, there are several confounds in the supporting research. Most studies of coping and appraisal utilize self-report and retrospective data and are therefore confounded by their

subjects' implicit theories of coping, appraisal, and emotion. Also, conclusions regarding stable emotional differences and long-term health are often made based on a finite number of specific, experimentally-elicited stressors (objective stressors such as an exam or subjects' recall of stressors). Therefore, the potentially critical link between the tendency or frequency with which threatening appraisals are made in everyday lives and stable differences in negative affectivity and health outcomes has been unexamined. Also, like many cognitive theories of emotion, appraisal research is plagued by the both the artificial dichotomy of cognition and affect, as well as the isolation of cognition from the continuous process that characterizes lived-experience. Consequently, appraisals are viewed as the beginning of a process that "causes" emotions; the influence of emotion or affective state and trait on appraisals apparently has not been considered in the literature.

The many conceptual and semantic variations of coping strategies were unified by the proposal that approach and avoidance are two basic modes of coping that represent cognitive and behavioral orientations toward and away from threat (Roth and Cohen, 1986). Although the short-term consequences of situation-specific avoidance have been studied, these authors show how avoidant coping can be considered to be more dispositional than other coping

strategies. A meta-analysis of attention and rejection coping styles by Mullen and Suls (1981) showed that rejection was associated with better physical outcomes (fewer symptoms, reduced physiological responding) in the short-term, whereas attention was associated with better long-term adaptation. Unfortunately, psychological outcomes were not included. Another meta-analysis by Suls and Fletcher (1985) also suggested that approach strategies (called "attention" in their study) were associated with better long-term psychological (i.e., lower levels of distress, depression, etc.) and physiological outcomes (i.e., less pain, cortisol excretion, etc.) in comparison to avoidant strategies. Avoidant strategies were associated with better short-term psychological and physiological outcomes, however, in comparison to attention strategies. Studies of monitoring and blunting also map onto the approach-avoidance dimension. Monitoring and blunting (Miller, 1987), refer respectively to seeking and avoiding threatening information. Evidence suggests that high blunters exhibit less situational negative affect than low blunters and high monitors and yet have poorer long-term physical and psychological health (Davey, Tallis, & Hodgson, 1992; Miller, 1992). Although they are statistically distinct constructs (Miller, 1992; Fuller & Conner, 1990), the blunting coping style is conceptually similar to the repressive coping style especially since the latter is also

associated with less negative affect, greater physiological arousal during stress, and disease (e.g., poorer immune functioning, cancer) (Schwartz, 1990).

Findings on approach and avoidant coping styles have implications for individual differences in negative affectivity. These findings suggest that avoidant coping, compared to approach coping, is advantageous in the short-term for reducing negative affect, but disadvantageous for long-term emotional and physical health. One possibility for these long-term effects is that avoiding a threatening situation precludes resolution. In this case, it is possible that such problematic situations will linger or recur, sparing one from short-term unpleasant affect, but not from the insidious long-term effects on mind and body. Also attempts to avoid painful feelings often take shape in compulsive behavior that may be a health risk such as alcoholism and drug addiction. Furthermore, the concepts of approach and avoidance seem to intersect well with attachment dynamics, manifested both interpersonally (avoiding vs. proximity-seeking) and intrapsychically (deactivation/defensive exclusion vs. flexible accessibility of thoughts/feelings).

The diversity of research on social support precludes any conceptual clarity of the meaning of social support. Rather, it has been termed a "metaconcept" that allows for a variety of definitions and operationalizations that commonly

refer to abstract characteristics of persons, social systems, and social transactions (Veiel & Baumann, 1992). This review will be confined to research that focuses on how relationships with individuals or groups are associated with negative affectivity.

Social support can be conceptualized as both a mediator and a moderator of emotion. The support of others can be sought to reduce distress and it can prevent distress by functioning as a resource that buffers individuals from threatening appraisals (Kessler, 1992; Wethington & Kessler, 1986); it can be both a coping strategy and a coping resource. The evidence suggests that emotional support from close relationships is the most powerful predictor of reduced psychological distress (Cohen, 1992). It is well established, however, that whereas perceived social support is associated with emotional adjustment to stress (Cohen, 1988; Cohen & Wills, 1985; House, Landis, & Umberson, 1988; Kessler & McLeod, 1985), received support is associated with poor emotional adjustment or has no effect (Barrera, 1986; Sandler & Barrera, 1984; Sarason, Shearin, Pierce, & Sarason, 1987; Stokes, 1983). It appears then, that social support as a moderating variable, or an antecedent condition, is related to lower levels of distress.

There are several ways of understanding these findings. According to the matching hypothesis, social support is only ameliorative when it is perceived to match the needs of the

individual (both situationally and dispositionally influenced) (Cohen & Wills, 1985; Coates & Wortman, 1980; Wortman, 1983). The empathic understanding needed to match support with the recipient's needs, by those providing social support, may therefore be a key ingredient to reducing distress (Thoits, 1984). For example, empathy offered to an individual who is ashamed to receive such support may backfire (Kessler, 1992). It is therefore appreciated by many social support researchers that relationships can be a source of distress (Rook, 1992).

It appears that the effects of perceived support on distress reflect stable individual differences in expectations regarding support. The role of attachment quality in perceptions of social support has been recognized by some researchers (e.g., Sarason, Sarason, and Pierce, 1990; West, Livesley, Reiffer, & Sheldon, 1986). Individuals who have positive expectancies regarding support might make more benign appraisals (Wethington and Kessler, 1986) and be more effective, problem-focused copers (Sarason, Pierce, and Sarason, 1990). These findings parallel those of the attachment research previously discussed; specifically, security is also associated with less distress and greater competence. The conceptual link between the two literatures is effectively summarized by Sarason, Pierce, and Sarason (1990, p. 101): "If we can equate the concept of attachment in childhood with perceived

social support in adulthood, this view of the function and effect of secure attachment will have important implications for the concept of perceived social support." This viewpoint is echoed in findings suggesting that security is associated with higher levels of perceived social support and lower levels of anxiety and depression (Blain, Thompson, Whiffen, 1993; Priel & Shamai, 1995).

The difficulty involved in integrating coping and appraisal research into a psychology of persons, and the lack of a unifying theoretical framework in social support research, highlights the utility of an attachment framework. Furthermore, the developmental foundation on which attachment theory rests, along with its substantial research base, remedies this deficiency in the coping and social support literatures (see Compas, 1987 for a summary of this research). The significance of appraisals and social support widens the conceptual lens on coping to include coping <u>resources</u>, that is, what individuals bring to situations that determines their tendencies to perceive threat. This illuminates the involvement of attachment figures, in both fostering internally felt security in working models and their functioning as sources of support. This has been increasingly recognized by researchers of attachment, coping, and social support (Blain, Thompson, & Whiffen, 1993; Mikulincer, Florian, & Weller, 1993; Mikulincer & Florian, 1995; Sarason, Pierce, & Sarason,

1990; Simpson & Rholes, 1994; Skinner & Wellborn, 1994).

Two studies by Mikulincer and colleagues (Mikulincer & Florian, 1995; Mikulincer, Florian, & Weller, 1993) showed a correspondence between coping strategies, appraisals, and attachment styles. The first study (Mikulincer et al., 1993) showed that the coping strategies, used by Israeli adults in response to Iraqi missile attacks on Israel during the Gulf War, were related to their attachment styles. Whereas secure subjects engaged in more support-seeking, avoidant subjects used avoidant coping strategies and ambivalent subjects used emotion-focused strategies. Compared to secure and avoidant subjects, ambivalent subjects showed more anxiety, depression, hostility, somatization, and intrusive thoughts; avoidant subjects showed higher levels of hostility and somatization relative to secure subjects. The second study (Mikulincer et al., 1995) measured appraisals, coping, and distress of Israeli recruits to 4-months of combat training. In addition to finding attachment style differences in coping similar to the first study, ambivalent and avoidant subjects appraised the training as threatening whereas secure subjects appraised it as challenging. Nevertheless, both secure and avoidant subjects appraised themselves as more able to cope than ambivalent subjects.

Simpson, Rholes, & Nelligan (1992) found that attachment styles differed in support-seeking and support-

giving. Females reunited with their male dating partners after a fear/anxiety manipulation were rated for degree of anxiety and support-seeking; men were rated in their provision of support (e.g., reassurance, emotional support). Among highly avoidant women, anxiety was negatively correlated with support-seeking whereas for secure women, anxiety and support-seeking were positively correlated. Also, greater partner distress elicited more support from secure men and less from avoidant men. Similarly, Simpson & Rholes (1994) indicate that parents of avoidant infants withdraw and are generally less supportive when their infants show negative emotions.

Also supporting an attachment framework for understanding the relations between coping resources and negative affectivity are the effects of caregivers on appraisals. This is supported by research showing that contact or presence of a familiar caregiver greatly reduces an infant's anxiety toward strangers and other fear-inducing stimuli (Izard & Harris, 1991; Shaver & Klinnert, 1982). Studies of infants' social referencing show that infants look to caregivers when they need more information to make appraisals (Campos & Sternberg, 1981). These phenomena support the importance of attachment figures in the emotional lives of children, and how working models of attachment figures may underlie our appraisals, coping, and affectivity later in life.

Predictions

This study is novel in its examination of how adults' working models of attachment are associated with patterns of negative affect that are operationalized in both self-report measures and autonomic responding. Subjects completed self-report measures of attachment quality and negative affect (both state and trait), and had their cardiovascular responses monitored during tasks designed to evoke negative affect.

Consistent with the reviewed attachment research, it was predicted that attachment styles characterized by a negative working model of self (preoccupied and fearful avoidant) would be associated greater levels of self-reported negative affect compared with attachment styles defined by positive working models of self (secure and dismissing avoidant). Also, dismissing avoidance was expected to be related to greater cardiovascular activation, in spite of its association with lower levels of self-reported negative affect. A link between security and lower levels of both self-reported negative affect and cardiovascular response was also predicted.

CHAPTER III

METHOD

Subjects

One-hundred-ninety-four subjects were recruited from the subject sign-up procedure in the Department of Psychology at the University of Tennessee, Knoxville. In this procedure, students from introductory psychology classes were able to participate in one of the studies being conducted in exchange for class credit. Forty-eight percent (n = 94) of the subjects were male and 52% (n = 100) were female. Subjects' ages ranged from 17-42; the mean and modal age of subjects were 19.9 for males and 18 for females. Eighty-nine percent (n = 173) of the subjects were White, 7% (n = 13) were Black, and 4% (n = 7) identified their race as neither White nor Black. One subject was excluded from the analysis in which race was a variable since race was not identified by the subject. All subjects refrained from ingesting chocolate or drinks containing caffeine and from exercise for 3 hours before their appointment at the laboratory.

Instruments

Physiological Recording

Blood pressure was measured with an IBS Sd-700A Blood Pressure and Pulse Rate Monitor (BioMed Instruments, Warren,

MI). This device uses both arterial wall motion and Korotkoff vibrations to determine blood pressure (BP). The monitor was connected to a printer that printed real time, in addition to systolic blood pressure (SBP) and diastolic blood pressure (DBP). The units of measurement for both BP indices are mm Hg.

A BoMed NCCOM-e Cardiovascular Monitor (Medex, Inc., Hilliard, OH) was used to collect impedance data from eight electrodes placed on the neck and sides of the subjects. This provided a measure of heart rate (HR) which was calculated in units of beats/minute. The NCCOM-e was interfaced to an IBM PS/2 Model 50z computer; incoming raw data were stored on a hard disk drive. ProComm Plus (Datastorm Technologies, Inc., Columbia, MO) was used to generate a script file that ran the data program and created a log storage file.

Self-Report Questionnaires

A self-report Relationship Questionnaire (RQ) corresponding to a 4-category typology of adult attachment style was used (Bartholomew & Horowitz, 1991). Of four different descriptions of experiences in close relationships, subjects endorsed the one that best matched their own, and on a 7-point scale rated the degree to which each style corresponded to them. This measure yielded one categorical variable (i.e., either secure, preoccupied, fearful avoidant, or dismissing avoidant) and 4 dimensional

ratings for each style.

Negative affect was measured using both state and trait self-report questionnaires. On a 7-item Feelings Checklist (FC), subjects rated how they felt during the preceding task on 4-point scale; a 10-item Recovery Feelings Checklist (RFC) was administered after the rest periods following each task. Subjects therefore completed four FC's in all, one after each of two tasks and one after each of two rest periods (Appendix B).

Trait measures of negative affect consisted of two widely-used self-report questionnaires, the Taylor Manifest Anxiety Scale, Bendig short form (TMAS; 1953) and the Buss-Durkee Hostility Inventory (BDHI; Buss & Durkee, 1957). The TMAS is a measure of anxiety, nervousness, self-consciousness, and general insecurity with items such as "I sometimes feel that I am about to go to pieces" and "I am more sensitive than most people." The BDHI consists of seven subscales tapping different manifestations of hostility: irritability (e.g., "I often feel like a powder keg ready to explode"), resentment (e.g., "At times I feel I get a raw deal out of life"), assault (e.g., "Once in a while I cannot control my urge to harm others"), indirect hostility (e.g., "When I am mad, I sometimes slam doors"), verbal hostility (e.g., "When I get mad I say nasty things"), negativism (e.g., "When someone is bossy I do the opposite of what he asks"), suspicion (e.g., "My motto is

never trust strangers"), and guilt (e.g., "I do many things that make me feel remorseful afterwards").

Stress Tasks

Two tasks were used to elicit sympathetic nervous system activity. The Mental Arithmetic Task (MAT; see Turner, 1994) requires subjects to subtract, serially by 7's, from a predetermined 4-digit number. The task was timed with a visible stopwatch and corrections were given if a subject made a mistake. The MAT is a standard laboratory task used in studies of stress and coping because of its utility in reliably evoking sympathetic nervous system responding, particularly beta-adrenergically influenced myocardial activity such as heart rate. It is commonly referred to as an "active coping" task because it is believed to provide subjects with the opportunity to influence outcomes through their own efforts; in contrast, "passive coping" tasks such as the cold pressor permit subjects little recourse but to endure the unpleasantness occasioned by the task (Obrist, 1981).

The Anger Recall Interview (ARI) was developed by Lawler and colleagues (Anderson & Lawler, 1995; Lawler, Wilcox, & Anderson, 1995). Subjects are asked to recall and describe a time when they were angry at someone with whom they were close. If a subject's account ends before the 4 minutes allotted for the task, they are encouraged to continue. To further prompt subjects, they are asked "How

did that experience make you feel?" and "What would you like to have done differently?". The subject's responses are tape-recorded. The utility of the ARI is that it is a rather social task, compared with the MAT, and may have greater ecological validity than is commonly found with nonsocial laboratory stressors (van Doornen & Turner, 1992). Not only is it more likely that attachment-related affect will be evoked by the ARI, there is evidence that interpersonal vignettes show the strongest association with high BP (Jorgensen, Johnson, Kolodziej, & Schreer, 1996).

Procedures

Subjects were greeted and given the informed consent form and the research participant demographic sheet. Next, they were escorted to a room that contained a reclining chair, a straight-back chair, and a small table on top of which a tape recorder was placed. An intercom system was used to monitor subjects' well-being throughout the experiment. Subjects were prepared for impedance recording and a blood pressure cuff was placed on their non-dominant arm. Male subjects were tested by male experimenters and female subjects by female experimenters.

The protocol involved a 10-minute baseline, a 4-minute MAT, a 5-minute post-MAT rest, a 4-minute ARI, and a 5-minute post-ARI rest. The MAT and ARI were counterbalanced. During the baseline, subjects were instructed that the blood pressure cuff periodically inflated and that they should

relax while resting recordings were obtained. Blood pressure recordings were taken minutes 7, 8, and 9 of the initial baseline period. During tasks, BP was recorded at 30", 1'30", 2'30", and 2'30". During rest periods, BP was obtained at 30", 2'30", and 4'30". The experimenter was absent during the rest periods, but was in the recording chamber with the subject during both the MAT and ARI. After the MAT and ARI, the subject completed the FC. The subject was asked to relax for the post-task rest period and the experimenter left the room. At the conclusion of each post-task rest period, subjects were administered the RFC. After the psychophysiological phase of the study, subjects completed the self-report measures and were given an extra credit voucher for their participation.

Physiological Data Quantification

Baseline. Baseline measures for SBP, DBP, and HR were calculated by averaging the readings for each across minutes 7, 8, and 9 of the initial 9-minute rest period.

Tasks. The absolute cardiovascular levels were calculated for SBP, DBP, and HR during the MAT and ARI by averaging the values obtained during each minute of the tasks. To calculate the reactivity score for each cardiovascular measure, the baseline score was subtracted from the score representing mean task level. Reactivity scores therefore reflect changes or elevations from baseline.

Rests. Mean arousal scores for each cardiovascular measure were calculated for the rest periods following the MAT and the ARI by averaging the values obtained during each minute of the tasks. These represented the mean rest period levels used in the analyses.

Limitations of the Study

Sampling Limitations

Because subjects were all undergraduate students from an introductory psychology class at a large state university, these results cannot be confidently generalized to individuals from other social classes and ages. Also, too few minority subjects precluded testing the interaction of attachment and race on dependent variables.

Methodological Limitations

The psychometric properties of the attachment measures imposed several limitations on the interpretation of the data. The RQ has shown only moderate stability over a 2-year period for both the attachment categories (Kappa=.45 for males; Kappa=.27 for females) and dimensional ratings (average of each attachment dimension: r=.47 for males; r=.48 for females) (Scharfe, & Bartholomew, 1994). Therefore, conclusions about the results of this study regarding attachment as an enduring disposition, and its relationships with other variables, cannot be made with confidence.

Another limitation imposed by the RQ is that previous

research has shown only a moderate degree of convergent validity between it and interview methods of assessing attachment (Bartholomew & Shaver, 1995). Nevertheless, the measure's self and other model dimensions have shown considerable construct validity (Griffin & Bartholomew, 1994a). Still, the predictive validity between self-report measures of attachment and autonomic variables remains relatively unexplored.

Another possible limitation is that the RQ, like all self-report measures, is subject to response biases owing to subjects' wishes to respond in a socially desirable fashion and by tendencies to preserve one's self-esteem. While this potential limitation applies to all of the self-report measures used, the validity of the self-report attachment measures are of greater concern since theory and research (see above literature review) show that defensiveness and unconscious influence are involved in attachment phenomena. Nevertheless, the dismissing avoidant style, when obtained from the self-report method, has shown adequate convergent validity with the interview method (Griffin & Bartholomew, 1994b), suggesting that self-report bias may be minimal for this attachment category.

It is also possible that carry-over effects from the stress tasks affected subjects' responses on the self-report questionnaires since they were completed after the ARI and MAT. While it is difficult to predict how these tasks might

have affected subjects' self-reports, theory and research (see Shaver and Clark, 1994) suggest that the tasks could have activated subjects' attachment behavioral systems, with the potential consequence that subjects' self-reports were more accurate reflections of both their attachment organizations and their experience of negative affect.

Finally, the ecological validity of this study--the extent to which experimental conditions produce effects in the subjects that are similar to those encountered outside the laboratory--warrants consideration. The conclusion reached in a review by van Doornen and Turner (1992) was that the evidence failed to support the existence of a relationship between cardiovascular responding to lab stressors and ambulatory cardiovascular levels to daily-life events; lab reactivity tended to account for little variance in ambulatory responding beyond that which was accounted for by baseline responding. There is modest evidence, however, that lab reactivity predicts cardiovascular reactions to specific, well-defined stressors that individuals encounter in daily life.

The extent to which this study remedied the weak to modest ecological validity found in previous research is unclear. While the MAT, along with other standard lab stressors has received widespread attention in this research, the ARI has not since it was developed only recently. Van Doornen and Turner (1990) suggest, however,

that a closer correspondence between lab stressors and real-life situations could increase the validity of the former. The ARI may be an advance in this direction, but it is likely that some individuals avoid disclosing troublesome events, especially to strangers, making the situation of the task unlikely to occur for them in their daily lives. (Though it is certainly possible that they find themselves in such situations despite their best efforts.) For them, the ecological validity of the ARI may rest in its ability to predict the autonomic consequences of individuals who find themselves in situations in which they are unable to rely on their habitual means of reducing anxiety (i.e., avoiding disclosure, attending to less anxiety-producing activities or thoughts, etc.). More research with the ARI is required, however, for this issue to be addressed adequately.

Statistical Limitations

Subjects could not be randomly assigned to attachment categories which are not found in equal proportions in the population. Therefore, the cell frequencies for both attachment styles and working model groups were unequal. This made it necessary to use unweighted-means analyses of between-subjects effects. Also, while tests for homogeneity of variance often showed unequal variances between attachment groups, the test used (Box's M) was overly conservative for large subject samples such as the one used

here. The analysis of variance is robust, however, in regard to violations of this assumption and the assumption of normality (Winer, 1971).

CHAPTER IV

RESULTS

Data Analysis

Data will be analyzed in a way that permits an evaluation of the merits of classifying subjects into working model dimensions versus the traditional attachment style prototypes. As already mentioned, more empirical support for construct validity has been found for the self and other working model dimensions of Bartholomew's 4-category typology than for the traditional attachment styles, particularly when measured via self-report. Working model dimensions also allow for a more finely tuned analysis that considers underlying dimensions shared by attachment "styles" that have traditionally been considered heterogeneous.

As shown in Figure 1, the traditional attachment categories endorsed by subjects were combined to form the working model groups. Secure and dismissing subjects were classified as belonging to the positive self model group; preoccupied and fearful subjects were categorized as belonging to the negative self model group. Secure and preoccupied subjects were classified as belonging to the positive other model group; fearful and dismissing avoidant comprised the negative other model group.

Analyzing the data using working model types as independent variables provides the basis for making predictions about and testing for differences between working models of self and other, as well as between the traditional attachment styles. In addition, the interaction between gender and quality of working models can also be assessed. Group differences were therefore analyzed by a 2 X 2 X 2 (self model type X other model type X gender) factorial design. Consequently, main effects represent differences associated with working models of self or other; self X other interactions indicate differences between the traditional attachment styles. To explore significant interactions among factors, the simple main effects were tested, allowing each level of one factor to be analyzed within each level of a second factor. When a self model X other model interaction was significant, the Tukey HSD post hoc analysis was used to detect differences among each of the four traditional attachment styles.

To analyze rating scale scores in accordance with working model dimensions, a score representing the positivity of the self model was derived by adding the rating scale scores for the negative self model styles (fearful and preoccupied) and subtracting this sum from the sum of the positive self model styles (secure and dismissing). Similarly, a score representing the positivity of the other model was obtained by adding the scale scores

for the negative other model groups (fearful and dismissing) and subtracting this sum from the sum of the positive other model groups (secure and preoccupied).

Analysis of Cardiovascular Data

To determine whether gender and race would confound comparisons of working models on cardiovascular variables, separate chi-square analyses for self model groups and for other model group were conducted. Gender was significantly related to model of self ($X^2(1) = 5.69$, $p < .02$), but not to model of other. A disproportionate number of males relative to females were classified as having a positive working model of self; females, relative to males, tended to be categorized in attachment groups characterized by a negative working model of self. Consequently, gender was included as a between-subjects factor in working model analyses. Race was found to be independent of working models of both self and other and therefore did not represent a confound in comparisons of working models. For this reason, and because there were too few minority subjects to fill the cells in self model X other model X race analyses, race was not included as a factor in further analyses.

To test whether the tasks produced elevations that were significantly different from baseline, a repeated measures ANOVA was conducted on all cardiovascular variables measured during baseline, the MAT, and the ARI. Results showed that both the MAT and the ARI produced highly significant (F(1,

193) = 144.9, $p < .0001$) elevations from baseline on SBP, DBP, and HR.

Because body weight was significantly correlated with baseline BP (SBP: $r = .57$, $p < .0001$; DBP: $r = .34$, $p < .0001$; HR: $r = -.04$, $p = .55$), a self model X other model X gender ANOVA on subjects' body weights was performed to determine whether subjects' body weights confounded group differences in mean level of cardiovascular responding. A gender main effect ($F(1, 186) = 23.07$, $p < .0001$) showed that males weighed more than females. There was also a significant other model X gender interaction ($F(1, 186) = 4.92$, $p < .05$), indicating that males with positive other models (secure and preoccupied) weighed significantly more ($F(1, 191) = 11.20$, $p < .001$) than males with negative other models (dismissing and fearful). Weight was therefore used as a covariate in a self model X other model X gender ANCOVA performed on baseline scores. This yielded a significant main effect for gender ($F(1, 186) = 47.98$, $p < .0001$) on baseline SBP and DBP ($F(1, 186) = 3.00$, $p < .10$). Table 1 indicates that males had a higher baseline BP than females that was not attributable to weight differences. Consequently, baseline measures of SBP and DBP were used as covariates in analyses of SBP and DBP reactivity when gender was an independent variable. No HR baseline group differences were found. Although no group differences in HR baseline were found, it was also used as a covariate to be

consistent with BP analyses.

Response Levels During Tasks

Analyses of mean task levels are presented before those of reactivity scores since the levels represent the actual level of cardiovascular work and because they provide a context in which differences in reactivity scores can be better understood. Self model X other model X gender ANOVAs on mean task levels were performed for each cardiovascular measure, with task (MAT and ARI) as a repeated measure.[4] Task main effects, shown on Table 2, were found for each cardiovascular score, with the ARI producing greater mean SBP ($F(1, 186) = 12.77$, $p < .005$) and DBP responses ($F(1, 186) = 10.48$, $p < .005$) than the MAT and the MAT eliciting greater mean HR than the ARI ($F(1, 186) = 11.55$, $p < .005$.

A highly significant main effect for gender ($F(1, 186) = 47.33$, $p < .0001$) on SBP and a marginally significant main effect for gender ($F(1,186) = 2.98$, $p < .10$) on DBP indicated that, similar to baseline differences, males had greater BP than females across both tasks combined (combined adjusted SBP means: males = 186.3, females = 184.8; combined adjusted DBP means: males = 112.8, females = 111.6).

The mean cardiovascular task levels for each of the four traditional attachment styles are illustrated (Figures

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[4]Significance levels from the results of analyses involving repeated measures did not need to be corrected since there were only 2 within-subjects variables, one for the MAT and one for the ARI.

2-4) for comparison with the working model differences that were found. Figure 2 depicts the only statistically significant difference found among the traditional attachment styles. This was a significant self model X other model X task interaction ($F(1, 186) = 5.40$, $p < .03$) for SBP levels. Figure 2 illustrates the results of Tukey HSD post hoc analyses which indicated that the dismissing avoidant group had a significantly greater mean SBP level during the ARI than the other three attachment groups ($p < .05$). Although the pattern of SBP means produced during the MAT was similar to those exhibited during the ARI, the group differences on the MAT were not statistically significant. Still, these results support one of the primary hypotheses of this study--that dismissing avoidance would be associated with greater cardiovascular arousal than other attachment groups. Although the DBP level for the dismissing group was greater than the other groups (Figure 3), this self model X other model interaction was not significant, nor was it significant for HR task levels (Figure 4).

Significant working model effects were also found. Although the traditional attachment style effect indicated greater SBP levels for the dismissing group, and not the fearful group, the ANOVA for SBP levels showed a significant main effect for other model ($F(1, 186) = 6.11$, $p < .05$), with negative other model subjects (both dismissing and fearful) exhibiting greater SBP than positive other model

subjects (secure and preoccupied) across both tasks (Figure 5). The ANOVA on DBP levels, however, did not yield a significant other model difference. The other model X gender interaction was significant for HR across both tasks combined ($F(1, 186) = 4.52$, $p < .05$). Figure 6 shows the results of exploring the interaction through testing the simple main effects. Females with negative other models had significantly greater HR ($F(1, 191) = 5.92$, $p < .05$) than males with negative other models, and marginally greater HR ($F(1, 191) = 3.62$, $p < .10$) than females with positive other models, across both tasks.

Self model effects for task levels were weaker than other model effects. Only a marginal main effect ($F(1, 186) = 3.32$, $p < .10$) for DBP was found across both tasks. This is illustrated in Figure 7. The positive self model group had a somewhat greater mean elevation than the negative self model group. No significant self model differences were found for SBP or HR levels.

Response Levels During Rest Periods

Differences in rest period levels were analyzed by self model X other model X gender ANOVAs on rest period levels for each cardiovascular. Rest period (MAT rest and ARI rest) was used as a within-subjects variable. Significant main effects were found for task-associated rest periods on SBP ($F(1, 186) = 14.69$, $p < .0001$) and DBP ($F(1, 186) = 4.27$, $p < .05$), but not on HR. Table 3 shows that all

subjects had greater BP elevations during the ARI rest period than during the MAT rest period.

Similar to the gender differences on baseline and task levels, a highly significant main effect for gender on SBP ($F(1, 186) = 89.26$, $p < .0001$) and a marginally significant main effect on DBP ($F(1, 186) = 2.91$, $p < .10$) was found across both rest periods with males showing greater elevations than females (combined adjusted SBP means: males = 178.6, females = 154.2; combined adjusted DBP means: males = 102.06, females = 98.71). For HR, a significant gender X rest period interaction ($F(1, 186) = 4.42$, $p < .05$) was found, indicating that females had greater HR than males ($F(1, 192) = 3.38$, $p < .10$) during the ARI rest (males = 71.7, females = 74.7).

Although no significant differences were found among the traditional attachment styles during the rest periods, the dismissing avoidant group had comparatively both greater SBP (Figure 8) and DBP (Figure 9) elevations during task-associated rest periods. Figure 10 indicates the HR levels for the traditional attachment styles during the rest periods.

Significant working model effects were found. A significant other model X rest period interaction for SBP was found ($F(1, 186) = 4.76$, $p < .05$). Although the dismissing group, and not the fearful group, was distinguished by elevated SBP, the negative other model

group, which included both dismissing and fearful subjects, showed a significantly greater ($F(1, 192) = 18.67$, $p < .0001$) mean SBP level than the positive other model group during the ARI rest period (Figure 11). There were no other model differences in DBP levels during rest periods. Figure 12 indicates the marginally significant other model X gender interaction ($F(1, 186) = 3.81$, $p < .10$) on HR across both tasks. This pattern of differences in HR levels on task-associated rest periods is similar to the one found for the tasks: females with negative other models had greater HR than males with negative other models and females with positive other models across both rest periods.

Self model effects from ANOVAs on rest period levels were similar to those found on task levels. A significant main effect for self model group was found only on DBP ($F(1, 186) = 5.13$, $p < .05$). Figure 13 shows that the positive self model group (dismissing and secure) had a greater mean elevation than the negative self model group. This pattern of self model differences is the same as the one found for DBP task levels.

Reactivity During Tasks

Analyses of change scores required the use of baseline SBP as a covariate in those analyses of SBP reactivity in which gender was an independent variable. This is because of the significant SBP baseline differences found between males and females. Although there were no gender or working

model differences in baseline DBP or HR, these baselines were used as covariates for the sake of consistency with analyses of SBP reactivity. Self model X other model X gender ANCOVAs were performed on each cardiovascular change score, with task used as a repeated measure and baseline as covariate. All task main effects obtained from these analyses mirror those found with the analyses of response levels reported above.[5] No significant main effects were found for gender, indicating that when baseline differences are controlled, no gender-associated differences in reactivity existed.

Examining the results for the traditional attachment categories, a significant self model X other model interaction on SBP ($F(1, 185) = 4.55$, $p < .05$) was across both tasks. Similar to the results for task levels shown in Figure 2, the dismissing avoidant group had significantly greater SBP reactivity than all other attachment groups ($p < .05$), but only on the ARI (mean change scores: secure = 14.9, fearful = 13.0, preoccupied = 13.6, dismissing = 16.0). The self model X other model interaction was marginally significant for DBP ($F(1, 186) = 3.23$, $p < .10$) across both tasks with a similar pattern of means; similar to the results for task levels shown in Figure 3, the

[5]Within-subjects effects in the reactivity analyses are equal to within-subjects effects in the raw score analyses because each dependent variable was adjusted by the same covariate. Therefore, within-subject comparisons all have adjustments that are equal to zero.

dismissing avoidant group had a somewhat greater reactivity than the other attachment groups (combined adjusted mean DBP change scores: secure = 13.7, fearful = 13.96, preoccupied = 14.8, dismissing = 18.8). The self X other interaction was not significant for HR.

Other model effects were not significant for SBP and DBP reactivity. For HR, however, the other model X gender interaction ($F(1, 185) = 3.88$, $p < .10$) was marginally significant across both tasks. Figure 14 shows that females with negative other models had somewhat greater HR reactivity than other subjects across both tasks.

A self model X gender interaction was significant for SBP ($F(1, 185) = 4.15$, $p < .05$) across both tasks. Figure 15 shows that females with positive self models had greater SBP reactivity than females with negative self models across both tasks combined ($F(1, 190) = 6.18$, $p < .05$). No significant self model effects on DBP reactivity were found. For HR, the self model X gender interaction ($F(1, 185) = 5.42$, $p < .10$) was marginally significant across both tasks. Figure 16 illustrates that once again, females with positive self models tended to have slightly greater HR changes than other subjects.

Recovery During Rest Periods

To analyze differences in recovery during the task-associated periods, self model X other model X gender ANCOVAs were performed on recovery scores for each

cardiovascular measure. Rest period was a within-subjects variable and the final minute of the previous tasks were covariates. As with the results for task levels, rest period main effects in SBP recovery were found ($F(1, 185) = 12.51$, $p < .001$) and DBP ($F(1, 185) = 4.13$, $p < .05$), but no significant differences in HR recovery. Subjects showed significantly less SBP and DBP recovery after the ARI than they did after the MAT (mean SBP: MAT rest = 115.6, ARI rest = 117.4; mean DBP: MAT rest = 70.1, ARI rest = 71.0).

A significant gender difference in SBP recovery was found across both task-associated rest periods ($F(1, 185) = 31.72$, $p < .0001$). Males had poorer SBP recovery than females after both tasks (adjusted means for both tasks combined: males = 172.10, females = 160.72). No sex differences in DBP recovery were found. A marginally significant gender X rest period interaction ($F(1, 185) = 3.98$, $p < .10$) on HR recovery indicated that males showed significantly greater recovery than females during the rest period following the ARI (males = 71.4, females = 74.7).

No recovery differences were found between the traditional attachment categories. For differences in recovery between other model groups, however, an other model X rest period interaction ($F(1, 185) = 4.59$, $p < .05$) on SBP was found. Figure 17 indicates that the positive other model groups showed significantly greater recovery than negative other model groups during the ARI rest period. A

marginally significant other model X gender interaction ($F(1, 185) = 2.87$, $p < .10$) for DBP recovery showed that females with negative other models showed less recovery than others on the ARI (Figure 18). No significant other model differences were found on HR reactivity. For self model effects, a significant difference was found for SBP across both rest periods ($F(1, 185) = 5.27$, $p < .05$) with negative self model groups showing poorer SBP recovery than positive self model groups (Figure 19). No other self model effects were significant.

Attachment Rating Scales and Cardiovascular Variables

Stepwise multiple linear regression analyses were conducted to identify the cardiovascular variables, including baseline, task, and rest period measures, that best predicted the score for positivity of self model and the score for positivity of other model. All subjects scores were included, regardless of their attachment or working model classifications. No variables were entered into the regression equations for either regression analysis since none of the pearson correlations between the physiological variables and positivity of self model and other model scores met the entry criterion (i.e., $p < .05$). Therefore, stepwise multiple linear regression analyses were conducted for each of the four individual attachment rating scales (Table 4). For the secure and preoccupied ratings, no variables were entered into the regression equations.

Ratings of fearful avoidance were significantly predicted only by less DBP reactivity during the MAT rest period (adj R^2 = .02, $F(1, 192) = 5.39$, $p = .05$). Paralleling the results found from analysis of group differences, ratings for dismissing avoidance were predicted only by greater SBP levels during the ARI (adj R^2 = .02, $F(1, 192) = 4.22$, $p < .05$).

Self-Reported Negative Affect

State Measures of Negative Affect

A self model X other model X gender MANOVA with task and FC items as repeated measures was performed (Table 5). All repeated measures were corrected for sphericity using the method developed by Greenhouse and Geisser (1959). Only within-subjects effects were significant with a task X item interaction ($F(6, 1122) = 3.67$, $p < .01$). Follow-up comparisons showed that subjects reported feeling angrier ($F(1, 193) = 12.46$, $p < .001$), but more relaxed ($F(1, 193) = 9.12$, $p < .005$) during the ARI than during the MAT. No significant between-subject effects were found.

The same analysis was repeated for the recovery FC's. Similarly, a significant task X item interaction was found ($F(7.03, 1674) = 4.73$, $p < .0001$), but no significant between-subject effects (Table 5). Follow-up comparisons showed that relative to the MAT, the ARI rest period was associated with more anger ($F(1, 193) = 21.90$, $p > .0001$), more unhappiness ($F(1, 193) = 7.74$, $p > .01$), greater

attempts to change thoughts ($F(1, 193) = 5.61$, $p > .05$), and less relief ($F(1, 193) = 11.37$, $p > .001$).

Trait Measures of Negative Affect

Self model X other model X gender ANOVAs on BDHI variables and the TMAS showed a marginal gender difference on the BDHI verbal hostility subscale ($F(1, 186) = 3.81$, $p < .10$) and a significant gender difference on the BDHI Assault subscale ($F(1, 186) = 8.41$, $p < .005$), with males scoring higher than females on both (Table 6).

A self model main effect was also found for several BDHI variables. Subjects with negative self models consistently scored higher than subjects with positive self models on the TMAS ($F(1, 186) = 22.38$, $p < .0001$) and the following BDHI variables: irritability ($F(1, 186) = 4.93$, $p < .05$), resentment ($F(1, 186) = 16.38$, $p < .0001$), negativism ($F(1, 186) = 3.13$, $p < .10$), guilt ($F(1, 186) = 2.77$, $p < .10$), and suspicion ($F(1, 186) = 6.01$, $p < .05$). Means are listed on Table 7.

Attachment Rating Scales and Trait Measures

Stepwise multiple linear regression analyses were conducted to identify the trait variables that best predicted each attachment rating scale. All subjects were included, regardless of their attachment or working model classifications (Table 8). As expected, higher ratings of security were best predicted only by lower scores on the TMAS (adj $R^2 = .18$, $F(1, 192) = 43.40$, $p < .0001$). Higher

fearful avoidant ratings were mostly related to higher scores on the TMAS, but also with higher scores on the BDHI suspicion subscale (adj R^2 = .16, $F(2, 191) = 19.73$, $p < .0001$). Higher preoccupied ratings were best predicted by higher scores on the TMAS and the BDHI resentment subscale, but also by lower scores on the BDHI assault subscale (adj R^2 = .14, $F(3, 190) = 11.19$, $p < .0001$). Higher ratings of dismissing avoidance were associated only with higher scores on the BDHI Assault subscale (adj R^2 = .03, $F(1, 192) = 7.20$, $p < .01$).

Cardiovascular and Self-Report Variables

Two-tailed pearson correlations between cardiovascular and self-report variables were computed. Although significant correlations between cardiovascular variables and self-report variables existed when they were computed for males and females separately, there did not appear to be a pattern to them, making interpretation difficult. Consistent patterns of relationships were found for males and females combined, however.

Table 9 shows only 2 significant correlations between baseline and trait scores. Assault was positively correlated with baseline SBP and resentment was negatively correlated with baseline DBP. BDHI subscales showed consistent, negative correlations with BP in spite of the lack of statistical significance with cardiovascular variables measured during the MAT. In general, SBP

reactivity measured during the ARI showed the strongest correlations with BDHI subscales with the greater increases for subjects who scores lower on the BDHI. The TMAS was weakly related only to SBP reactivity on the ARI but was significantly correlated, with SBP levels obtained during both the ARI ($\underline{r}$ = -.15, $\underline{p}$ < .05) and the MAT ($\underline{r}$ = .14, $\underline{p}$ < .05).

Table 10 shows that correlations between FC items and reactivity during the MAT were weak. For the ARI, however, SBP reactivity was positively correlated with subjects' reports of greater anger. DBP reactivity was positively correlated with higher ratings of both depression and feeling invigorated. No significant correlations were found between items from the RFC's and reactivity or levels.

CHAPTER V

CONCLUSION

Discussion of Results

Before discussing the findings regarding the association between quality of attachment, negative affect, and cardiovascular responding, task and gender differences will be summarized. Because they have been the subject of previous investigations, the extent to which the results obtained about task and gender differences replicate those from prior research will be examined. This not only determines whether manipulations used in this study were successful in achieving intended aims, it also provides a basis from which inferences can be made that regard the meaning of the tasks, and ultimately, the context in which attachment style differences can be understood.

Task and Rest Period Differences in Cardiovascular Responding

Although both the MAT and ARI effectively elicited changes from baseline in all cardiovascular indices, there were differences in the response patterns they elicited. While the MAT produced greater changes in HR than the ARI, SBP and DBP were more responsive to the ARI than to the MAT. This pattern continued into the rest periods following tasks as subjects showed greater BP elevation after the ARI than

after the MAT. This replicates the well-established finding (Turner, 1994) that the MAT stimulates beta-adrenergic activity, which results in increased HR; on this basis, the MAT is often referred to and classified as a beta-adrenergic or "cardiac task." Because BP is a function of both increased cardiac activity and vasoconstriction, the ARI may be categorized as alpha-adrenergic and beta-adrenergic in nature given the relative sensitivity of BP, as well as HR, to its demands.

This means of categorization has utility in its description of the relative activation of components of the cardiovascular system. It remains a purely empirical means of assessing the nature of the tasks, however, and does not account for the observed differences in a way that includes subject's experience of each task. Therefore, the respective relationships between cardiovascular responding and both affective states, provided by the FC data, and personality variables, obtained from trait questionnaire data, will be examined in light of past research findings.

The absence of a baseline FC precludes determining whether tasks produced a statistically significant change in affects. Mean and modal ratings indicated, however, that most subjects reported that the tasks absorbed their attentions but did not make them feel angry, happy, depressed, nor any other emotion; only small proportions of the subjects reported that the tasks had "somewhat" of an

effect on their emotional states, and none of the subjects stated that the tasks "definitely" did. Therefore, if FC's were accurate reflections, the tasks had little or no effect on most subjects' conscious feelings.

Nevertheless, the differences in the affects elicited between the MAT and ARI indicated that the tasks had different effects on subjects' conscious feeling states. Task differences were in the expected direction with subjects reporting that they felt angrier from the ARI than from the MAT, as well as feeling angrier, unhappier, less relief, and greater attempts to change their thoughts during the rest period succeeding the ARI. The ARI, therefore, seemed to be more unpleasant than the MAT, although it is possible that this is due to the demand characteristic inherent in asking subjects to recollect an "angry" situation.

While the results show, in an indirect manner that, compared with the MAT, the ARI manipulation elicited angry affect, it cannot be determined on the basis of the data whether subjects were angrier due to the content elicited by the task or due to the task requirements to rehash a personally conflictual situation in the presence of a stranger; that is, subjects could have been angry at the individual who was the subject of their recollections, at the experimenter during the ARI, or both. It is likely that the object of subjects' anger depended on the individual

character of the subject, which can be conceptualized as a certain style of relating to others, a tendency to make particular kinds of attributions, etc.. Still, because of the unusual circumstance of the ARI (i.e., being asked about a presumably affect-laden event that occurred in their private life of the subject by a stranger in the laboratory of a public institution), it is difficult to determine without further investigation into the methodology whether the reason for and object of subjects' angry feelings could be understood as an individual characteristic.

These findings suggest that the tasks differed in both the relative pattern of responding (HR vs. BP) as well as the degree to which anger was elicited. The relationships between cardiovascular reactivity and trait measures of negative affect (BDHI, TMAS) also help clarify the meaning of the tasks and provide a context within which attachment differences could be understood. Consistent patterns of negative correlations were found between several BDHI variables and BP (both absolute levels and reactivity) measured at baseline and during both tasks. Specifically, resentment was inversely related to both resting and absolute DBP levels, whereas suspicion was negatively correlated with DBP levels during both tasks and subsequent rest periods. Greater anxiety and a tendency to express hostility indirectly (e.g., slamming doors, gossiping) was associated with lower SBP. Subjects' assaultiveness was

exceptional in being positively related to both resting and absolute, but not reactivity, measures of SBP.

Although correlations between reactivity scores and BDHI variables were also negative, they formed a somewhat different pattern. Assaultiveness was not associated with any reactivity variables and the relationship between DBP and resentment was not significant. Increases in SBP from baseline during the ARI were consistently but negatively related to all BDHI variables except assaultiveness and guilt. Verbal hostility and suspicion were also associated with smaller increases in BP responding from baseline during both tasks. While verbal hostility and negativism were associated with lower BP reactivity, lower HR reactivity also showed a negative association with verbal hostility and irritability. Guilt was not linearly related to any index of cardiovascular responding.

In general, it is difficult to discern a pattern in the correlation matrix from which simple associations can be made between specific BDHI subscales and the type of cardiovascular variable (absolute level vs. reactivity) or a specific cardiovascular index (SBP vs. DBP vs. HR). This may be due to the interrelationships between the BDHI subscales and the high degree of shared variance between the two factors (i.e., the affective and expressed hostility dimensions) found in previous research (Felsten & Leitten, 1993). The inability to show a distinctive pattern of

cardiovascular responding for individual BDHI subscales may also be a particular case of the general difficulty finding an emotion-specific physiology (Ekman & Davidson, 1994). Nevertheless, the pattern of negative correlations between elevated cardiovascular responding and both the BDHI subscales and the TMAS was a consistent finding which suggests that either defensiveness or the suppression of hostility is related elevated responding.

Previous research on the relationship between cardiovascular responding and trait measures of negative affect helps clarify the present findings. According to Houston's (1992) review, the findings regarding associations between trait measures of negative affect and cardiovascular responding are equivocal due to both supporting and disconfirming studies. The findings are clearer, however, from studies showing that defensiveness is generally related to greater cardiovascular reactivity. In a recent, comprehensive meta-analysis of personality differences in BP, Jorgensen et al. (1996) analyzed 295 effect sizes from studies relating elevations in BP to affect expression, negative affectivity, and defensiveness. Similar to the findings of several studies reviewed by Houston (1992), the strongest association was found between BP and defensiveness. Also, elevated BP was related to anger suppression on self-report measures in subject samples with age ranges comparable to the sample used in this study.

Furthermore, this relationship was even stronger when interpersonal vignettes designed to evoke anger were used as assessment procedures. No relationship was found between post-task ratings (i.e., state measures) of negative affect and BP.

The present results converged with those found in past research. Inverse correlations between reactivity and trait (BDHI, TMAS) measures as well as post-task ratings were found, supporting the relationship between defensiveness/anger suppression and reactivity found in previous studies. Current findings diverge from past research, however, due to significant, positive correlations between SBP reactivity during the ARI and post-task ratings of anger. Similarly, greater DBP reactivity during the ARI was associated with higher ratings of tension, depression, and feeling invigorated from the ARI. Because the decreased variability in FC items limit the magnitude of the correlations, the significant correlations that were found are therefore worthy of notice. These correlations not only contrast with research showing an inverse relationship between BP and anger assessed by interpersonal vignettes, it indicates a discrepancy between the subjects' self-reports on post-task ratings and on the BDHI, which showed negative correlations with reactivity.

To be explicit, the discrepancy is between subjects' reports of anger as they reflect on themselves in

hypothetical situations posed by trait measures and their feelings about a recently occurring situation (i.e., the ARI) referred to on a post-task rating checklist (i.e., the FC). It is as if the subject with high BP completing the FC said "I feel really angry from that task," but then on the trait measure said, "but I am not the sort of person who easily and/or frequently gets angry." It is certainly possible that the task demands of the ARI undermined defensive subjects' habitual attempts to deny their angry feelings by prompting them to attend to a situation to which they ordinarily would have avoided attending. This is supported by the findings from a study by Baumeister and Cairns (1992) which showed that defensive subjects who were prevented from ignoring threatening feedback ruminated and worried about it more than other subjects when this feedback was received publically. Defensive subjects who received the feedback privately showed a strong tendency to ignore the feedback.

While more research is needed to confirm this interpretation of the results, it is certainly possible that individuals who are otherwise defensive get angry in certain situations, particularly when they do not have recourse to avoidant coping. It is reasonable that subjects who are more defensive have greater difficulty modulating their anger when they are frustrated or impinged upon; that is, they may have more reason to be defensive. In contrast to

the ARI, the task demands of the MAT did not induce subjects to attend to negative affect, and given the inverse, albeit marginal, relationships between reactivity and both depression and unhappiness, appear to have left intact subjects' attempts to cope defensively.

In summary, the two tasks differed in the pattern of reactivity and the affects they elicited. The ARI elicited greater SBP reactivity and post-task ratings of anger, unhappiness, attempts to change thinking, and less relief, than the MAT. Also, the task demands of the ARI created a situation that may be characterized as involving "passive coping" (Obrist, 1981) in undermining subjects' usual defensive coping strategies. Like other passive coping tasks, such as the cold pressor, the ARI was associated with greater alpha-receptor activation and vasoconstriction under conditions in which subjects had no recourse but to endure the task without their usual defensive tactics. The MAT, in contrast, in evoking relatively greater beta-receptor activation and cardiac arousal than the ARI, appears to be an "active coping task" that provided subjects with the opportunity to influence outcomes through efforts of their own. Still, in addition to being a function of the task, physiological response patterns are mediated by individual differences in hemodynamic response patterns that show both temporal and situational stability (Sherwood, Dolan, & Light, 1990; Sherwood & Turner, 1992). The gender,

attachment style, and working model group differences in cardiovascular responding found in this study are evidence of this.

Gender Differences in Cardiovascular Responding

Main effects for gender differences were found on several cardiovascular indices. Interactions found between gender and working model groups, however, will be discussed in the following section. Replicating well-established findings (Lawler, Wilcox, & Anderson, 1995; Turner, Sherwood, & Light, 1992), males were found to have higher baseline, task, and rest period levels of SBP and DBP than females that were not attributable to body mass differences. There was also a gender difference in recovery, which involved covarying for the last task-minute: males showed poorer SBP recovery across both rest periods. The gender differences in SBP and DBP disappeared from all tasks, however, when using baseline-adjusted reactivity scores.

Although females continued to show elevated myocardial activity compared with males after the ARI, there were no gender differences in HR during the tasks. Females had greater HR than males during the ARI rest period and poorer recovery (i.e., with HR levels adjusted for the last task minute). The interactions between gender and working model type will further elucidate the relationship between gender and cardiovascular responding after the ARI.

Attachment Style Differences in Cardiovascular Responding

Support was found for one of the primary hypotheses of this study--subjects with a dismissing avoidant attachment style had significantly greater absolute SBP levels and reactivity compared with other attachment styles during the ARI. This was supported by the results of the regression analyses which showed that ratings of dismissing avoidance were predicted solely by SBP level during the ARI. Dismissing avoidant subjects also had somewhat greater DBP reactivity, but not levels, across both tasks. No significant attachment style or working model differences in DBP recovery or HR responses on tasks and rest periods were found.

In spite of showing a similar pattern of attachment style differences, however, SBP levels on the MAT were not significant. Although the differences in SBP reactivity across both tasks was significant, the attachment style main effect on the MAT disappeared in the post hoc analysis. The reason for the generally greater between-group variability during the ARI compared with the MAT is difficult to determine since the tasks differ in various ways. The ARI may be a more attachment-relevant "stressor" given the interpersonal nature of the task or the affects that it elicits. Also, tasks such as the ARI that presumably involve passive coping may reveal attachment differences better than active coping tasks such as the MAT.

While Figures 2, 3, 8, and 9 depict greater cardiovascular levels for the dismissing group (i.e., SBP baseline and rest period levels, DBP task and rest period levels), the differences from other attachment group means were not significant; the relatively high within-group variability of BP and HR scores required between-group differences of a magnitude only approached by those group differences in SBP during tasks. A greater sample size might have added the statistical power needed for these differences to reach significance, but it is also possible that methods of measuring attachment that do not rely on self-report would improve the predictive validity of observed attachment classifications with respect to cardiovascular variables.

Differences in cardiovascular responding between groups formed on the basis of the quality of working models of self and other were also found. It is likely that analyses of working model groups benefitted from the increased statistical power gained from the larger cell sizes resulting from combinations of the traditional attachment groups. Whether differences between the traditional attachment groups might have reached significance with more subjects in each cell remains to be confirmed in future research. Nevertheless, these results indirectly suggest that this may be the case. For example, avoidant groups, defined by a negative other model, showed greater SBP levels

and recovery during the ARI rest period than the secure and preoccupied groups, characterized by a positive other model. Although the two negative other model groups are conceptually linked by a tendency to avoid intimacy, inspection of the data shows that the fearful avoidant group's BP means for tasks and rest periods were lower, albeit non-significantly, than all the other groups. Therefore, while the avoidant groups are conceptually related and statistically different from the other groups when their BP scores were combined, these attachment styles do not appear to be similar on cardiovascular variables.

Differences in responding between positive and negative self model groups were also found. Absolute DBP levels were greater for dismissing avoidant and secure groups combined (the positive self model groups) than for fearful and preoccupied groups (the negative self model groups) during tasks and on the rest periods following them. The only exception to this was the greater SBP recovery of the positive self model group relative to the negative self model group. Figures 2, 3, 8, and 9 show that while both positive self model groups had greater DBP levels than the negative self model groups, the difference between the means for secure, fearful, and preoccupied groups was slight. The positive self model group's greater elevation compared with the negative self model group's appears to be due to the elevated BP of the dismissing style and increased

statistical power. Similar to the findings for the other model dimension, the evidence does not support the predictive validity of the self model dimension with cardiovascular variables.

In general, there appears to be a relatively clear trend: individuals with a dismissing avoidant attachment style showed greater BP elevation than individuals with other attachment styles, particularly for SBP measured during the ARI. Significant differences between working model dimensions, particularly between positive and negative other model groups, appears to be the result of increased statistical power and the elevated scores of the dismissing avoidant group. In spite of Griffin and Bartholomew's (1994a, 1994b), strong evidence for the construct validity of these dimensions, the present results call into question the predictive validity of the working model dimensions--when they are derived from a self-report measure--with respect to cardiovascular responding and supports the use of traditional individual attachment styles for such research. (Other physiological variables than those used in this study might prove different.) Though the traditional attachment rating scales only fared somewhat better, the lack of an association between working model rating scale scores and cardiovascular responding further supports the lack of predictive validity of working model dimensions with respect to physiology. Addressing this issue, Griffin and

Bartholomew (1994a) made the following statement:

> ...[T]here are both theoretical and empirical reasons to believe that attachment styles are more than the sum of underlying dimensions. The models of self and other described by Bowlby are characterized by globally positive (or negative) expectations and evaluations, whereas specific patterns identified...are characterized by distinct strategies or approaches to maintaining felt security. Thus, these styles have configural meaning in terms of their prototypical patterns of emotional response and interpersonal behavior. (p. 442)

Buttressing the results of this study is the finding that self-reported dismissing avoidance, but not other self-reported attachment styles, showed satisfactory convergent validity with an interview assessment method (Griffin & Bartholomew, 1994a, 1994b). Since it is maintained that interviews have greater validity than self-reports, this permits greater confidence in the current findings regarding dismissing avoidance. The low validity of the other self-reported attachment styles may have contributed to heterogeneity within the attachment groups, accounting for the lack of significant differences among them; this may also explain why the secure group did not exhibit the expected lower levels sympathetic responding.

Interactions between working model dimensions and

gender were also found. Females with negative other models (dismissing and fearful avoidant females), consistently showed elevated HR levels across tasks and rests periods, and marginally poorer DBP recovery after the ARI, compared with females with positive other models and all males. This group was comprised mostly of fearful avoidant females as only three females were classified as dismissing avoidant. In addition, females with positive self models had significantly greater SBP reactivity than females with negative self models and marginally greater HR reactivity than male subjects.

While this study replicated the gender differences in cardiovascular responding found in previous studies (Lawler et al., 1995; Turner et al., 1992), these findings suggest that the differences are mediated by insecurity. Females who avoid intimate relationships may be particularly prone to greater cardiovascular HR responding. Their poorer DBP recovery and HR levels during the ARI rest period indicates that disclosing memories involving their anger toward someone with whom they were close had a lingering autonomic effect. The same may be true for females who have positive self models. Because there were too few female dismissing subjects, however, it could not be determined whether these interactions between gender and working model could be better accounted for by either fearful or dismissing avoidance.

Attachment Style Differences in Self-Report

No significant attachment style or working model differences in state measure (i.e., task or recovery FC's) were found. On FC's and RFC's, then, subjects with different attachment styles did not report being differentially affected by the tasks, in spite of the physiologic differences between the dismissing avoidant group and the other attachment groups. Because the other attachment groups were roughly equivalent in the degree of arousal they exhibited, the lack of differences between their post-task ratings is not remarkable. Still, past attachment research, as well as the attachment differences found on the trait measures in this study, suggest that fearful and preoccupied (negative self model groups) should express greater negative affect (Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994b; Kunce & Shaver, 1994) than secure and dismissing subjects (positive self model groups). It is possible, however, that the tasks did not produce conscious negative affect sufficient to reveal the expected attachment differences in post-task ratings. Consequently, it is impossible to determine without more data whether attachment style differences in defense and coping can be inferred from the discrepancy between findings on post-task affect ratings and those indicating physiologic differences.

Findings from analyses of the trait measures, however,

confirmed the predictions of this study. Dismissing avoidant and secure subjects (positive self model groups) reported significantly less anxiety, irritability, resentment, negativism, guilt, and suspicion than fearful and preoccupied subjects (negative self model groups). Individuals with positive self models may be less likely to experience irritating affects for several reasons: conflict may be less threatening to them given their high self-regard; they may be more likely to resolve disagreements without the mushrooming of negative affect, and; they may be unaware of these negative affects, the outcome of defensively preserving one's self-worth. Also, in contrast to the findings for fearful and preoccupied subjects on the state measures of negative affect, these results parallel those found in previous research (Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994b; Kunce & Shaver, 1994).

The attachment rating scales had stronger relationships with self-report variables than with cardiovascular variables. While this is partly due to the shared method variance of two self-report measures, results confirmed expectations of how they would be associated. Security, for instance, was related to reports of less trait anxiety and less self-consciousness; both the fearful avoidant and preoccupied ratings were associated with reports of greater anxiety. This supports the hypothesis that the self-model dimension differentiates between self-reports of negative

affect.

Fearful avoidance was additionally associated with suspicion, betraying their mistrust of others, a defining feature of avoidance. The extent to which subjects rated themselves as preoccupied related positively to the resentment subscale and negatively to the assault subscale. The former subscale is represented by many items reflecting beliefs of being cheated and deprived, as well as feeling jealous and envious; low scores on the assault subscale may reflect an inhibition of aggressive impulses. In general, the group of variables associated with the preoccupied rating may reflect the stark ambivalence toward attachment figures that is believed to be a prominent feature of both the adult preoccupied style and the infant anxious-ambivalent style (Shaver & Clark, 1994).

Dismissing avoidance was predicted solely by greater assaultiveness, the only self-report variable that was positively correlated with cardiovascular variables, particularly SBP baseline, task, and rest period responding. Although the assault subscale mean for the dismissing avoidant group was greater than it was for the other groups, this difference was not significant. Corresponding with these findings is the association found between the dismissing rating and absolute SBP levels during the ARI, as well as the relationship found between BP elevation and assaultiveness for the dismissing avoidant group.

Implications for Theory and Research

The current findings form a relatively cohesive profile of dismissing avoidance with respect to affect modulation, coping, defense, and cardiovascular activity. The most prominent of these was the association between dismissing avoidance and the tendency to deny experiences of negative affect in spite increased BP responding. While assaultiveness was associated with dismissing avoidance, the BDHI assault subscale does not reflect the conscious experience of anger as an irritating affect; rather, items from this subscale have loaded on the factor commonly believed to represent hostility expression, and not on the factor referred to as the affective or "neurotic" dimension (Bushman, Cooper, & Lemke, 1991). Studies showing that expressive hostility was unrelated to cardiovascular reactivity, positively related to severity of coronary heart disease (Felsten & Leitten, 1993), and that neurotic hostility was negatively related to heart disease (Siegman, Dembroski, & Ringel, 1987), parallel the present findings.

While the present findings coincide with those from studies showing that repressive coping (Schwartz, 1990; Weinberger, Schwartz, & Davidson, 1979) is characterized by a discrepancy between self-report of negative affect and autonomic activation, it is inaccurate to depict the above findings in this manner. There is no criterion for either cardiovascular or self-report variables that permit an

evaluation of whether subjects are objectively overreporting or underreporting negative affect relative to their physiologic states, or vice versa. Furthermore, subjects with high security ratings had negative affect scores that were lower than the subjects with higher fearful and preoccupied ratings--and as low as those of subjects with high dismissing ratings. Nevertheless, subjects with high security ratings showed a level of cardiovascular responding that was equivalent to fearful and preoccupied subjects. It appears that while secure subjects did not have the degree of cardiovascular elevation that was exhibited by dismissing subjects, neither did their reports of less trait negative affect have any consequence on their cardiovascular activation, at least in comparison with fearful and preoccupied subjects. Since security was not necessarily related to lower levels of activation, one may therefore conclude that the "discrepancy" displayed by dismissing avoidant subjects is similarly demonstrated by secure subjects. This interpretation may also be applied to fearful and preoccupied subjects since they reported more negative affect than secure subjects, but did not score significantly higher on any cardiovascular variable.

These results indicate relative differences between attachment strategies on cardiovascular variables and on self-report of negative affect on trait measures indicating different patterns of negative affect experience.

Dismissing avoidance was most conspicuous in its association with greater BP, compared to the other attachment styles, and along with security, was related to reports of less negative affect than fearful and preoccupied styles. These comparative findings are congruent with Bowlby's (1980) theory that avoidance entailed the exclusion from consciousness of painful affects arising within close relationships. Studies using the strange situation have similarly showed that while avoidant infants exhibit less distress, they nevertheless show greater sympathetic activation than other infants (Izard, Porges, Simons, Haynes, Hyde, Parisi, & Cohen, 1991; Sroufe & Waters, 1977b). Also paralleling Bowlby's theory, as well as the current findings, Dozier and Kobak (1992) found that deactivation (i.e., avoidance) was positively correlated with greater skin conductance levels in adults when they were asked to recall experiences of rejection and separation.

The findings are also compatible with the clinical theory that the exclusion of affect from the individual's knowledge does not restrict its influence upon the individual but instead expresses itself somatically, and possibly symptomatically, through mental or behavioral alterations. This was the phenomenon of hysterical conversion and dissociations of affects from consciousness that were observed by Freud (1893/1959b, 1894/1959a) very

early in the history of psychoanalysis and became its mainstay. The contribution of Pennebaker and his colleagues (Pennebaker, 1995) appear to be compelling empirical demonstrations of this same phenomenon. Their findings indicated that individuals who tend to inhibit communication and disclosure of negative affect and traumatic experiences have greater autonomic activity and poorer health and immune system functioning than individuals who tend to disclose, communicate, and express negative affect and traumatic experiences (also see Anderson, 1981). From a systems perspective, Schwartz (1990) outlined the processes underlying the toll that inattention to, or unawareness of, negative affect exacts on physiology and health.

Inferring the unawareness or unconsciousness of negative affective states as characteristic dismissing avoidance is not only consistent with theory, it is a parsimonious explanation of the findings; a narrowed or restricted awareness of affects may be intimately associated with tendencies toward action as well as somatic expression, respectively represented by the findings of greater assaultiveness and elevated BP associated with dismissing avoidance. Although this remains to be studied experimentally, a possible explanation is offered by the findings of clinical observation. While often formulated from and applied to individuals who exhibit symptoms, psychodynamic clinical theory posits a relationship between

unconsciousness and action. This can be traced to Freud's (1914/1958) notion that action replaces remembering, though his concept of "action" was broad, encompassing neurotic symptoms, ways of relating to others, and the patient's transference to the analyst. More recently, from his clinical observations of "impulsive character styles," Shapiro (1965) underscored the lack of enduring cognitive-affective structures (e.g., interests, values, relationships with others) necessary for replacing the impulse to act with conscious intention and deliberateness. Therefore, what has essentially become clinical lore in regard to impulsive action-tendency is the substitution of action for feeling, particularly its symbolic representation in language and its manifestation in the communication of feelings and in the knowledge of emotions. Although Wurmser's (1978) subject is drug addiction, he described a similar process: lacking the words for feelings, the addict suffers a "short-circuit to the action system," as a means of avoiding or reducing the tension of unarticulated feeling-states. While habitual drug use and assault are manifestly different behaviors, Hopson (1993) found that alienation and lack of connection to others, possibly a consequence of avoidant attachment, is a central theme in the addict's experience. Again, while this study's findings parallel clinical observations, further research is required to substantiate that the link between the two. It is unknown, for example, whether the

assaultiveness measured by the BDHI reflects impulsive, unintended, and possibly regretted aggression, a tendency to use aggression as a mode of self-defense, a means of retaliation, or a rather deliberate and gratifying sadism.

The interpretation of these results has thus far not distinguished between suppression and repression of affect. While the findings support theoretically-based expectations of a defensive process, a condition of unconsciousness or unawareness of affect cannot be inferred with confidence on the basis of these data. It is possible that dismissing avoidant subjects were fully aware of negative affects but did not communicate them; instead of being unaware of feeling angry, it is possible that they lied on the self-report measures. Although dismissing avoidant individuals do not disclose as much intimate knowledge as others (Mikulencer & Nachson, 1991), this does not constitute unawareness.

The experimental literature on repression has dealt with this issue extensively. Those studies that infer unawareness as an explanation for discrepancies between self-report and physiology are of particular relevance. Although this inference is supported by operationalizations other than physiology, such as performance on behavioral, perceptual, and memory retrieval tasks (Singer, 1990), Weinberger (1990) reviews compelling evidence that repressors are not conscious of negative affect. For

example, various studies that maximized anonymity for subjects and minimized cues for socially desirable responding and impression management have consistently found that repressors still report less negative affect than other individuals. The extent to which this research clarifies the question of unawareness in dismissing avoidant individuals, however, depends on the degree of overlap between the repressive coping and attachment style constructs that can be empirically demonstrated.

This study confirms the hypothesis that the quality of adult attachment is related to differences in patterns of negative affect expression, specifically hostility and anxiety, when they are operationalized via self-report trait measures and cardiovascular responding to laboratory tasks. The generalizability of these results is restricted not only by the lack of empirical study of the ecological validity of the ARI, but also by the limitations of the subject sample. Although this age range of the sample was 17-42 years old, most of the subjects were late adolescents and young adults. Whether the relationship between attachment and negative affect exists, and if so how it evolves with age, requires samples of subjects who are well into adult stages of their lives. In contrast, attachment research with infants and children have found, similar to this study, that avoidance was associated with greater autonomic activity and relatively less expression of distress, albeit behaviorally

(Donovan & Leavitt, 1984; Izard, Porges, Simons, Haynes, Hyde, Parisi, & Cohen, 1991; Sroufe & Waters, 1977b).

This evidence supports attachment theory's explanation of the etiology of individual differences in the negative affectivity: the infant-caregiver bond provides a critical context within which affective experience is organized and regulated and the enduring nature of working models is the vehicle of continuity of this affective experience throughout the life span. While infant attachment styles have been shown to be relatively stable over 10 years, and adult attachment classifications for 3-4 years (Shaver & Clark, 1994), longitudinal data are not yet available with respect to patterns of negative affect. Nevertheless, the present results show that the role of attachment dynamics in negative affective differences is a fruitful area of exploration, not only for their etiology, but also for their functioning in mental and physical health.

REFERENCES

REFERENCES

Ainsworth, M. S., Blehar, M. C., Waters, E., & Wall, S. (1978). Patterns of attachment: A psychological study of the strange situation. Hillsdale, New Jersey: Erlbaum.

Ainsworth, M. S. & Wittig, B. A. (1969). Attachment and exploratory behavior in a strange situation. In B.M. Foss (Ed.), Determinants of Infant Behavior (Vol. 4, pp. 111-136). London: Methuen.

Anderson, S. F., & Lawler, K. A. (1995). The anger recall interview and cardiovascular reactivity in women: An examination of context and experience. Journal of Psychosomatic Research, 39(3), 335-343.

Anderson, C. D. (1981). Expression of affect and physiological response in psychosomatic patients. Journal of Psychosomatic Research, 25(3), 143-149.

Arend, R., Gove, F. L., & Sroufe, L. A. (1979). Continuity of individual adaptation from infancy to kindergarten: A predictive study of ego resiliency and curiosity in preschoolers. Child Development, 50, 950-959.

Barefoot, J. C. (1992). Developments in the measure of hostility. In H. S. Friedman (Ed.), Hostility, coping, and health (pp. 13-31). Washington, D. C.: American Psychological Association.

Barrera, M. (1986). Distinctions between social support concepts, measures, and models. American Journal of Community Psychology, 14, 413-445.

Bartholomew, K. (1990). Avoidance of intimacy: An attachment perspective. Journal of Social and Personal Relationships, 55, 521-536.

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. Journal of Personality and Social Relationships, 61, 226-244.

Bartholomew, K., & Shaver, P. R. (1995, August). The correspondence between different method of assessing adult attachment. Poster presentation at the Annual Convention of the American Psychological Association, New York, NY.

Billings, A. G., & Moos, R. H. (1984). Coping, stress, and social resources among adults with unipolar depression.

Journal of Personality and Social Psychology, 46(4), 877-891.

Blain, M. D., Thompson, J. M., & Whiffen, V. E. (1993). Attachment and perceived social support in late adolescence: The interaction between working models of self and others. Journal of Adolescent Research, 8(2), 226-241.

Bolger, N. (1990). Coping as a personality process: A prospective study. Journal of Personality and Social Psychology, 59(3), 525-537.

Bowlby, J. (1969/1982). Attachment and Loss, Vol. 1. New York: Basic Books.

Bowlby, J. (1973). Attachment and Loss, Vol. 2. New York: Basic Books.

Bowlby, J. (1980). Attachment and Loss, Vol. 3. New York: Basic Books.

Brennan, K. A., & Shaver, P. R. (1995). Dimensions of attachment, affect regulation, and romantic relationship functioning. Personality and Social Psychology Bulletin, 21(3), 267-283.

Bretherton, I., Bates, E., Benigni, L., Camaioni, L., & Volterra, V. (1979). Relationships between cognition, communication, and quality of attachment. In E. Bates, L. Benigni, I. Bretherton, L. Camaioni, & V. Volterra (Eds.), The emergence of symbols: Cognition and communication in infancy (pp.223-269). New York: Academic Press.

Braungart, J.M. & Stifter, C.A. (1991). Regulation of negative reactivity during the strange situation: Temperament and attachment in 12-month-old infants. Infant Behavior and Development, 14, 349-364.

Baumeister, R. F., & Cairns, K. J. (1992). Repression and self-presentation: When audiences interfere with self-deceptive strategies. Journal of Personality and Social Psychology, 62(5), 851-862.

Bushman, B. J., Cooper, H. M., & Lemke, K. M. (1991). Meta-analysis of factor analyses: An illustration using the Buss-Durkee Hostility Inventory. Personality and Social Psychology Bulletin, 17, 344-349.

Buss, A., & Durkee, A. (1957). An inventory for assessing different kinds of hostility. Journal of Consulting

Psychology, 21, 343-348.

Campos, J. J., & Sternberg, C. (1981). Perception, appraisal, and emotion: The onset of social referencing. In M. E. Lamb & L. R. Sherrod (Eds.), Infant social cognition: Empirical and theoretical considerations (pp. 273-314). Hillsdale, N. J.: Lawrence Erlbaum.

Coates, D., & Wortman, C. B. (1980). Depression maintenance and interpersonal control. In A. Baum & J. Singer (Eds.), Advances in environmental psychology: Applications of personal control (Vol. 4, pp.). Hillsdale, N.J.: Erlbaum.

Cohen, S. (1988). Psychosocial models of the role of social support in the etiology of disease. Health Psychology, 7, 267-297.

Cohen, S. (1992). Stress, social support, and disorder. In H. O. F. Veiel, & U. Baumann (Eds.), The meaning and measurement of social support (pp. 109-124). New York: Hemisphere Publishing Corporation.

Cohen, S. & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis, Psychological Bulletin, 98, 310-357.

Cohen, D. J., Dibble, E., & Graw, J. M. (1977). Father's and mother's perceptions of children's personality. Archives of General Psychiatry, 34, 480-487.

Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. Journal of Personality and Social Psychology, 58, 644-663.

Compas, B. E. (1987). Coping with stress during childhood and adolescence. Psychological Bulletin, 101(3), 393-403.

Coyne, J. C., Aldwin, C., & Lazarus, R. S. (1981). Depression and coping in stressful episodes. Journal of Abnormal Psychology, 90(5), 439-447.

Crittenden, P. M. (1985). Social networks, quality of child-rearing, and child development. Child Development, 56, 1299-1313.

Davey, G. C. L., Tallis, F., & Hodgson, S. (1993). The relationship between information-seeking and information-avoiding coping styles and the reporting of

psychological symptoms. Journal of Psychosomatic Research, 37(4), 333-344.

Davis, P. J., & Schwartz, G. E. (1987). Repression and the inaccessibility of affective memories. Journal of Personality and Social Psychology, 52, 155-162.

Donovan, W.L. & Leavitt, L.A. (1985). Physiologic assessment of mother-infant attachment. Journal of the American Academy of Child Psychiatry, 24, 65-70.

Dozier, M., & Kobak, R. R. (1992). Psychophysiology in attachment interviews: Converging evidence for deactivating strategies. Child Development, 63, 1473-1480.

Durrett, M. E., Otaki, M., & Richards, P. (1984). Attachment and the mother's perception of social support from the father. International Journal of Behavioral Development, 7(2), 167-176.

Egeland, B., & Farber, E. (1984). Infant-mother attachment: Factors related to its development and changes over time. Child Development, 55, 753-771.

Ekman, P., & Davidson, R. J. (1994). The nature of emotion: Fundamental questions. New York: Oxford University Press.

Elicker, J., Englund, M., & Sroufe, L. A. (1992). Predicting peer competence and peer relationships in childhood from early parent-child relationships. In R. Parke & G. Ladd (Eds.), Family-peer relations: Modes of linkage (pp. 77-106). Hillsdale, NJ: Erlbaum.

Ellsworth, P. C., & Smith, C. A. (1988). From appraisal to emotion: differences among unpleasant feelings. Motivation and Emotion, 12(3), 271-302.

Emmons, R. A. (1992). The repressive personality and social support. In H. S. Friedman (Ed.), Hostility, coping, and health (pp. 141-150). Washington, D. C.: American Psychological Association.

Endler, N. S., Parker, J. D. A., Butcher, J. N. (1993). A factor analytic study of coping styles and the MMPI-2 content scales. Journal of Clinical Psychology, 49(4), 523-527.

Endler, N. S., & Parker, J. D. A. (1994). Assessment of multidimensional coping: Task, emotion, and avoidance strategies. Psychological Assessment, 6(1), 50-60.

Felsten, G., & Leitten, C. L. (1993). Expressive, but not neurotic hostility is related to cardiovascular reactivity during a hostile competitive task. Personality and Individual Differences, 14, 805-813.

Fenichel, O. (1945). The Psychoanalytic theory of neurosis. New York, NY: Norton.

Folkman, S. (1992). Making the case for coping. In B. Carpenter (Ed.), Personal coping: Theory, research, and application (pp 31-46). Westport, C.T.: Praeger.

Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. Journal of Health and Social Behavior, 21, 219-239.

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: study of emotion and coping during three stages of a college examination. Journal of Personality and Social Psychology, 48, 1500-170.

Folkman, S., & Lazarus, R. S. (1986). Stress processes and depressive symptomatology. Journal of Abnormal Psychology, 95(2), 107-113.

Folkman, S., & Lazarus, R. S. (1988a). Coping as a mediator of emotion. Journal of Personality and Social Psychology, 54(3), 466-475.

Folkman, S., & Lazarus, R. S. (1988b). The relationship between coping and emotion: Implications for theory and research. Social Science Medicine, 26(3), 309-317.

Folkman, S., & Lazarus, R. S., Dunkel-Schetter, C., Gruen, R. J., & DeLongis, A. (1986). The dynamics of a stressful encounter: Cognitive appraisal, coping, and encounter outcomes. Journal of Personality and Social Psychology, 50(5), 992-1003.

Folkman, S., & Lazarus, R. S., Gruen, R. J., & DeLongis, A. (1986). Appraisal, coping, health status, and psychological symptoms. Journal of Personality and Social Psychology, 50(3), 571-579.

Freud, A. (1966). The ego and the mechanisms of defense. (Trans. C. Baines). New York: International Universities Press. (Original work published 1936)

Freud, S. (1958). Remembering, repeating and working-through. (Further recommendations on the technique of psycho-analysis II). In J. Reviere (Ed. and Trans.), The standard edition of the complete psychological

works of Sigmund Freud (vol. 12, 147-156). London: Hogarth Press. (Original work published 1914)

Freud, S. (1959a). The defence neuro-psychoses. Collected Papers: Early psychoanalytic writings. New York: Basic Books. (Original work published 1894)

Freud, S. (1959b). Some points in a comparative study of hysterical paralyses. Collected papers: Early psychoanalytic writings. New York: Basic Books. (Original work published 1893).

Frodi, A. & Thompson, R. (1985). Infants' affective responses in the strange situation: Effects of prematurity and of quality of attachment. Child Development, 56, 1280-1290.

Fuller, B. F., & Conner, D. A. (1990). Selection of vigilant and avoidant coping strategies among repressors, highly anxious and truly low anxious subjects. Psychological Reports, 66, 103-110.

Gaensbauer, T. J., Connell, J. P., & Schultz, L. A. (1983). Emotion and attachment: Interrelationships in a structured laboratory paradigm. Developmental Psychology, 19(6), 815-831.

Greenhouse, S., & Geisser, S. (1959). On methods in the analysis of profile data. Psychometrika, 24, 95-112.

Griffin, D., & Bartholomew, K. (1994a). Models of the self and other: Fundamental dimensions underlying measures of adult attachment. Journal of Personality and Social Psychology, 67(3), 430-445.

Griffin, D., & Bartholomew, K. (1994b). The metaphysics of measurement: The case of adult attachment. In K. Bartholomew & D. Perlman (Eds.), Advances in personal relationships: Attachment Processes in adulthood (Vol. 5, pp. 181-204). Bristol, P. A.: Jessica Kingsley.

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. Journal of Personality and Social Psychology, 52, 511-524.

Hopson, R. E. (1993). A thematic analysis of the addictive experience: Implications for psychotherapy. Psychotherapy, 30(3), 481-494.

House, J. S., Landis, K., & Umberson, D. (1985). Social relationships and health. Science, 241, 540-545.

Houston, B. K. (1992). Personality characteristics, reactivity, and cardiovascular disease. In J. R. Turner, A. Sherwood, & K. C. Light (Eds.), Individual differences in cardiovascular responses to stress (pp. 103-123). New York: Plenum Press.

Izard, C. E., & Harris, P. (1995). Emotional development and developmental psychopathology. In D. Cicchetti & D. Cohen (Eds.), Developmental psychopathology (Vol 1., pp. 467-503). New York: John Wiley and Sons.

Izard, C. E., Porges, S. W., Simons, R. F., Haynes, O. M., Hyde, C., Parisi, M., & Cohen, B. (1991). Infant cardiac activity: Developmental changes and relations with attachment. Developmental Psychology, 27(3), 432-439.

Jacobson, S. W., & Frye, K. F. (1991). Effect of maternal social support on attachment: Experimental evidence. Child Development, 62(3), 572-582.

Jorgensen, R. S., Johnson, B. T., Kolodziej, M. E., & Schreer, G. E. (1996). Elevated blood pressure and personality: A meta-analytic review. Psychological Bulletin, 120(2), 293-320.

Kessler, R. C. (1992). Perceived support and adjustment to stress: Methodological considerations. In H. O. F. Veiel, & U. Baumann (Eds.), The meaning and measurement of social support (pp. 259-272). New York: Hemisphere Publishing Corporation.

Kessler, R. C., & McLeod, J. D. (1985). Social support and mental health in community samples. In S. Cohen & S. L. Syme (Eds.), Social support and health (pp.219-240). New York: Academic Press.

Kirkpatrick, L. A., & Davis, K. E. (1994). Attachment style, gender, and relationship stability: A longitudinal analysis. Journal of Personality and Social Psychology, 66, 502-512.

Kobak, R. R., Cole, H. E., Ferenz-Gillies, R., Fleming, W. S., and Gamble, W. (1993). Attachment and emotion regulation during mother-teen problem solving: A control theory analysis. Child Development, 64, 231-245.

Kobak, R.R. & Sceery, A. (1988). Attachment in late adolescence: Working models, affect regulation, and representations of self and others. Child Development, 59, 135-146.

Koniak-Griffin, D. (1988). The relationship between social support, self-esteem, and maternal-fetal attachment in adolescents. Research in Nursing and Health, 11(4), 269-278.

Kunce, L. J., & Shaver, P. R. (1994). An attachment-theoretical approach to caregiving in romantic relationships. In K. Bartholomew & D. Perlman (Eds.), Advances in personal relationships (Vol. 5, pp. 205-237). London: Jessica Kingsley.

Lamb, M. E., Thompson, R. A., Gardner, W. P., & Charnov, E. L. (1985). Infant-Mother Attachment: The Origins and Developmental Significance of Individual Differences in Strange Situation Behavior. Hillsdale, N.J.: Erlbaum.

Lamb, M. E., Thompson, R. A., Gardner, W. P., Charnov, E. L., & Estes, D. (1984). Security of infantile attachment as assessed in the 'strange situation': its study and biological interpretation. Behavioral and Brain Sciences, 7, 127-171.

Lawler, K. A., Wilcox, Z. C., & Anderson, S. F. (1995). Gender differences in patterns of dynamic cardiovascular regulation. Psychosomatic Medicine, 57, 357-365.

Lazarus, R. S. (1993). Coping theory and research: Past, present, and future. Psychosomatic Medicine, 55, 234-247.

Lazarus, R. S., & Folkman, S. (1984). Emotions and adaptation. New York: Plenum Press.

Lazarus, R. S., & Smith, C. A. (1988). Knowledge and appraisal in the cognition-emotion relationship. Cognition and Emotion, 2, 281-300.

Lieberman, A. F., Weston, D. R., & Pawl, J. H. (1991). Preventive intervention and outcome with anxiously attached dyads. Child Development, 62, 199-209.

Lutenkhaus, P., Grossman, K.E., & Grossman, K. (1985). Infant-mother attachment at twelve months and style of interaction with a stranger at the age of three years. Child Development, 56, 1538-1542.

Lyons-Ruth, K., Connell, D. B., Gruenbaum, H. U., & Botein, S. (1990). Infants at social risk: Maternal depression and family support services as mediators of infant development and security of attachment. Child Development, 61(1), 85-98.

Main, M. (1983). Exploration, play, and cognitive functioning related to infant mother attachment. Infant Behavior and Development, 6, 167-174.

Main, M., Kaplan, N. & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. Monographs of the Society for Research in Child Development, 50(1-2, Serial No. 209).

Main, M., & Solomon, J. (1986). Discovery of a new, insecure-disorganized/disoriented attachment pattern. In M. Yogman & T. B. Brazelton (Eds.), Affective development in infancy (pp. 95-124). Norwood, N.J.: Ablex.

Main, M. & Weston, D. (1981). The quality of the toddler's relationship to mother and to father: Related to conflict behavior and the readiness to establish new relationships. Child Development, 52, 932-940.

Matas, L., Arend, R.A., & Sroufe, L.A. (1978). Continuity of adaptation in the second year: The relationship between quality of attachment and later competence. Child Development, 49, 547-556.

Matheny, A. P. (1989). Children's behavioral inhibition over age and across situations: Genetic similarity for a trait during change. Journal of Personality, 57, 215-226.

McCrae, R. R. (1992). Situational determinants of coping. In B. Carpenter (Ed.), Personal coping: Theory, research, and application (pp. 65-76). Westport, C.T.: Praeger.

McCrae, R. R., & Costa, P. T. (1986). Personality, coping, and coping effectiveness in an adult sample. Journal of Personality, 54, 385-405.

McCrae, R. R., & Costa, P. T., Jr. (1990). Personality in adulthood. New York: Guilford.

McEwen, B. S. (1989). The role of hormones acting on the brain play in linking nature with nurture. In A. M. Galburda (Ed.), From reading to neurons (pp. 463-472). Cambridge, M. A.: The MIT Press.

Mikulencer, M., Florian, V., & Weller, A. (1993). Attachment styles, coping strategies, and posttraumatic psychological distress: The impact of the gulf war in Israel. Journal of Personality and Social Psychology, 64(5), 817-826.

Mikulencer, M., & Florian, V. (1995). Appraisal of and coping with a real-life stressful situation: The contribution of attachment styles. Personality and Social Psychology Bulletin, 21(4), 406-414.

Mikulencer, M., & Nachson, O. (1991). Attachment styles and patterns of self-disclosure. Journal of Personality and Social Psychology, 61, 321-331.

Miller, S. M. (1987). Monitoring and blunting: Validation of a questionnaire to assess styles of information seeking under threat. Journal of Personality and Social Psychology, 52, 345-353.

Miller, S. M. (1992). Individual differences in the coping process: What to know and when to know it. In B. Carpenter (Ed.), Personal coping: Theory, research, and application (pp.77-91). Westport, C.T.: Praeger.

Mullen, M., & Suls, J. (1982). The effectiveness of attention and rejection as coping styles: A meta-analysis of temporal differences. Journal of Psychosomatic Research, 26(1), 43-49.

Obrist, P. A. (1981). Cardiovascular psychophysiology: A perspective. New York: Plenum Press.

Pancake, V. R. (1989). Quality of attachment in infancy as a predictor of hostility and emotional distance in preschool peer relationships. Unpublished doctoral dissertation. University of Minnesota, Minneapolis.

Pastor, D. L. (1981). The quality of mother-infant attachment and its relationship to toddlers' initial sociability with peers. Developmental Psychology, 17, 326-335.

Pennebaker, J. W. (1995). Emotion, disclosure, and health. Washington, D.C.: American Psychological Association.

Priel, B., & shamai, D. (1995). Attachment style and perceived social support: Effects on affect regulation. Personality and Individual Differences, 19(2), 235-241.

Rook, K. S. (1992). Detrimental aspects of social relationships: Taking stock of an emerging literature. In H. O. F. Veiel, & U. Baumann (Eds.), The meaning and measurement of social support (pp. 157-170). New York: Hemisphere Publishing Corporation.

Roseman, I. J., & Spindel, M. S., & Jose, P. E. (1990). Appraisals of emotion-eliciting events: Testing a

theory of discrete emotions. Journal of Personality and Social Psychology, 59(5), 899-915.

Roth, S. & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. American Psychologist, 41(7), 813-819.

Sandler, I. N., & Barrera, M., Jr. (1984). Toward a multimethod approach to assessing the effects of social support. American Journal of Community Psychology, 12, 37-52.

Sarason, B. R., Pierce, G. R., & Sarason, I. G. (1990). Social support: The sense of acceptance and the role of relationships. In B. R. Sarason, I. G. Sarason, & Pierce, G. R. (Eds.), Social support: An interactional view (pp. 97-128). New York: John Wiley & Sons.

Sarason, B. R., Shearing, E. N., Pierce, G. R., & Sarason, I. G. (1987). Interrelations among social support measures: Theoretical and practical implications. Journal of Personality and Social Psychology, 52, 813-832.

Scharfe, E. & Bartholomew, K. (1994, August). Stability of adult attachment representations: A two year follow-up. Poster presented at the Annual Convention of the American Psychological Association, Los Angeles, CA.

Schwartz, G. (1990). Psychobiology of repression and health: A systems approach. In J. L. Singer (Ed.) Repression and dissociation (pp. 405-434). Chicago: University of Chicago Press.

Senchak, M. & Leonard, K. E. (1992). Attachment styles and marital adjustment among newlywed couples. Journal of Social and Personal Relationships, 9, 51-64.

Shapiro, D. (1965). Neurotic styles. New York: Basic Books.

Shaver, P. R., & Brennan, K. A. (1992). Attachment styles and the "big five" personality traits: Their connections with each other and romantic relationship outcomes. Personality and Social Psychology Bulletin, 18, 536-545.

Shaver, P. R., & Clark, C. L. (1994). The psychodynamics of adult romantic attachment. In J. Masling and R. F. Bornstein (Eds.) Empirical perspectives on object relations theory (pp. 105-156). Washington, DC: American Psychological Association.

Shaver, P. R., & Klinnert, M. (1982). Schacter's theories of affiliation and emotion: implications of developmental research. 37-72. In L. Wheeler (Ed.), Review of personality and social psychology (Vol. 3, pp. 37-72). Beverly Hills, C. A.: Sage.

Sherwood, A., & Turner, J. R. (1992). A conceptual and methodological overview of cardiovascular reactivity research. In Turner, J. R., Sherwood, A., & Light, K. C. (Eds.), Individual differences in cardiovascular responses to stress (pp. 3-32). New York: Plenum Press.

Siegman, A. W., Dembroski, T. M., & Ringel, N. (1987). Components of hostility and the severity of coronary artery disease. Psychosomatic Review, 49, 127-135.

Simpson, J. A., & Rholes, W. S. (1994). Stress and secure base relationships in adulthood. In K. Bartholomew & D. Perlman (Eds.), Advances in personal relationships: Attachment Processes in adulthood (Vol. 5, pp. 181-204). Bristol, P. A.: Jessica Kingsley.

Simpson, J. A., & Rholes, W. S., & Nelligan, J. S. (1992). Support seeking and support giving within couples in an anxiety provoking situation: The role of attachment styles. Journal of Personality and Social Psychology, 62, 434-446.

Singer, J. L. (1990). Repression and dissociation: Implications for personality theory, psychopathology, and health (pp. 337-386). Chicago: University of Chicago Press.

Smith, C. A., Haynes, K. N., Lazarus, R. S., & Pope, L. K. (1993). In search of the "hot" cognitions: Attributions, appraisals, and their relation to emotion. Journal of Personality and Social Psychology, 65(5), 916-929.

Sroufe, L. A., Carlson, E., & Shulman, S. (1993). Individuals in relationships: Development from infancy through adolescence. In D.C. Funder, R.D. Parke, C. Tomlinson-Keasey, & K. Widman (Eds.), Studying lives through time (pp.315-342). Washington, DC: American Psychological Association.

Sroufe, L. A., Schork, E., Frosso, M., Lawroski, N., & LaFreniere, P. (1984). The role of affect in social competence. In C. Izard, J. Kagan, & R. Zajonc (Eds.), Emotions cognitions and behavior (pp. 289-319). New York: Cambridge University Press.

Sroufe, L. A., & Waters, E. (1977). Attachment as an organizational construct. Child Development, 48, 1184-1199.

Sroufe, L. A., & Waters, E. (1977b). Heart rate as a convergent measure in clinical and developmental research. Merrill-Palmer Quarterly, 23, 3-27.

Stern, R. M., Ray, W. J., & Davis, C. M. (1980). Psychophysiological recording. New York: Oxford University Press.

Stokes, J. P. (1983). Predicting satisfaction with social support from social network structure. American Journal of Community Psychology, 11, 141-152.

Suls, J., & Fletcher, B. (1985). The relative efficacy of avoidant and nonavoidant coping strategies: A meta-analysis. Health Psychology, 4(3), 249-288.

Taylor, J. A. (1953). A personality scale of manifest anxiety. Journal of Abnormal and Social Psychology, 48, 285-290.

Thoits, P. A. (1984). Coping, social support, and psychological outcomes: The central role of emotion. In P. Shaver (Ed.), Review of Personality and Social Psychology (Vol. 5, pp. 219-238). Beverly Hills, C.A.: Sage.

Thompson, R., & Lamb, M. (1984). Assessing qualitative dimensions of emotional responsiveness in infants: Separation reactions in the Strange Situation. Infant Behavior and Development, 7, 423-445.

Turner, J. R. (1994). Cardiovascular reactivity and stress: Pattern of physiological response. New York: Plenum Press.

Turner, J. R., Sherwood, A., & Light, K. C. (1990). Hemodynamics of blood pressure responses during active and passive coping. Psychophysiology, 27(6), 656-668.

Turner, J. R., Sherwood, A., & Light, K. C. (1992). Individual Differences in cardiovascular Response to stress. New York: Plenum Press.

van Doornen, L. J. P., & Turner, J. R. (1992). The ecological validity of laboratory stress testing. In J. Turner, A. Sherwood, & K. C. Light (Eds.), Individual Differences in cardiovascular Response to stress (pp. 63-83). New York: Plenum Press.

Veiel, H. O. F., & Baumann, U. (1992). The many meaning of social support. In H. O. F. Veiel, & U. Baumann (Eds.), The meaning and measurement of social support (pp. 1-9). New York: Hemisphere Publishing Corporation.

Watson, D., & Clark, L. A. (1984). Negative Affectivity: The disposition to experience aversive emotional states. Psychological Bulletin, 96, 465-490.

Watson, D., & Clark, L. A. (1994). Emotions, moods, traits, and temperaments: Conceptual distinctions and empirical findings. In P. Ekman & R. J. Davidson (Eds.), The nature of emotion: Fundamental questions (pp. 89-93). New York: Oxford University Press.

Weber, R. A., Levitt, M. J., & Clark, M. C. (1986). Individual variation in attachment security and strange situation behavior: The role of maternal and infant temperament. Child Development, 57, 56-65.

Weinberger, D. A., Schwartz, G. E., & Davidson, R. J. (1979). Low-anxious, high-anxious, and repressive coping styles: Psychometric patterns and behavioral and physiological responses to stress. Journal of Abnormal Psychology, 88, 369-380.

Weinberger, D. A. (1990). The construct validity of the repressive coping style. In J. L. Singer (Ed.), Repression and dissociation: Implications for personality theory, psychopathology, and health (pp. 337-386). Chicago: University of Chicago Press.

West, M., Livesly, W. J., Reiffer, L., & Sheldon, A. (1986). The place of attachment in the life events model of stress and illness. Canadian Journal of Psychiatry, 31, 202-207.

Wethington, E., & Kessler, R. C. (1986). Perceived support, received support, and adjustment to stressful life events. Journal of Health and Social Behavior, 27, 78-89.

Winer, B. J. (1971). Statistical principles in experimental design. New York: McGraw-Hill.

Wurmser, L. (1978). The hidden dimension psychodynamics of compulsive drug use. New York: Jason Aronson.

APPENDICES

APPENDIX A

Table 1. Baseline Levels by Gender.

	Male (n = 94)	Female (n = 100)	p
Baseline			
SBP	124.0(10.7)	106.7(8.9)	< .0001
DBP	70.2(7.2)	67.2(7.3)	< .10
HR	72.0(11.8)	75.1(11.2)	ns

Note. Standard deviations are in parentheses.

Table 2. Cardiovascular Levels During the MAT and ARI.

	MAT	ARI	p
Task			
SBP	128.2(16.1)	129.8(15.9)	< .005
DBP	77.5(9.0)	79.9(9.0)	< .005
HR	83.4(12.8)	81.2(11.9)	< .005

Note. Standard deviations are in parentheses. N = 194.

Table 3. Cardiovascular Levels During the Task-Associated Rest Periods.

	MAT	ARI	p
Rest			
SBP	115.6(13.1)	117.4(12.6)	< .0001
DBP	70.1(7.8)	71.0(7.2)	< .05
HR	73.5(11.0)	73.3(11.2)	ns

Note. Standard deviations are in parentheses. N = 194.

Table 4. Prediction of Attachment Rating Scales from Cardiovascular Variables (N = 194).

Dependent Variable	Step	Variable Entered	Beta	R^2 Change	F Change
Secure	-	-	-	-	-
Fearful	1	MATR DBP	-.17	.03	5.39
Preoccupied	-	-	-	-	-
Dismissing	1	ARI SBP	.15	.02	4.22

Note. No variables were removed from the regression model. No variables were entered into or removed from the regression models for the secure and preoccupied rating scales. For each step, F change is significant ($p < .05$). MATR = MAT rest period.

Table 5. Task and Rest Period Means on Feelings Checklists.

	MAT	ARI
Tasks		
1. absorption	2.8(0.4)	2.9(0.3)
2. depressed	1.7(0.9)	1.7(0.9)
3. happy	1.9(0.8)	1.8(0.8)
4. angry	1.6(0.9)	1.9(0.9)
5. unhappy	1.9(0.9)	1.8(0.9)
6. invigorated	2.0(0.9)	1.9(0.9)
7. relaxed	1.8(0.9)	2.1(0.9)
Rest Periods		
1. thoughts of task	2.6(0.8)	2.5(0.8)
2. relax	3.4(0.5)	2.9(0.4)
3. angry	1.5(0.8)	1.9(0.9)
4. aware of breathing	2.1(0.9)	2.1(0.9)
5. breathed deeper	1.9(0.9)	1.9(0.9)
6. unhappy	1.6(0.9)	1.8(0.9)
7. muscle tension	2.0(0.9)	2.0(0.9)
8. heart pounding	1.9(0.9)	1.8(0.9)
9. changed thoughts	2.8(1.1)	2.6(0.9)
10. relieved	2.5(0.8)	2.2(0.9)

Note. Standard deviations are in parentheses.

Table 6. Gender Means on the BDHI and TMAS.

	Male (n = 93)	Female (n = 100)
BDHI		
verbal	7.9(2.4)	6.9(2.9)
assault	4.6(2.9)	3.1(2.4)
indirect	4.0(2.0)	4.2(2.1)
irritability	5.4(2.4)	5.6(2.9)
resentment	3.1(2.3)	3.1(2.2)
negativism	2.5(1.3)	2.4(1.4)
suspicious	3.4(2.0)	3.6(3.0)
TMAS	7.3(4.4)	8.3(4.8)

Note. Standard deviations are in parentheses.

Table 7. BDHI and TMAS Means by Self Model Groups.

	SELF MODEL	
	Positive	Negative
BDHI		
verbal	7.1(2.6)	7.7(2.9)
assault	3.9(2.8)	3.8(2.6)
indirect	3.7(2.0)	4.7(2.0)
irritability	4.8(2.4)	6.5(2.7)
resentment	2.4(2.0)	4.1(2.2)
negativism	2.2(1.4)	2.8(1.3)
suspicious	2.9(2.7)	4.3(2.1)
guilt	4.6(1.9)	5.2(1.9)
TMAS	6.0(3.7)	10.1(4.7)

Note. Standard deviations are in parentheses. Positive self model = secure and dismissing. Negative self models = preoccupied and fearful.

Table 8. Prediction of Attachment Rating Scales from the BDHI and TMAS (N = 194).

Dependent Variable	Step	Variable Entered	Beta	R^2 Change	F Change
Secure	1	TMAS	-.43	.18	43.40[a]
Fearful	1	TMAS	.37	.14	31.34[a]
	2	suspicion	.19	.03	7.12[b]
Preoccupied	1	TMAS	.32	.11	22.55[a]
	2	resentment	.17	.03	5.57[c]
	3	assault	-.22	.02	4.40[c]
Dismissing	1	assault	.19	.04	7.20[b]

Note. No variables were removed from the regression model.
[a]$p < .0001$. [b]$p < .01$. [c]$p < .05$.

Table 9. Correlations Between Self-Report, Reactivity, and Rest Period Levels.

	verb	asslt	ind	irr	res	neg	susp	guilt	TMAS
Baseline									
SBP	.04	.20[b]	-.09	-.01	-.03	.04	-.00	-.10	-.10
DBP	-.04	-.04	-.07	.04	-.15[d]	.05	-.09	-.01	-.03
HR	.01	.03	-.05	.07	-.05	.09	.04	-.09	-.08
MAT									
SBP	-.13[e]	-.01	-.11	-.13[e]	-.12	-.10	-.18[c]	-.08	-.12
DBP	-.07	-.02	-.08	-.05	.02	-.08	-.06	.06	-.06
MHR	-.07	-.02	-.06	-.11	-.03	-.09	-.11	-.02	-.08
ARI									
SBP	-.25[a]	.04	-.13[e]	-.19[c]	-.15[b]	-.19[c]	-.17[b]	-.00	-.13[e]
DBP	-.19[c]	-.07	.01	-.12	-.07	-.21[b]	-.17[b]	-.00	-.10
HR	-.13[e]	-.07	-.09	-.13[e]	-.01	-.06	-.09	.02	-.05
MAT Rest									
SBP	.07	.21[b]	-.09	-.03	-.08	.05	-.04	-.07	-.07
DBP	-.08	-.05	-.07	-.04	-.19[c]	-.02	-.19[c]	-.08	-.07
HR	.04	-.02	.04	-.04	-.07	.12	-.00	-.10	-.08
ARI Rest									
SBP	.04	.18	-.06	-.05	-.05	.02	-.07	-.09	-.08
DBP	.04	-.01	-.01	.06	-.17[d]	.07	-.12[e]	-.04	-.03
HR	.03	.02	-.05	.07	-.04	.12[e]	.02	-.07	-.04

[a] $p < .001$. [b] $p < .005$. [c] $p < .01$. [d] $p < .05$. [e] $p < .10$.

Table 10. Correlations Between FC and Reactivity on Tasks.

	Abs	Dep	Hap	Ang	Unhap	Invig	Relax
MAT							
SBP	-.06	-.12[e]	.01	.06	-.13[e]	-.06	.07
DBP	-.02	.02	-.06	-.02	-.02	-.01	-.03
HR	-.07	-.08	.01	-.02	-.03	.06	.01
ARI							
SBP	.12[e]	.06	-.07	.15[b]	.03	.10	-.09
DBP	.03	.17[b]	-.05	.09	.04	.17[b]	-.17[b]
HR	-.01	.06	.02	-.02	-.00	.07	.11

[a]$p < .001$. [b]$p < .005$. [c]$p < .01$. [d]$p < .05$. [e]$p < .10$.

		MODEL OF SELF (positive)	MODEL OF SELF (negative)
MODEL OF OTHER	(positive)	SECURE Comfortable with intimacy and dependency	PREOCCUPIED Preoccupied with relationships
	(negative)	DISMISSING AVOIDANT Dismissing of close relationships	FEARFUL AVOIDANT Wishes for closeness but feels too vulnerable for it

Figure 1. Bartholomew's (1990) 4-Category Adult Attachment Style Typology. (Adapted from Bartholomew, 1990)

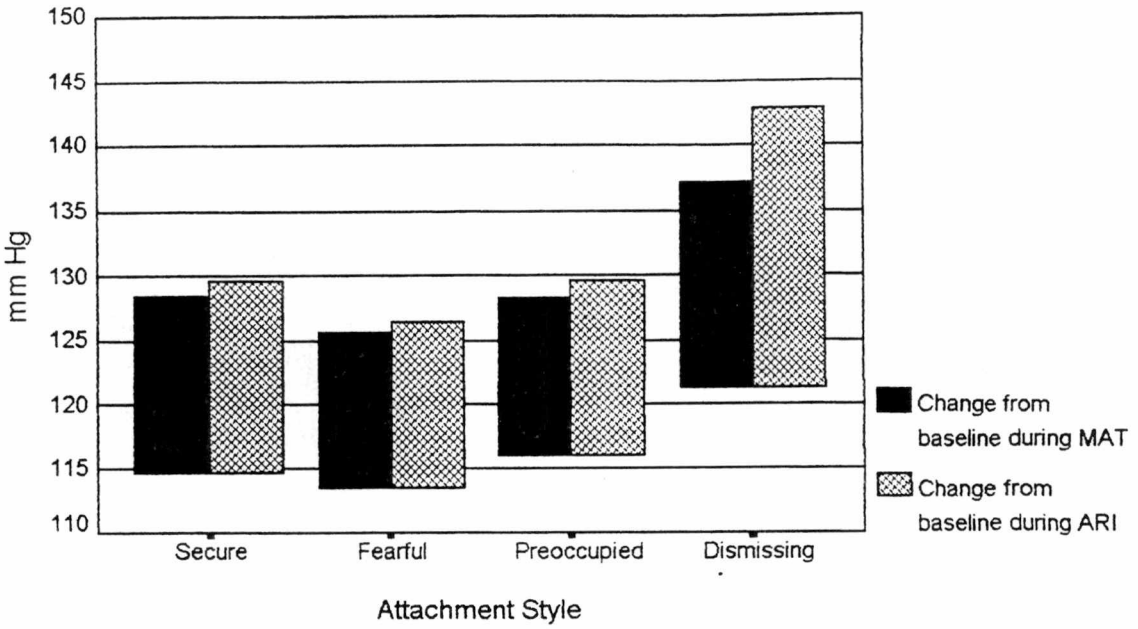


Figure 2. SBP Baseline and Task Levels by Attachment Style.

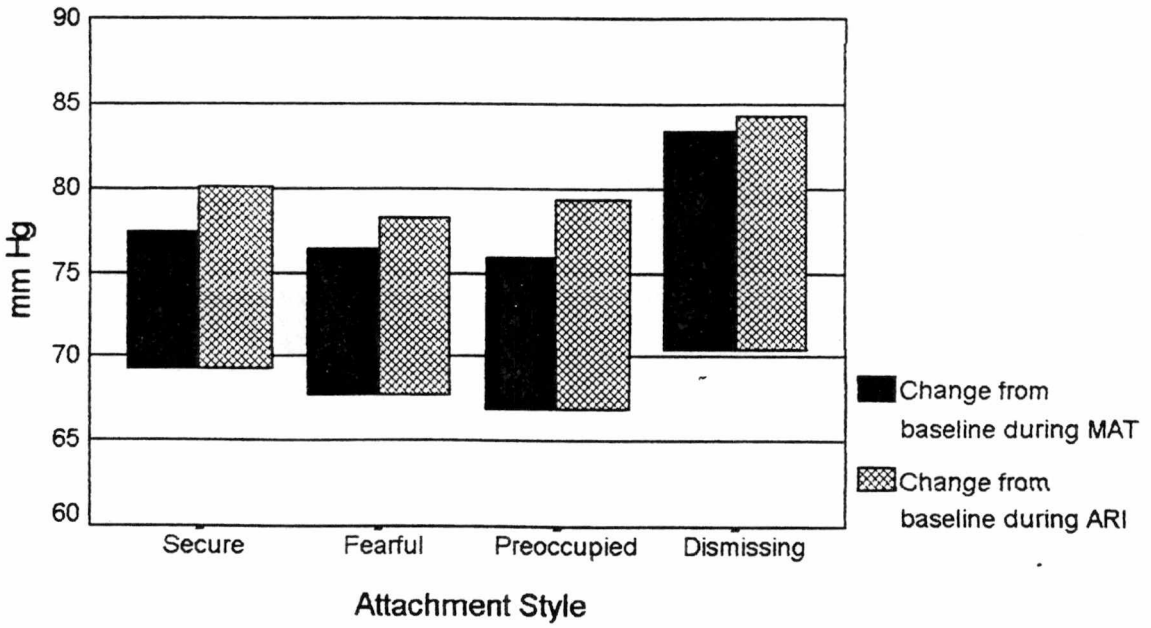


Figure 3. DBP Baseline and Task Levels by Attachment Style.

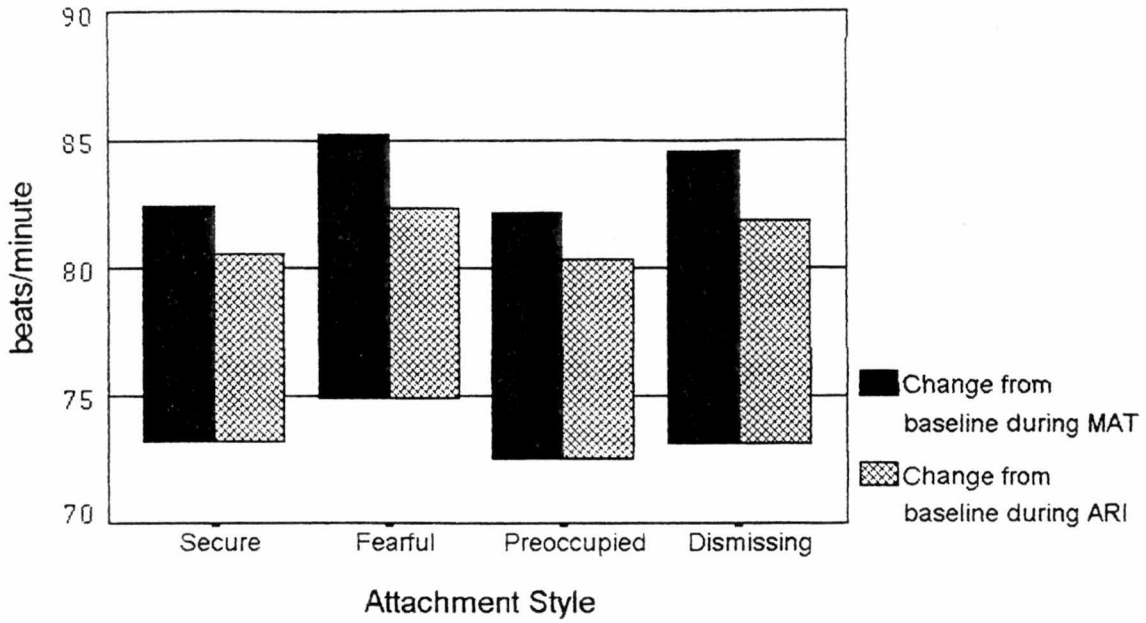


Figure 4. HR Baseline and Task Levels by Attachment Style.

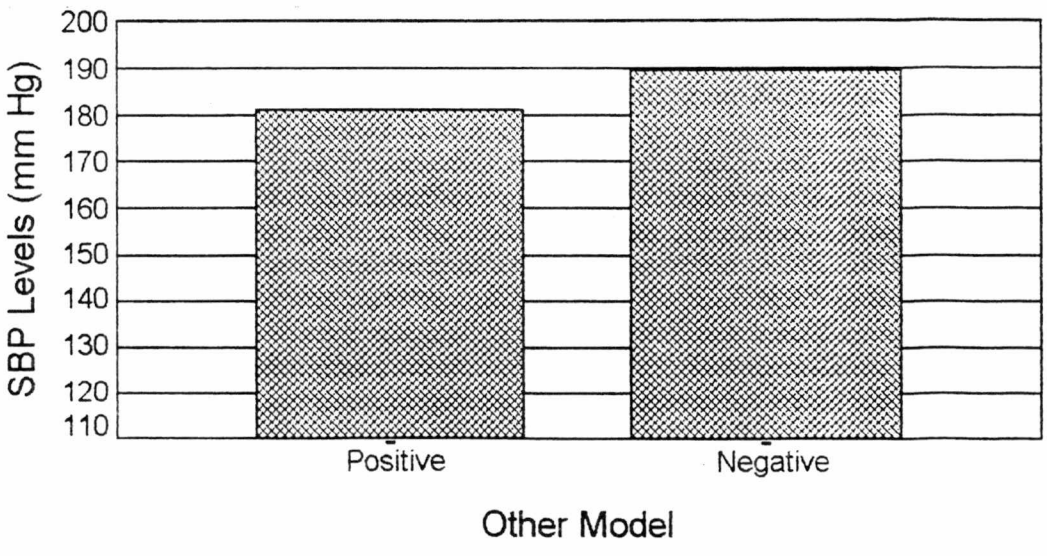
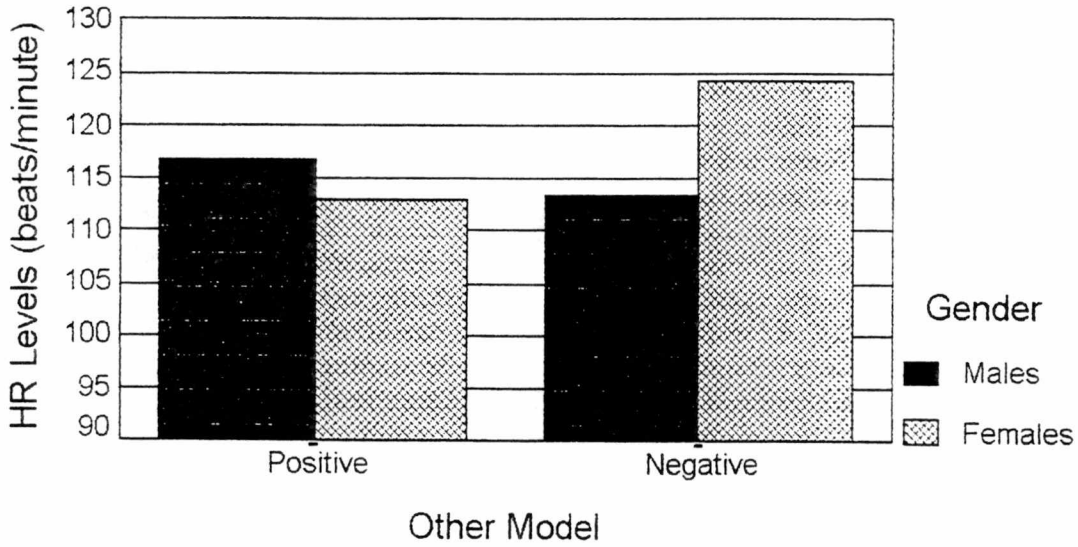
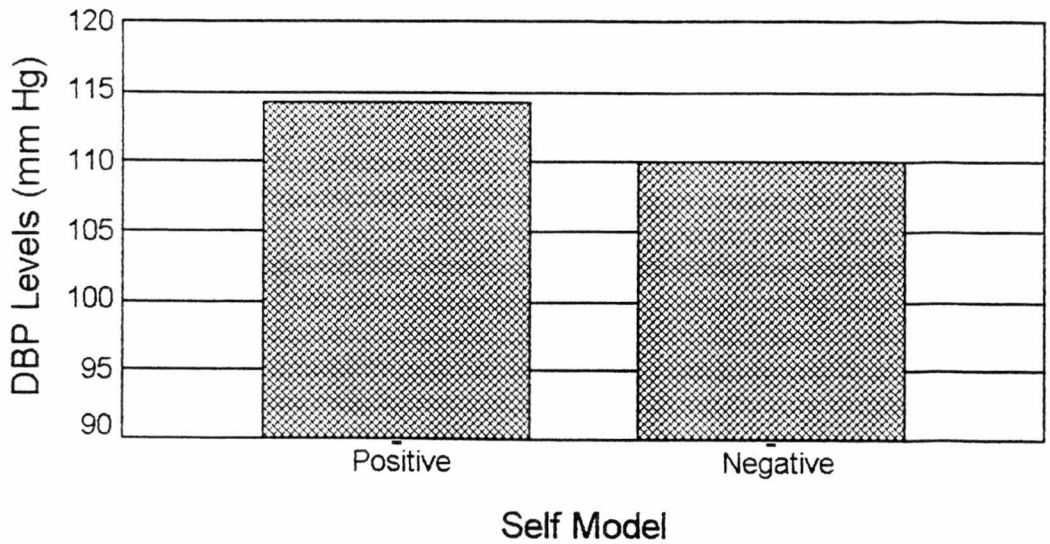


Figure 5. SBP Task Levels by Other Model Groups.



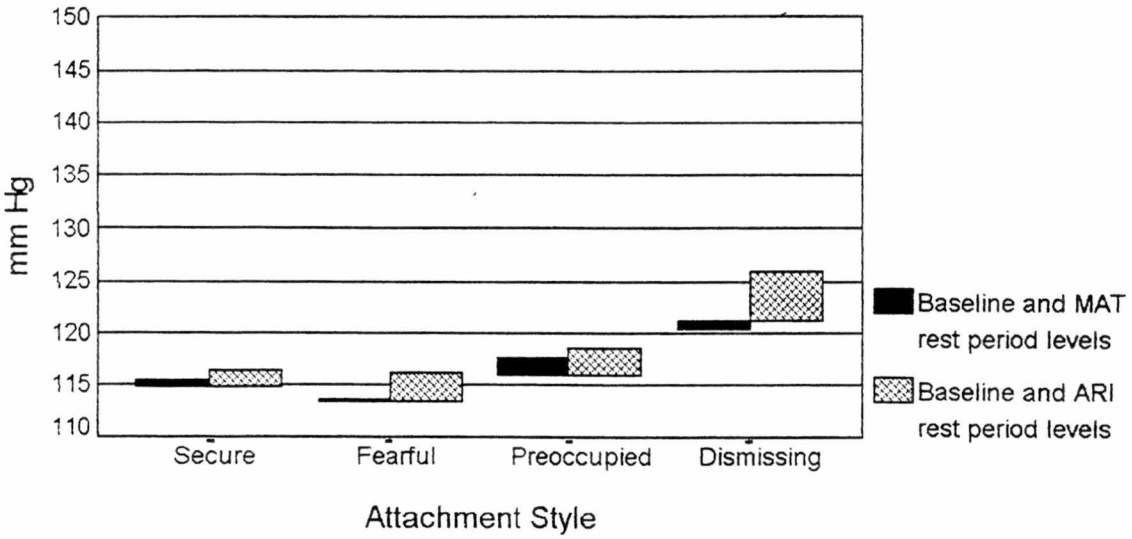
HR levels represent adjusted means for both the MAT and ARI combined.

Figure 6. HR Task Levels by Other Model Groups and Gender.



DBP levels represent adjusted means for both the MAT and ARI combined.

Figure 7. DBP Task Levels by Self Model Groups.



Note. SBP for the dismissing group fell below baseline during the MAT rest period.

Figure 8. SBP Baseline and Rest Period Levels by Attachment Style.

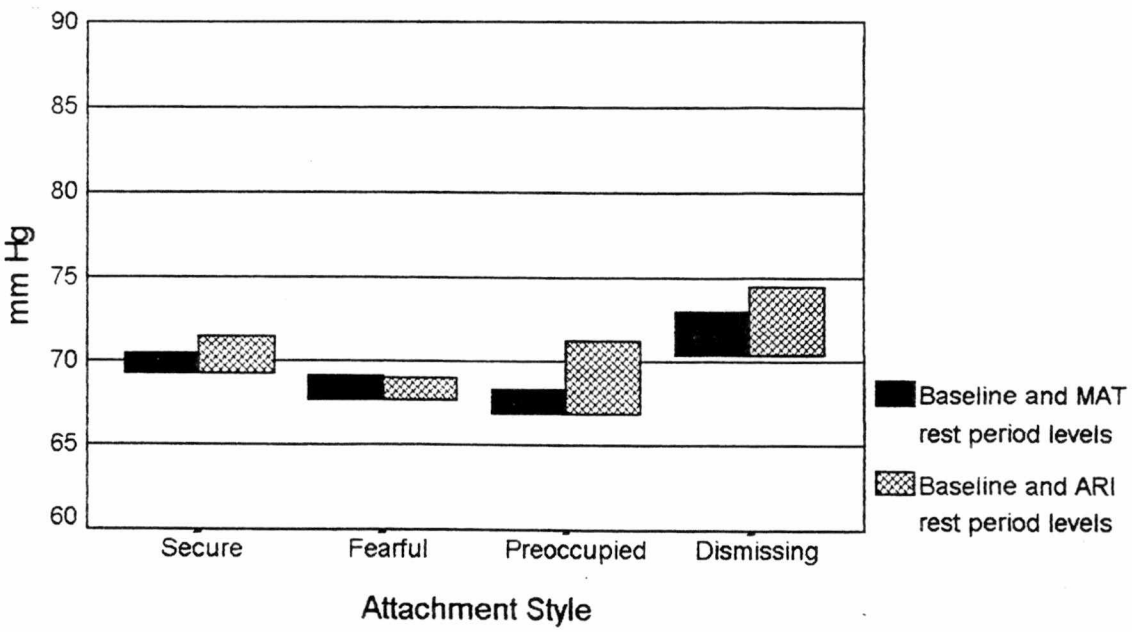
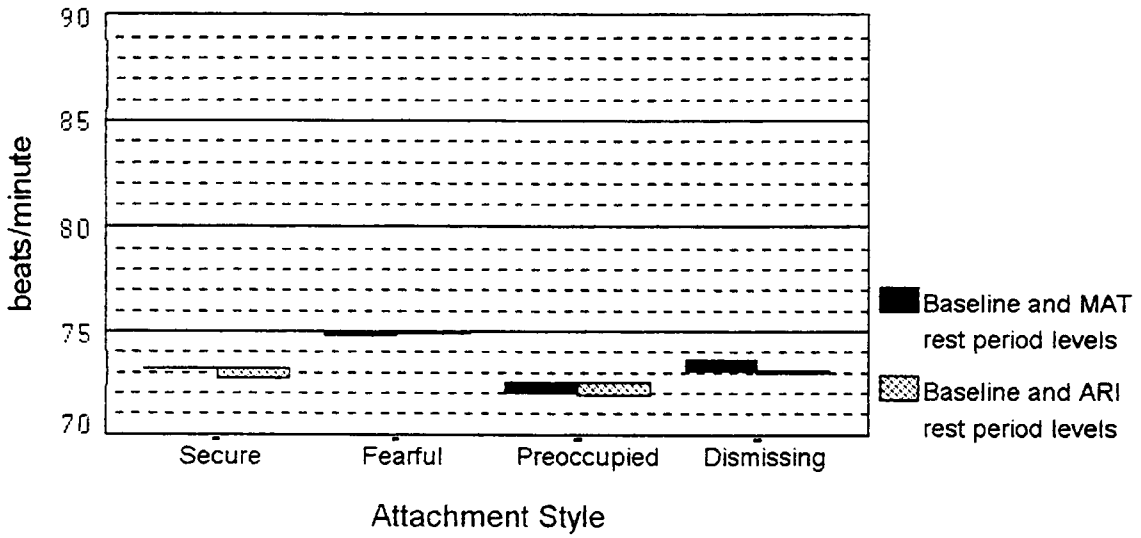
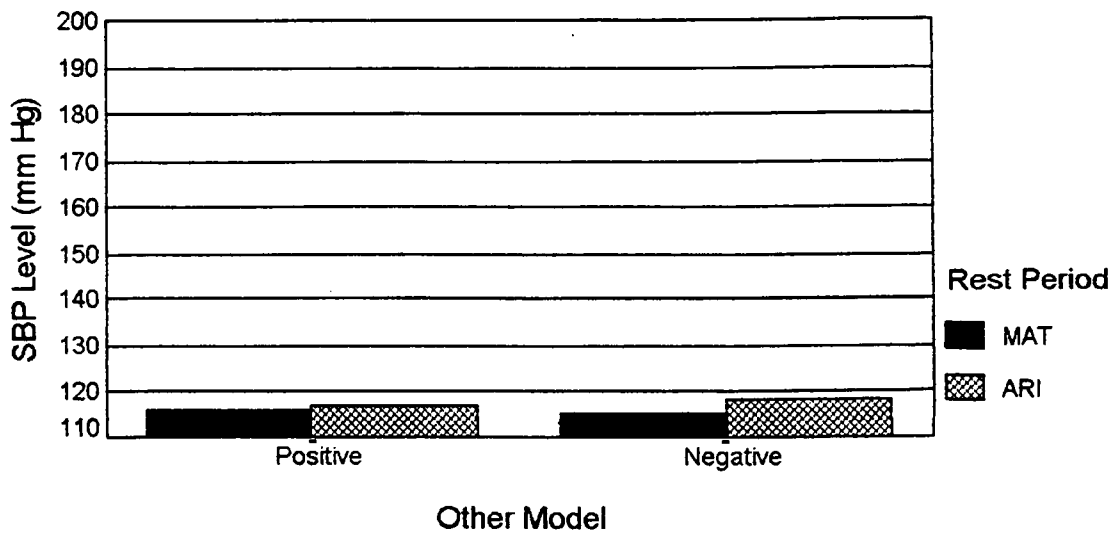


Figure 9. DBP Baseline and Rest Period Levels by Attachment Style.



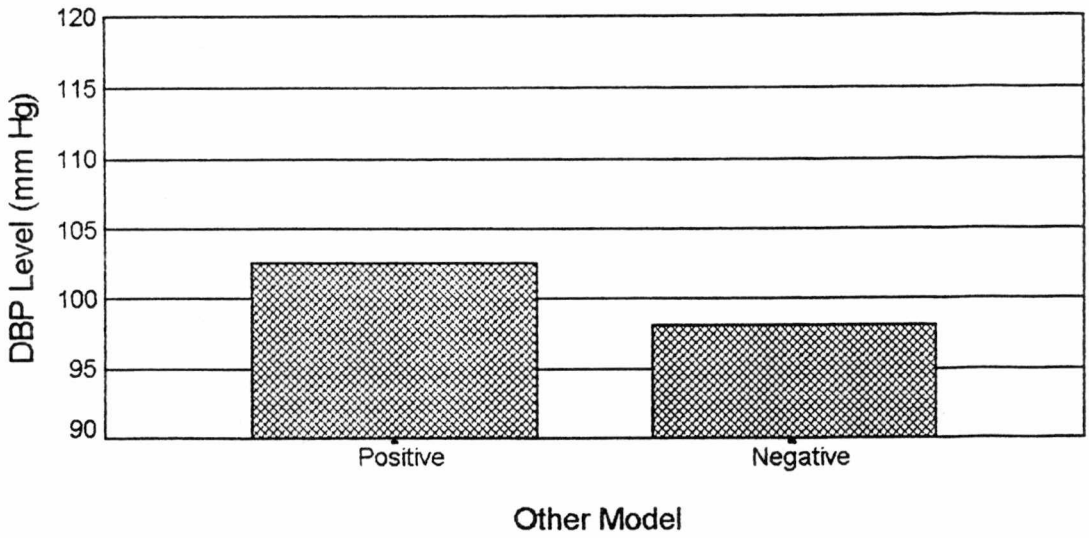
Note. All groups' HR rates fell on or below baseline except for the dismissing avoidant group during the MAT rest period.

Figure 10. HR Baseline and Rest Period Levels by Attachment Style.



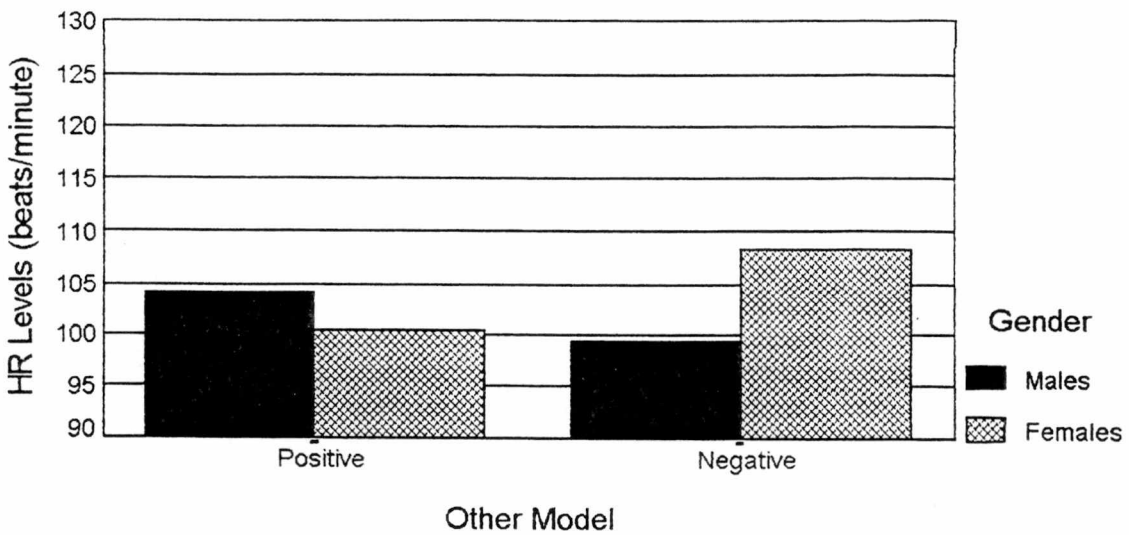
SBP levels represent adjusted means for both the MAT and ARI rest periods combined.

Figure 11. SBP Rest Period Levels by Other Model Groups.



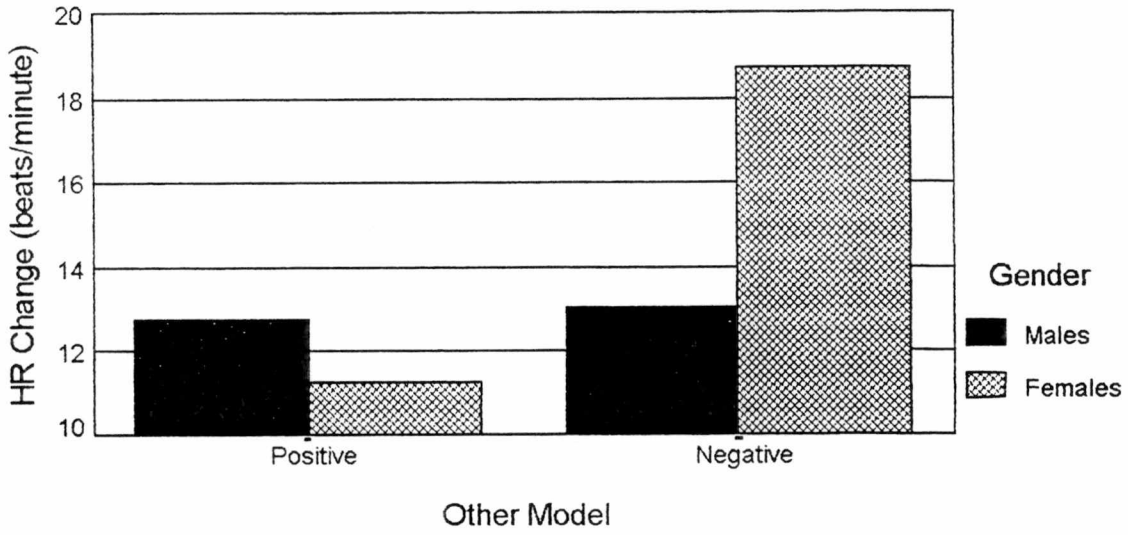
DBP levels represent adjusted means for both the MAT and ARI rest periods combined.

Figure 12. HR Rest Period Levels by Other Model Groups and Gender.



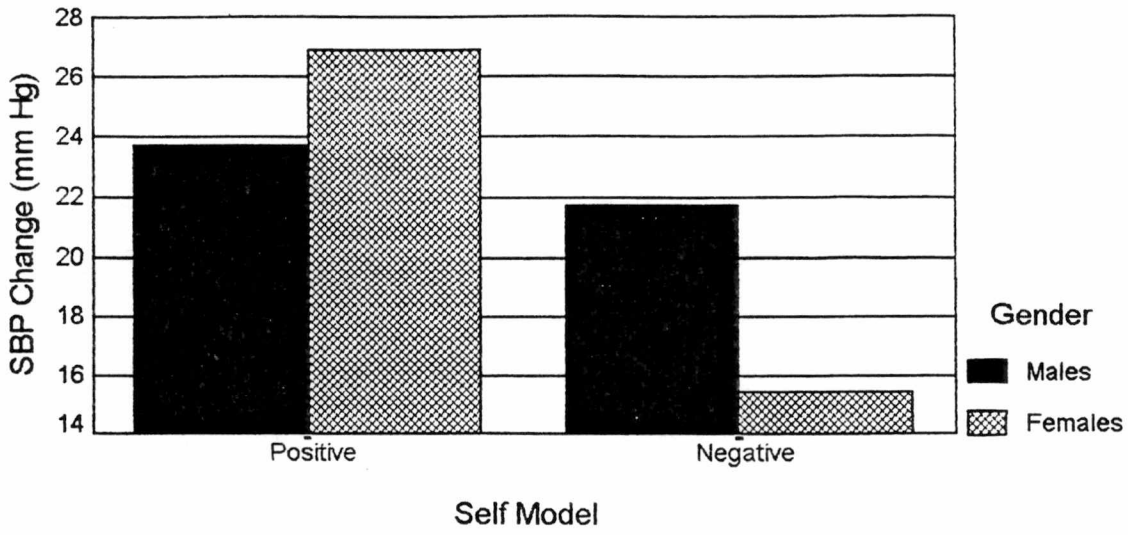
HR levels represent adjusted means for both the MAT and ARI rest periods combined.

Figure 13. DBP Rest Period Levels by Self Model Groups.



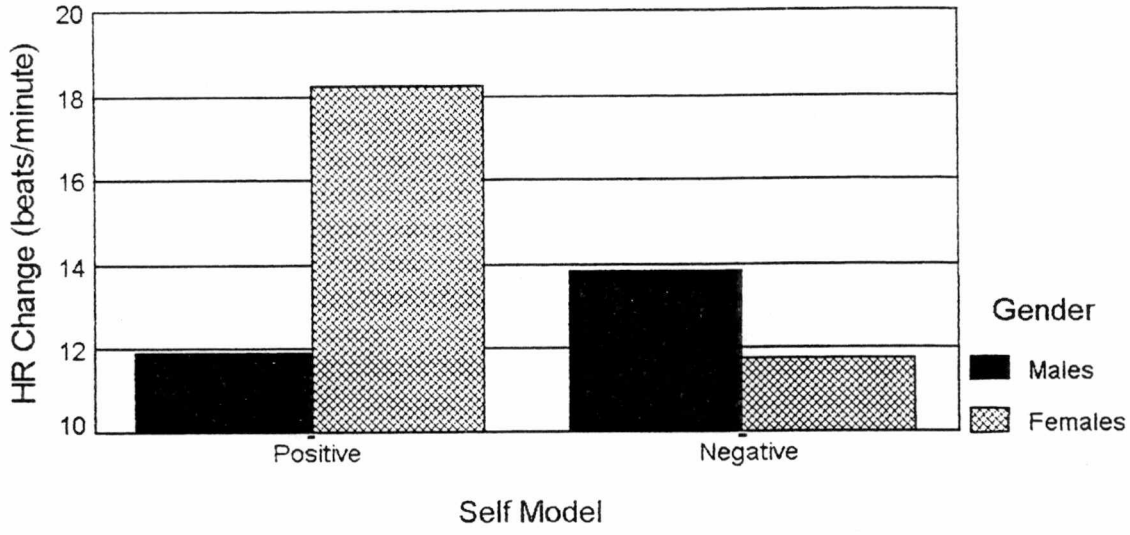
HR change scores represent adjusted means for both the MAT and ARI combined.

Figure 14. HR Reactivity by Other Model Groups and Gender.



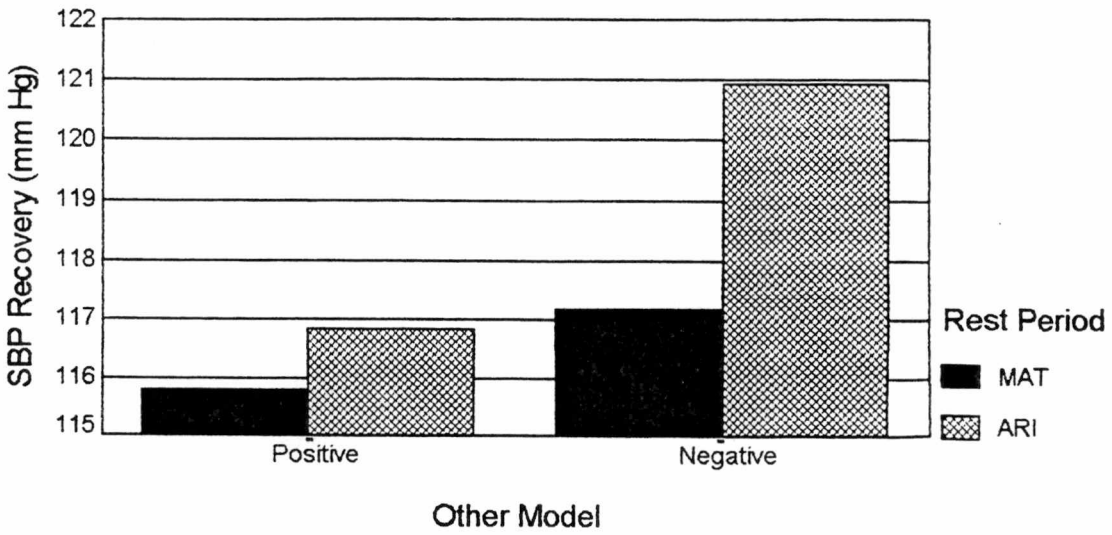
SBP change scores represent adjusted means for both the MAT and ARI combined.

Figure 15. SBP Reactivity by Self Model Groups and Gender.



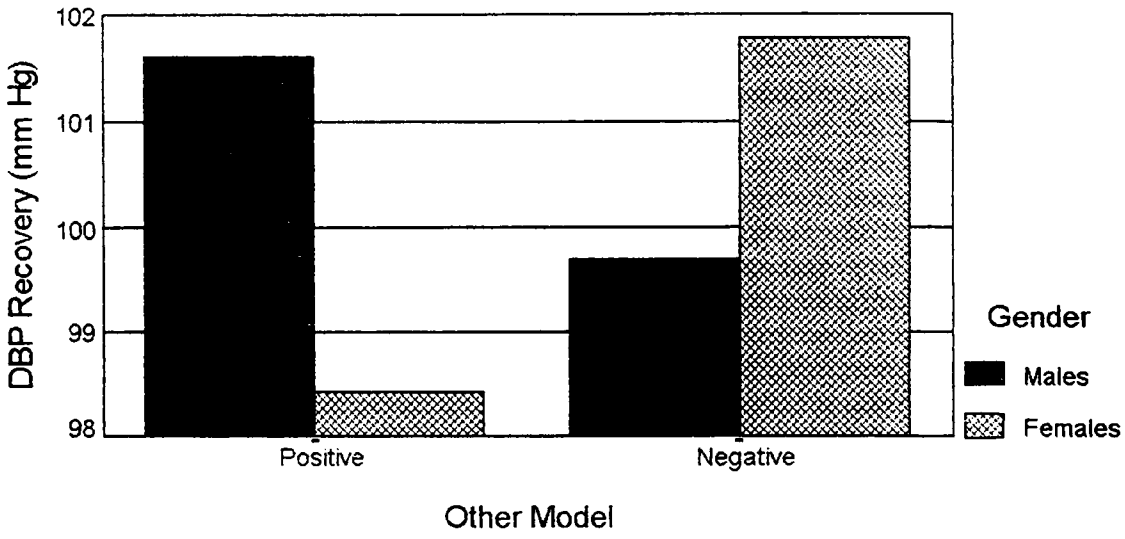
HR change scores represent adjusted means for both the MAT and ARI combined.

Figure 16. HR Reactivity by Self Model Groups and Gender.



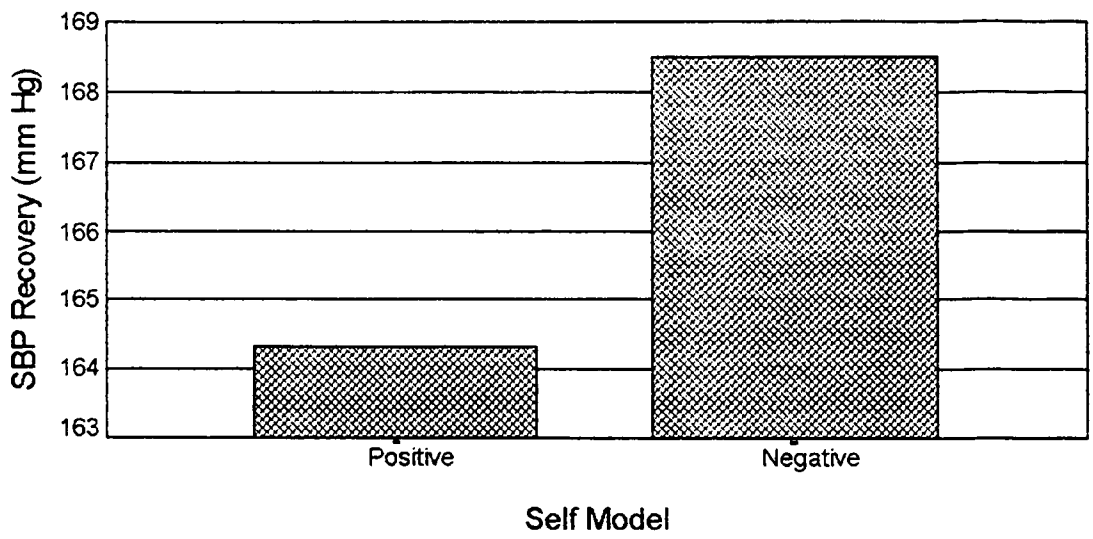
SBP recovery scores are combined mean rest period levels adjusted for last minute of tasks. Greater levels = poorer recovery from both tasks.

Figure 17. SBP Recovery by Other Model Groups and Rest Period.



DBP recovery scores are combined mean rest period levels adjusted for last minute of tasks. Greater levels = poorer recovery from both tasks.

Figure 18. DBP Recovery by Other Model Group and Gender.



SBP recovery scores are combined mean rest period levels adjusted for last minute of tasks. Greater levels = poorer recovery fom both tasks.

Figure 19. SBP Recovery by Self Model Groups.

APPENDIX B

FEELINGS CHECKLIST

Each of these statements describes a feeling or mood related to the experimental task(s) you just completed. Please use the rating scale next to each statement to describe how you feel about the task at this moment.

Work quickly and provide a mark for each statement. Your first reaction is best.

Scale: 1-Definitely does not describe my feelings.
2-Cannot decide.
3-Somewhat describes my feelings.
4-Definitely does describe my feelings.

1.	The task absorbed my attention.	1	2	3	4
2.	The task left me feeling depressed.	1	2	3	4
3.	I was happy after this task.	1	2	3	4
4.	I felt angry after this task.	1	2	3	4
5.	I felt unhappy when I finished.	1	2	3	4
6.	I was invigorated.	1	2	3	4
7.	I felt relaxed.	1	2	3	4

RESTING PERIOD

Read each of these statements and rate them according to how they apply to you during the resting period just completed. There is no right or wrong answer. Work quickly and give your first reaction. Circle the number that corresponds to your answer.

Scale: 1-Definitely does not describe my feelings.
2-Cannot decide.
3-Somewhat describes my feelings.
4-Definitely does describe my feelings.

During this resting period:

1.	I thought about the math task/ anger discussion task.	1	2	3	4
2.	I tried to relax.	1	2	3	4
3.	I felt angry.	1	2	3	4
4.	I was aware of my breathing and any changes in it.	1	2	3	4
5.	I tried to breath deeper.	1	2	3	4
6.	I felt unhappy.	1	2	3	4
7.	I was aware of increased muscle tension in my body.	1	2	3	4
8.	I felt my heart pounding.	1	2	3	4
9.	I tried to change my thoughts to something else.	1	2	3	4
10.	I felt relieved.	1	2	3	4

VITA

Richard Scot Adlin was born on Long Island, New York on November 28, 1968. He attended public school in Brentwood, New York until his graduation in June, 1986. He entered the State University of New York at Buffalo where he received his Bachelor of Arts in Psychology. He continued there until May, 1992 when he received his Master of Arts in General Psychology. He entered the Doctoral Program in Clinical Psychology at the University of Tennessee, Knoxville in 1992. In 1996, he attended the clinical psychology internship at Massachusetts Mental Health Center, a teaching hospital of Harvard Medical School and received his doctoral degree in December, 1997.

He is presently working at the inpatient psychiatric facility of Appalachian Regional Healthcare in Hazard, Kentucky as a staff psychologist.